GARDEN GROVE

CITY OF GARDEN GROVE
OFFICE OF THE CITY CLERK

Safeguard all official records of the City.
Conduct municipal elections and oversee legislative administration.
Provide reliable, accurate, and timely information to the City Council, staff, and the general public.

March 29, 2021

Request # 6685
Requester: Cameron Hughes
Company: Paladin Law Group

Re: 7341 Anaconda Ave.

Dear Mr. Hughes,

Enclosed are the records found concerning the history of the above-mentioned site(s), especially as it pertains to fire code violation history, permits, the use, storage, or disposal of hazardous substances, and the installation or removal of underground flammable or combustible liquid storage tanks.

The City of Garden Grove Fire Department has utilized its best efforts to locate the records requested. The City does not provide records on spills, leaks and clean-up, as that information is provided through the County of Orange Health Department.

Sincerely,

Amanda Pollock
City of Garden Grove
City Clerk's Office

GARDEN GROVE

FIRE DEPARTMENT

HAZARDOUS MATERIALS DISCLOSURE PROGRAM

REPORTING FORMS PACKET

SHORT VERSION

FOR OFFICIAL USE ONLY

FACILITY ID NO. 3891

BUSINESS NAME Advanced Chemistry & Technology.

BUSINESS ADDRESS 7341 Anaconda Ave

APPROVED BY G DATE 4/09

NEW BUSINESS ☐ YES ☐ NO UPDATE

PICK __ 4D __ BUSLIST __ CALARP: __ CUPA: __ GIS __

FEE

Revised 2/2007

FIRE SAFETY SURVEY
GARDEN GROVE FIRE DEPARTMENT

11301 Acacia Parkway, Garden Grove, CA 92842
Bus 714-741-5600 Fax 714-741-5640

File # 8891
Fire District 2314
Inspector FPB Shift N
Next Insp 5 / 2010

Occupant or DBA ADVANCED CHEMISTRY & TECHNOLOGY **Business Phone** 714 373-2837

Address 7341 ANACONDA Ave **Suite** _____ **Zip** 92841

Business Owner Jordan Company **Phone**

Emergency Contact [redacted] **Phone** [redacted]

Group F-1 **Load** _____ **Sprinklers F/P/N** F **5 yr. Cert.** 11/08/2007 **Haz Mat** ☑

Fire Permits

811031 HIGH-PILED COMBUSTIBLE STOCK, 801031 HAZARDOUS MATERIALS - use, handling or storage, 741031 NON-FLAM. COMP. GASES, 491011 HOT WORK - welding and cutting / open flame,

An inspection at the above location/occupany revealed the following violations(s)

SIGNS

☐ Provide address visible from the street (CFC 505.1)

☐ Provide hazardous materials warning signs (CFC 2703.5)

EXITS

2ND CONTAINMENT DOOR LATCH
CONTAINMENT EXIT DOOR PANIC HARDWARE
SHIPPING/RECIEVING EXIT DOOR

☑ Provide/maintain approved panic hardware (CFC 1008.1.9)

☐ Remove locks, chains,bolts or bars from exit door (CFC 1008.1.8)

☐ Remove exit door/hardware (CFC 1008.1.8.5)
Location _____

☐ Remove exit obstruction (CFC 1028.3)

☐ Provide/maintain illuminated exit sign(s) (CFC 1011.2)

EMERGENCY LIGHTS BY MAIN ELECTRICAL PANELS

☑ Provide and maintain approved emergency lighting (CFC 1006.1)

ACCESS

☐ Provide outside Knox Box (CFC 506.1)

☐ Remove obstructions to fire apparatus access (CFC 503.4)

FIRE PROTECTION EQUIP. AND SYS.

☐ Provide ___extinguishers __2A10BC __40BC __K (CFC 906.1)

☐ Service and tag extinguisher(s) (CFC 901.6)

☐ Hang extinguisher(s) 3.5'-5' from floor (Title 19, Sec.567.6)

☐ Clean filters, ducts , hood above cooking surface (CFC 904.11.6.4)

☐ Service auto-extinguishing system semi-annually (CFC 904.11.6.3)

☐ 5 yr certification on sprinkler/standpipe system (Title 19, Sect. 904)

ASSEMBLY OCCUPANCIES

☐ Post maximum occupancy load sign (CFC 1004.3)

☐ Remove combustible decorative material (CFC 807.1.2)

☐ Remove storage under stairway (CFC 315.2.2)

ELECTRICAL SAFETY PRE-CAUTION!

☐ Discontinue use of extension cords (CFC 605.6)

☐ Keep 30" clear for access in front of electrical panel (CFC 605.3)

☐ Provide/replace electrical __cover __socket __power strip (CFC 605.1)

Location _____

HAZ-MAT SAFETY PRE-CAUTIONS

☐ Complete Hazardous Materials Disclosure packet 714-741-5636 (CFC 2701.5.1)

☐ Provide approved cabinet if more than 10 gal. flammable liquids (CFC 3404.3.4.3)

☐ Provide approved safety containers(s) for flammable liquids (CFC 3404.3.1)

MISCELLANEOUS

☐ Lower storage __18" below sprinklers or __ 2' from ceiling (CFC 315.2.1)

MAINTANENCE ROOM-SECURE GAS CYLINDER
PROPAINE CYLINDERS NEAR CONTAINMENT

☑ Secure compressed gas cylinders (CFC 3003.5.3)

SECURE 55 gl. DRUMS TO PALETS

☐ Post __Business License __Fire Department Permit (CFC 105.6)

☐ **NO VIOLATIONS**

ADDITIONAL VIOLATIONS AND/OR NOTES

- FIRE DOOR ANNUAL TEST OK 8/3
- PLUG HOLE IN CONTAINMENT ROOM

Business representative signature _____ Date 8/3/10

Inspector ID # TRAVIS MELLEN # 2867 Date 8/3/10

☑ Cleared 8/18/10 ☐ Mailback card due __/__/____ ☑ Re-inspection date 8/17/10 9:00AM ☐ Final Notice __/__/____

FORM 1

CITY OF GARDEN GROVE FIRE DEPARTMENT

11301 Acacia Parkway, Garden Grove, CA 92842 (714) 741-5600 (714) 741-5636

Hazardous Materials Business Information Form

BUSINESS INFORMATION

FACILITY # (Supplied by GGFD): 3 0 0 3 5	BEGINNING DATE 1	ENDING DATE 2	
BUSINESS NAME 4: Advanced Chemistry & Technology, Inc. (ACTECH)		BUSINESS PHONE 5: 714 373 2837	
BUSINESS SITE ADDRESS 6: 7341 Anaconda Ave			
CITY 7: GARDEN GROVE	STATE 8: CA	ZIP 9: 92841	
DUN & BRADSTREET 10	SIC CODE (4 DIGIT #) 11: 2891	FIRE DISTRICT 12	
COUNTY 13: ORANGE			
BUSINESS OPERATOR NAME 14	OPERATOR'S PHONE 15		

BUSINESS OWNER

OWNER NAME 16: The Jordan Company		OWNER PHONE 17: 212 572 0800	
OWNER MAILING ADDRESS 18: 767 5th Ave 48th Floor			
CITY 19: New York	STATE 20: NY	ZIP 21: 10153	

ENVIRONMENTAL CONTACT

CONTACT NAME [redacted] 22		CONTACT PHONE [redacted] 23	
CONTACT MAILING [redacted] 24			
CITY [redacted] 25	STATE 26: CA	ZIP [redacted] 27	

EMERGENCY CONTACTS

PRIMARY		SECONDARY	
NAME [redacted] 28		NAME [redacted] 33	
TITLE 29: V.P. Operations		TITLE 34: VP. MFG	
BUSINESS PHONE 30: 714 373 2837 x 156		BUSINESS PHONE 35: 714 373 2837 x 131	
24-HR. PH [redacted] 31		24-HR. PHONE [redacted] 36	
PAGER # [redacted] 32		PAGER # 37	

ADDITIONAL LOCALLY COLLECTED INFORMATION

DESCRIBE THE TYPE OF BUSINESS OPERATION: 38: Aircraft Sealant Manufacturer		TOTAL # OF EMPLOYEES 39: 47	
BILLING ADDRESS (IF DIFFERENT FROM ABOVE) 40: Same As Above		ATTENTION 41	
PROPERTY OWNER NAME 42: Cambell/Griffith Trust	ADDRESS 43: 3029 Wilshire Blvd Santa Monica	PHONE 44: 310 828 7547	

Certification: Based on my inquiry of those individuals responsible for obtaining the information, I certify under penalty of law that I have personally examined and am familiar with the information submitted and believe the information is true, accurate, and complete.

[redacted] ENTATIVE 45	DATE 46: 4/29/09	
[redacted] 49		
TITLE OF SIGNER: VP MFG 50	VP MFG	

CITY OF GARDEN GROVE
11301 ACACIA PARKWAY
GARDEN GROVE, CALIFORNIA 92842
(714) 741-5636

CUPA

BUSINESS ACTIVITIES

FACILITY INFORMATION

I. FACILITY IDENTIFICATION

FACILITY ID# 3 0 [redacted] 0 3 5 [redacted]

1. EPA ID # (Hazardous Waste Only) CAR000169516 2.

BUSINESS NAME (Same as FACILITY NAME or DBA-Doing Business As) 3.

II. ACTIVITIES DECLARATION

NOTE: If you check YES to any part of this list, please submit the Business Owner/Operator Identification page.

Does your facility...		If Yes, please complete these pages of the UPCF...
A. HAZARDOUS MATERIALS		
Have on site (for any purpose) hazardous materials at or above 55 gallons for liquids, 500 pounds for solids, or 200 cubic feet for compressed gases (include liquids in ASTs and USTs); or the applicable Federal threshold quantity for an extremely hazardous substance specified in 40 CFR Part 355, Appendix A or B; or handle radiological materials in quantities for which an emergency plan is required pursuant to 10 CFR Parts 30, 40 or 70?	☐ YES ☒ NO 4.	✓ HAZARDOUS MATERIALS INVENTORY - CHEMICAL DESCRIPTION (Form 3)
B. UNDERGROUND STORAGE TANKS (USTs)		
1. Own or operate underground storage tanks?	☐ YES ☒ NO 5.	✓ UST FACILITY (Formerly SWRCB Form A) ✓ UST TANK (one page per tank) (Formerly Form B)
2. Intent to upgrade existing or install new USTs?	☐ YES ☒ NO 6.	✓ UST FACILITY ✓ UST TANK (one per tank) ✓ UST INSTALLATION - CERTIFICATE OF COMPLIANCE (one page per tank) (Formerly Form C)
3. Need to report closing a UST?	☐ YES ☒ NO 7.	✓ UST TANK (closure portion-one page per tank)
C. ABOVE GROUND PETROLEUM STORAGE TANKS (ASTs)		
Own or operate ASTs above these thresholds: - any tank capacity is greater than 660 gallons, or - the total aggregate capacity for the entire facility (ASTs, drums and portable containers) greater than 1,320 gallons?	☐ YES ☒ NO 8.	✓ NO FORM REQUIRED TO CUPAS
D. HAZARDOUS WASTE		
1. Generate hazardous waste?	☒ YES ☐ NO 9.	✓ EPA ID NUMBER - provide at the top of this page
2. Recycle more than 100 kg/month of excluded or exempted recyclable materials (per HSC §25143.2)?	☐ YES ☐ NO 10.	✓ RECYCLABLE MATERIALS REPORT (one per recycler)
3. Treat hazardous waste on site?	☐ YES ☒ NO 11.	✓ ONSITE HAZARDOUS WASTE TREATMENT - FACILITY (Formerly DTSC Forms 1772) ✓ ONSITE HAZARDOUS WASTE TREATMENT - UNIT (one page per unit) (Formerly DTSC Forms 1772A,B,C,D and L)
4. Treatment subject to financial assurance requirements (for Permit by Rule and Condition Authorization)?	☐ YES ☒ NO 12.	✓ CERTIFICATION OF FINANCIAL ASSURANCE (Formerly DTSC Form 1232)
5. Consolidate hazardous waste generated at a remove site?	☐ YES ☒ NO 13.	✓ REMOTE WASTE/CONSOLIDATION SITE ANNUAL NOTIFICATION (Formerly DTSC Form 1196)
6. Need to report the closure/removal of a tank that was classified waste and cleaned onsite?	☐ YES ☒ NO 14.	✓ HAZARDOUS WASTE TANK CLOSURE CERTIFICATION (Formerly DTSC Form 1249)
E. LOCAL REQUIREMENTS		
Cal-ARP: California Accidental Release Prevention Program *H&SC Chapter 6.95, Article 2, §25531 et seq* — Stationary Source with more than a Threshold Quantity of a Regulated Substance in a Process	☐ YES ☒ NO 15.	✓ REGULATED SUBSTANCE REPORTING FORM (Orange County CUPA)

GARDEN GROVE FIRE DEPARTMENT
BUSINESS EMERGENCY PLAN

A BUSINESS IS REQUIRED BY LAW TO NOTIFY THE GARDEN GROVE FIRE DEPARTMENT WITHIN 30 DAYS OF ANY OF THE FOLLOWING EVENTS:

1. Change of business address.
2. Change of business ownership.
3. Change of business name.
4. Cessation of business operation (quitting business).
5. Use or handling of a previously undisclosed hazardous material.
6. A 100% increase in the quantity of a previously disclosed hazardous material.

IN ADDITION, IF A BUSINESS HANDLES EXTREMELY (ACUTELY) HAZARDOUS MATERIALS, THE BUSINESS MUST NOTIFY THE GARDEN GROVE FIRE DEPARTMENT WITHIN 30 DAYS OF ANY OF THE FOLLOWING EVENTS:

1. A modification, change, or addition to your facility which either increases your usage of extremely hazardous materials by 10% or greater, or substantially increases the risk in handling extremely hazardous materials at that address.

Your business is required by State law to retain a copy of this entire Business Plan, chemical inventory, material safety data sheets and site maps, for review by Fire Department personnel. State where your Disclosure and Emergency Business Plan will be kept.

Manufacturing Manager's office.

Show location on site map also using symbol in the legend.

Note: A fee is charged for a replacement copy from the Garden Grove Fire Department.

I certify, under penalty of perjury, that the enclosed information is true and correct to the best of my knowledge.

Signatu[redacted]

Name:

Title: VP Manufacturing

Date: 7-May-2009

GARDEN GROVE FIRE DEPARTMENT
HAZARDOUS MATERIALS DISCLOSURE PROGRAM
BUSINESS EMERGENCY PLAN

EMERGENCY NOTIFICATIONS:
A handler of hazardous materials is required to immediately report any release or threatened release of hazardous materials to the Garden Grove Fire Department. Failure to do so may result in criminal and/or civil prosecution.

REQUIRED NOTIFICATIONS:
In the event of a release or threatened release of hazardous materials, it is State law to notify each of the following agencies.

AGENCY	PHONE NUMBERS
Garden Grove Fire Department, Police, Paramedics	911
Office of Emergency Services (OES)	(800) 852-7550 or (916) 427-4341
National Response Center	(800) 424-8802
Individual responsible for calling these agencies:	

Provide the following information when you call:

- Name of the person and business
- Business street address
- Location of the incident
- Type of incident (spill, gas release, etc.)
- The name(s) of the chemical substance(s) involved
- The amount of the chemical substance(s) involved
- The extent of injuries, if any
- Possible hazards to human health and/or the environment
- Emergency call-back phone number (____)_____

If a chemical spill or release at your facility could create a toxic cloud or a liquid stream that could drift beyond your facility, then, identify nearby facilities that could be in imminent danger.

To the North
Facility Tenants change often - unknown Phone ( )
Facility Phone ( )

To the South
Facility Catalina Cylinders Phone (714) 890-0999.
Facility Phone ( )

To the East
Facility Tenants change often - unknown Phone ( )
Facility Phone ( )

To the West
Facility Pacific Polymers Phone (714) 898-0025
Facility Phone ( )

GARDEN GROVE FIRE DEPARTMENT
HAZARDOUS MATERIALS DISCLOSURE PROGRAM
BUSINESS EMERGENCY PLAN

OPTIONAL NOTIFICATIONS:

1. Hazardous Waste Contractor
   Name: UNIVAR (323) 837-7022
2. Insurance Company
   Name: Lockton (816) 960-9000
3. Poison Control Center – 24-Hour 1 (800) 876-4766

EVACUATION PLANS AND PROCEDURES:

Evacuation Alarms – describe the type of alarm signals that will be used to start an evacuation at this facility (vocal, paging system, manual alarm, etc.):

Paging system, manual alarm, vocal.

Evacuation Drills

Evacuation drills and records proving you have held such drills are required by California law. The drill record does NOT have to be provided to the Fire Department with this business plan, but shall be maintained for a period of three years and shall be available for review by Fire Department personnel. The record shall include the facilitator's name, title, facility location, date of drill, and the signature of the facilitator. For your convenience, a form for recording list information is included with this packet. Make additional copies as needed.

The following four forms:

A) Evacuation Drill Record

B) Emergency Coordinator Task Completion Sheet

C) Emergency Chemical Disclosure Form

D) Training Record

These forms are designed to assist you in organizing, planning and maintaining permanent records. They are to be retained at the business, and may be requested by emergency responders upon their arrival or during your annual fire inspection.

GARDEN GROVE FIRE DEPARTMENT

EVACUATION DRILL RECORD

Business Name: Advanced Chemistry & Technology, Inc.

Street Address: 7341 Anaconda Ave. Garden Grove.

Date of Evacuation Drill: September 18, 2008

Brief Description of Drill: Simulation of emergency, sounded alarm by paging system, evacuate building, accounted for everyone.

Facilitator's Name: Stephane Pyrek

Facilitator's Title: VP. MFG

I hereby certify, under penalty of perjury, that I facilitated the evacuation drill as described above.

Signature of Facilitator: Stephane E. Pyrek

Date Signed: 7-May-2009

Date of Evacuation Drill: _____

Brief Description of Drill: _____

_____

Facilitator's Name: _____

Facilitator's Title: _____

I hereby certify, under penalty of perjury, that I facilitated the evacuation drill as described above.

Signature of Facilitator: _____

Date Signed: _____

THIS RECORD TO BE RETAINED AT THE BUSINESS.
MAKE ADDITIONAL COPIES OF THIS FORM AS NEEDED.

GARDEN GROVE FIRE DEPARTMENT
TRAINING RECORDS
FOR HAZARDOUS MATERIALS AND EMERGENCIES

In addition to planning and conducting training programs, each employer should maintain training records for no less than three years. For your convenience, a form for recording this information is provided for your use. These reports do not have to be mailed back to the Fire Department with the Business Plan, but should be available to Fire Department personnel upon request. Make as many additional copies of these forms as you need.

Employee Name: Chris schatzer
Employee Title: Receiving Operator
Training Provided: HAZWOPER REFRESHER

Date Completed: Feb 2009

Employee Name: All AC TECH Manufacturing & Packaging.
Employee Title: Various
Training Provided: 49 CFR - Hazardous Material Training

Date Completed: APRIL 2009

Employee Name:
Employee Title:
Training Provided:

Date Completed:

Employee Name:
Employee Title:
Training Provided:

Date Completed:

THIS RECORD TO BE RETAINED AT THE BUSINESS.
MAKE ADDITIONAL COPIES OF THIS FORM AS NEEDED.

GARDEN GROVE FIRE DEPARTMENT
BUSINESS EMERGENCY PLAN

EVACUATION PLANNING

Describe the evacuation routes, emergency exits, and staging areas for employees in each work area at this facility. (A "staging area" is a specific location where your personnel meet after an evacuation, where you make sure everyone evacuated safely.)

1. Working area: Manufacturing Area EAST Portion of Building
   Evacuation route: EAST EXIT TO STAGING AREA.
   Emergency exits: EAST & North SIDES OF BUILDING
   Staging area: EAST PARKING LOT

2. Working area: OFFICE & LAB - EAST Portion of Building
   Evacuation route: South exit then east to staging area
   Emergency exits: SOUTH & EAST SIDES of building.
   Staging area: EAST PARKING LOT

3. Working area: Packaging - West Portion of Building
   Evacuation route: West exit then east to staging area
   Emergency exits: North and West side of BUILDING
   Staging area: EAST PARKING LOT

4. Working area: OFFICE - WEST Portion of Building
   Evacuation route: South then east to staging area.
   Emergency exits: South side of building
   Staging area:

5. Working area:
   Evacuation route:
   Emergency exits:
   Staging area:

MAKE ADDITIONAL COPIES OF THIS FORM AS NEEDED.

GARDEN GROVE FIRE DEPARTMENT
BUSINESS EMERGENCY PLAN

EMPLOYEE RESPONSIBILITIES:

Every business is required to develop an emergency plan. Part of this plan shall include the pre-assignment of important emergency duties to specific employees, and training of employees to carry out these emergency duties. Provide this information below for those employees who will carry out the emergency duties:

JOB TITLE: Emergency Coordinator

EMERGENCY FUNCTION(S): Response to Scene, directs, reports with Public emergency response units (Fire, police, etc)

a. George Bo[illegible]

b. Steven Rivera

c. Jon Book

d.

JOB TITLE: First Responder

EMERGENCY FUNCTION(S): 1ST Person Reporting to Scene.

a. Ron Cassayre

b. Stephen Pyrek

c. Chris Schechter

d.

JOB TITLE: Team Lead

EMERGENCY FUNCTION(S): Takes rolls, accounts for employees, reports missing to Emergency Coordinator.

a. Jay Becton

b. Tom Coughlin

c. Ron Cassayre.

d.

MAKE ADDITIONAL COPIES OF THIS FORM AS NEEDED.

GARDEN GROVE FIRE DEPARTMENT
BUSINESS EMERGENCY PLAN

TRAINING:

Every business handling hazardous materials above the minimum limits shall provide training for their employees in the following area:

A. Method for safe handling of hazardous materials.
B. Procedures for notification and coordination with emergency agencies, in the event of a spill or threatened spill.
C. Use of emergency response equipment and supplies under the control of the handler.
D. Emergency mitigation procedures in response to a release or threatened release hazardous material.
E. Tasks assigned to employees in the event of a hazardous materials emergency.
F. Evacuation procedures.

Describe the type of training programs you either are currently using or will use during the next year to provide the required employee training.

Training by outside agency to satisfy OSHA Hazardous Waste Operators and Emergency Responde Standard 29 CFR 1910.120 (e)(8)(q)(8) and CCR 5192 (e)(q)

MAKE ADDITIONAL COPIES OF THIS FORM AS NEEDED.

Hazardous Material Disclosure

Business Information / Chemical Inventory / Business Emergency Plan

GARDEN GROVE FIRE DEPARTMENT
11301 Acacia parkway
Garden Grove, CA 92840
Bus. (714) 741-5600 Fax (714) 741-5640
Hazardous Materials Coordinator
(714) 741-5636

Date: 4/9/09

Address: 7341 ANACONDA File No:

Occupant or DBA: ADVANCED CHEMISTRY & TECHNOLOGY

Owner/Manager: GEORGE E BARRAZA Phone (626) 945-1336

☒ California Health and Safety Code, Section 6.95, you are required to properly complete the Business Emergency Plan (BMP) packet. You are required to return the BEP packet, Hazardous Materials Disclosure Forms, and all material safety data sheets within fifteen (15) days to the Garden Grove Fire Department. HazMat Coord. (714) 741-5636

An inspection at the above location/occupancy revealed the following violation(s):

Violation(s): CA Health and Safety Code Chapter 6.95, Article 1 and Title 19, §2729 et seq., California Code of Regulations (CCR)

- ☒ Complete Hazardous Materials Disclosure packet, HSC Chapter 6.95, Title 19 Div 2 Chapter 3, CFC 8001.3.2
- ☐ Failure to submit a Business Emergency Plan. [HSC 25505(a)(1)]; CFC 8001.3.2
- ☐ Failure to review and/or revise the Business Emergency Plan as required [HSC 25505(b)&(c)]
- ☐ Chemical inventory is incomplete and/or requires update. [HSC 25509]
- ☐ The Emergency Response Plan is inadequate and/or does not address the following issues and shall be immediately revised and resubmitted: [HSC 25504(b)&(c)]
  - ☐ Notification Procedures
  - ☐ Mitigation Procedures
  - ☐ Evacuation Procedures
  - ☐ Employee Training
- ☐ Business Owner/Operator page is incomplete or needs to be updated. [HSC 25509]
- ☐ Failure to provide name, title, and 24-hour number of emergency contact(s). [HSC 25509(a)(7)]
- ☐ Site Map is incomplete or insufficient. [HSC 25509]
- ☐ Failure to report a release or threatened release. [HSC 25507]
- ☐ Failure to report a change in business or chemical inventory within 30 days of the following event(s): [HSC 25510]
  - ☐ 100% or more increase in the quantity of a disclosed material
  - ☐ Addition of a previously undisclosed material
  - ☐ Change in business address
  - ☐ Change in business ownership
  - ☐ Change of business name
  - ☐ Other (See comments below):

Violation(s): California Fire Code 2001, Articles 79 & 80, Title 19 Part 9, California Code of Regulations (CCR)

- ☐ Provide for secondary containment for hazardous materials liquids and solids (CFC 8003.1.3.3)
- ☐ Provide spill control for hazardous materials liquids (CFC 8003.1.3.2)
- ☐ Provide approved cabinet if more than 10 gallons of flammable liquids (CFC 7902.5)
- ☒ Provide placarding and signs (NFPA 704, CFC Article 79 §7901.9, Article 80 §8001.7-8)
- ☐ **No Violations Found**

Additional Violations and/or Notes:

NFPA 704 PLACARD FOR RCRA STORAGE AREA IN REAR OF BUILDING.

Responsible Party: Re-inspection Date: MAY 4TH 2009

The above are violations of California law and require immediate correction. Failure to correct violations is subject to civil penalties.

Fire Dept. Inspector: Captain Janowick ID #: 4212

Condition Upon Re-inspection: [redacted] Date: 4-9-09

COMPLIES 5/6/09 Captain Janow

FIRE SAFETY SURVEY
GARDEN GROVE FIRE DEPARTMENT

11301 Acacia Parkway, Garden Grove, CA 92842
Bus 714-741-5600 Fax 714-741-5640

File # 317
Fire District 2314
Inspector FPB **Shift** N
Next Insp 5 / 2009

Occupant or DBA ADVANCED CHEMISTRY & TECHNOLOGY **Business Phone** 714 373-2837
Address 7341 ANACONDA Ave **Suite** **Zip** 92841
Business Owner ~~Josef Beierl~~ George E Barraza 626-945-1336 **Phone** ~~818 761-3764~~
Emergency Contact RON CASSAYRE **Phone** 562 212-6060
Group H2 **Load** **Sprinklers F/P/N** F **5 yr. Cert.** 11/08/2007 **Haz Mat** ☑

Fire Permits

741031 NON-FLAM. COMP. GASES, 491011 HOT WORK - welding and cutting / open flame, 801031 HAZARDOUS MATERIALS - use, handling or storage, 811031 HIGH-PILED COMBUSTIBLE STOCK,

An inspection at the above location/occupany revealed the following violations(s)

SIGNS
- ☐ Provide address visible from the street (CFC 505.1)
- ☐ Provide hazardous materials warning signs (CFC 2703.5)

EXITS
- ☐ Provide/maintain approved panic hardware (CFC 1008.1.9)
- ☒ Remove locks, chains,bolts or bars from exit door (CFC 1008.1.8)
- ☐ Remove exit door/hardware (CFC 1008.1.8.5) Location ______
- ☐ Remove exit obstruction (CFC 1028.3)
- ☒ Provide/maintain illuminated exit sign(s) (CFC 1011.2) 12' All Doors
- ☐ Provide and maintain approved emergency lighting (CFC 1006.1)

ACCESS
- ☒ Provide outside Knox Box (CFC 506.1)
- ☐ Remove obstructions to fire apparatus access (CFC 503.4)

FIRE PROTECTION EQUIP. AND SYS.
- ☐ Provide ___extinguishers __2A10BC __40BC __K (CFC 906.
- ☐ Service and tag extinguisher(s) (CFC 901.6)
- ☐ Hang extinguisher(s) 3.5'-5' from floor (Title 19, Sec.567.6)
- ☐ Clean filters, ducts , hood above cooking surface (CFC 904.11.6.4)
- ☐ Service auto-extinguishing system semi-annually (CFC 904.11.6.3)
- ☐ 5 yr certification on sprinkler/standpipe system (Title 19, Sect. 904)

ASSEMBLY OCCUPANCIES
- ☐ Post maximum occupancy load sign (CFC 1004.3)
- ☐ Remove combustible decorative material (CFC 807.1.2)
- ☐ Remove storage under stairway (CFC 315.2.2)

ELECTRICAL SAFETY PRE-CAUTION!
- ☐ Discontinue use of extension cords (CFC 605.6)
- ☐ Keep 30" clear for access in front of electrical panel (CFC 605.3)
- ☐ Provide/replace electrical __cover __socket __power strip (CFC 605.1)

Location ______

HAZ-MAT SAFETY PRE-CAUTIONS
- ☐ Complete Hazardous Materials Disclosure packet 714-741-5000 (CFC 2701.5.1)

abinet if more than 10 gal. flammable
.4.3)

— addresses

afety containers(s) for flammable
.1)

" below sprinklers or __ 2' from ceiling

- ☐ Secure compressed gas cylinders (CFC 3003.5.3)
- ☐ Post __Business License __Fire Department Permit (CFC 105.6)

☐ **NO VIOLATIONS**

ADDITIONAL VIOLATIONS AND/OR NOTES

— [illegible] Doors — [illegible] — TEST FUSEABLE LINK FIRE [illegible]
— [illegible]

Business representative signature [signature] Date 3/10/09
Inspector ID # 2867 Date 3/10/09

☒ Cleared 3/24/09 ☐ Mailback card due __/__/____ ☒ Re-inspection date 3/24/09 ☐ Final Notice __/__/____

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☐ REVISED 1 Page ____ of ____ 2

FACILITY ID# 30 035 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: Material Storage Area 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # G2-G7 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: ZIRCONIUM (IV) N-PROPOXIDE | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☒ No 11 (* If EPCRA see instructions)

COMMON NAME: METAL ALKOXIDE 9 | An EHS Chemical ☐ Yes ☐ No 12 (*If EHS is "Yes", all amounts must be LBS)

CAS # 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☐ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 18

AVERAGE DAILY AMOUNT: 20 19 | MAXIMUM DAILY AMOUNT: 200 20 | ANNUAL WASTE AMOUNT: NONE 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET ☒ c. POUNDS ☐ d. TONS 23 (*If EHS, amount must be in pounds.) | DAYS ON SITE: 365 DAYS 24 | LARGEST CONTAINER: 4 LB JAR 25

STORAGE CONTAINER (Check all that apply) 26
☐ a. ABOVEGROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BLDG ☐ d. STEEL DRUM ☐ e. PLASTIC DRUM ☐ f. NONMETALLIC DRUM ☐ g. METAL CONTAINER ☐ h. CARBOY ☐ i. VAT ☐ j. FIBER DRUM ☐ k. BAG(S) ☐ l. BOX(S) ☐ m CYLINDER ☐ n. GLASS CONTAINER ☐ o PLASTIC CONTAINER ☐ p. IN MACH OR EQUIP ☐ q. TANK WAGON ☐ r. RAIL CAR ☐ s. TOTE BIN ☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	75 29	ZIRCONIUM (IV) N-PROPOXIDE 30	☐ Yes ☐ No 31	23519-77-9 32
2	25 29	n-PROPANOL 30	☐ Yes ☐ No 31	71-23-8 32
3	29	30	☐ Yes ☐ No 31	32
4	29	30	☐ Yes ☐ No 31	32
5	29	30	☐ Yes ☐ No 31	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

UNDOT # UN 1993 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS 3 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 37
FIRE (RED) 4
HEALTH (BLUE) 2
REACTIVE (YELLOW) 1
SPECIAL HAZARD WHITE OX/W

MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Revised 2/02 -- haz-inven2.doc

MATERIAL SAFETY DATA SHEET

Manufacturer: Strem Chemicals, Inc.
7 Mulliken Way
Newburyport, MA 01950-4098

STREM CUSTOMER SERVICE: (978) 462-3191
CHEMTREC (EMERGENCY ONLY): (800) 424-9300
POISON CENTER: (800) 562-8236

SECTION 1 Product Identification

CHEMICAL NAME: Zirconium (IV) n-propoxide (23-28% free alcohol)

PRODUCT NUMBER: 93-4017

CAS REGISTRY NUMBER: 23519-77-9

FORMULA: $Zr(OC_3H_7)_4$

EINECS NUMBER: 245-711-9

CHEMICAL FAMILY: metal alkoxide

SYNONYM: zirconium propanolate in n-propyl alcohol, 1-hydroxypropane

SECTION 2 Composition and Information on Ingredients

INGREDIENT:	CAS#	%	ACGIH (TWA)	OSHA (PEL)
Title Compound	23519-77-9	75	5mg/m3 (as Zr)	5mg/m3 (as Zr)
n-propanol	71-23-8	25	200ppm	500mg/m3

SECTION 3 Hazards Identification

EMERGENCY OVERVIEW: Harmful by inhalation, in contact with skin and if swallowed. Irritating to skin, eyes and respiratory tract. Possible risk of impaired fertility, irreversible effects and harm to the unborn child.

PRIMARY ROUTES OF EXPOSURE: Inhalation, ingestion, contact with skin and eyes.

EYE CONTACT: If liquid contacts the eye, irritating solid zirconium oxide powder may form. N-propanol vapor may cause severe eye irritation.

SKIN CONTACT: Harmful in contact with skin. Dehydrating agent. Liquid will cause mild irritation of the skin.

INHALATION: Harmful by inhalation. Irritating to the nose, mucous membranes and respiratory tract and cause headache, dizziness, and drowsiness.

INGESTION: Harmful if swallowed. Ingestion may cause gastrointestinal distress, nausea, vomiting and headache.

ACUTE HEALTH EFFECTS: Harmful by inhalation, in contact with skin and if swallowed. Irritating to skin, eyes and respiratory tract. Possible risk of harm to the unborn child.

CHRONIC HEALTH EFFECTS: Possible risk of impaired fertility and irreversible effects. In animal studies n-propanol has acted as a mutagen, tumorigen and reproductive effector. Prolonged exposure can damage nerves, and liver.

NTP: No **IARC:** No **OSHA:** No

SECTION 4 First Aid Measures

EYE EXPOSURE: Immediately flush the eyes with copious amounts of water for at least 10-15 minutes. A victim may need assistance in keeping their eye lids open. Get immediate medical attention.

SKIN EXPOSURE: Wash the affected area with soap and water. Remove contaminated clothes if necessary. Seek medical assistance if irritation persists.

INHALATION: Remove the victim to fresh air. Closely monitor the victim for signs of respiratory problems, such as difficulty in breathing, coughing, wheezing, or pain. In such cases seek immediate medical assistance.

INGESTION: Seek medical attention immediately. Keep the victim calm. Give the victim water (only if conscious).

SECTION 5 Fire Fighting Measures

FLASH POINT: 83 °F

AUTOIGNITION TEMPERATURE: no data

EXPLOSION LIMITS: no data

EXTINGUISHING MEDIUM: carbon dioxide, dry powder or foam

SPECIAL FIRE FIGHTING PROCEDURES: If involved in a fire, fire fighters should be equipped with a NIOSH approved positive pressure self-contained breathing apparatus and full protective clothing.

HAZARDOUS COMBUSTION AND DECOMPOSITION PRODUCTS: If involved in a fire this material may emit toxic organic fumes and zirconia dust.

UNUSUAL FIRE OR EXPLOSION HAZARDS: Flammable liquid. No unusual fore or explosion hazards.

SECTION 6 Accidental Release Measures

SPILL AND LEAK PROCEDURES: Eliminate all ignition sources. Avoid contact with water. Small spills may be adsorbed into diatomaceous earth, sand, or other suitable adsorbent, and swept up.

SECTION 7 Handling and Storage

HANDLING AND STORAGE: Store in a tightly sealed container in a cool dry place. If container is left open, product may adsorb moisture from the atmosphere and release 1-propanol vapor.

SECTION 8 Exposure Controls and Personal Protection

EYE PROTECTION: Always wear approved safety glasses when handling a chemical substance in the laboratory.

SKIN PROTECTION: Wear protective clothing and gloves.

VENTILATION: Material may form a vapor upon exposure to air. if possible, handle the material in an efficient fume hood.

RESPIRATOR: If ventilation is not available a respirator should be worn. The use of respirators requires a Respirator Protection Program to be in compliance with 29 CFR 1910.134.

ADDITIONAL PROTECTION: No additional protection required.

SECTION 9 Physical and Chemical Properties

COLOR AND FORM: yellow liq.

MOLECULAR WEIGHT: 327.56

BOILING POINT (°C): no data

VAPOR PRESSURE: not applicable

SPECIFIC GRAVITY: 1.05

ODOR: alcohol odor

SOLUBILITY IN WATER: reacts with water

SECTION 10 Stability and Reactivity

STABILITY: moisture sensitive liquid

HAZARDOUS POLYMERIZATION: no hazardous polymerization

CONDITIONS TO AVOID: Keep away from moisture, heat and ignition sources including open flame and electrostatic discharge.

INCOMPATIBILITY: water, mineral acids, alkali metals, oxidizing agents, acid chlorides, and halogens

DECOMPOSITION PRODUCTS: Carbon dioxide, carbon monoxide, organic vapors, and metal oxides and carbonates.

SECTION 11 Toxicological Information

RTECS DATA: No information available in the RTECS files. N-propanol: skin (rbt) mild; eye (rbt) draize:20 mg/24h moderate; oral (human-woman) LDLo: 5700 mg/kg; oral (rat) LDLo: 1870 mg/kg; inhalation (rat) lclo: 4000 ppm/4h; intraperitoneal (rat) LD50: 2164 mg/kg; inhalation (mouse) LC50 : 48 gm/m3.

CARCINOGENIC EFFECTS: n-propanol: Tumorigen

MUTAGENIC EFFECTS: n-propanol: Mutagen

TETRATOGENIC EFFECTS: n-propanol: Reproductive effector

SECTION 12 Ecological Information

ECOLOGICAL INFORMATION: No information available

SECTION 13 Disposal Considerations

DISPOSAL: Dispose of according to local, state and federal regulations.

SECTION 14 Transportation Information

SHIPPING NAME (CFR): Flammable liquids, N.O.S.

HAZARD CLASS (CFR): 3

ADDITIONAL HAZARD CLASS (CFR): NA

PACKING GROUP (CFR): III

UN ID NUMBER (CFR): UN# 1993

SHIPPING NAME (IATA): Flammable liquid, N.O.S.

HAZARD CLASS (IATA): 3

ADDITIONAL HAZARD CLASS (IATA): NA

PACKING GROUP (IATA): III

UN ID NUMBER (IATA): UN# 1993

SECTION 15 Regulatory Information

TSCA: Listed in the TSCA inventory.

SARA (TITLE 313): Title compound not listed.

SECOND INGREDIENT: Isopropanol (Strong acid process): listed, TSCA, SARA.

THIRD INGREDIENT: none

SECTION 16 Other Information

DISCLAIMER: The information herein is believed to be accurate and reliable as of the date compiled. However, Strem Chemicals, Inc. makes no representation, warranty, or guarantee of any kind with respect to the information contained in this document or any use of the product based on this information.

PREPARATION DATE: 02/26/01

REVISION DATE: 09/06/05

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☒ REVISED 1 Page ____ of ____ 2

FACILITY ID# 30035 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: Material Storage Area 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # G2-G7 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: AC-131 Part B | WASTE ☐ Yes 8 | TRADE SECRET ☒ Yes ☐ No 11 (* If EPCRA see instructions)

COMMON NAME 9 | An EHS Chemical ☐ Yes ☒ No 12 (*If EHS is "Yes", all amounts must be LBS)

CAS # 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☐ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE 18 ☒ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT: 5 19 | MAXIMUM DAILY AMOUNT: 50 20 | ANNUAL WASTE AMOUNT: 5 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET 23 ☒ c. POUNDS ☐ d. TONS (*If EHS, amount must be in pounds.) | DAYS ON SITE: 365 DAYS 24 | LARGEST CONTAINER: 5 Gal Pail 25

STORAGE CONTAINER (Check all that apply) 26
☐ a. ABOVEGROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BLDG ☐ d STEEL DRUM ☐ e. PLASTIC DRUM ☐ f. NONMETALLIC DRUM ☒ g. METAL CONTAINER ☐ h. CARBOY ☐ i. VAT ☐ l. FIBER DRUM ☐ l. BAG(S) ☐ l. BOX(S) ☐ m CYLINDER ☒ n. GLASS CONTAINER ☐ o PLASTIC CONTAINER ☐ p. IN MACH OR EQUIP ☐ q. TANK WAGON ☐ r. RAIL CAR ☐ s. TOTE BIN ☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	>65 29	Zirconium n-Propoxide 30	☐ Yes ☐ No 31	23519-77-9 32
2	>25 29	n-Propanol 30	☐ Yes ☐ No 31	71-23-8 32
3	balance 29	Trade Secret 30	☐ Yes ☐ No 31	N.A. 32
4	29	30	☐ Yes ☐ No 31	32
5	29	30	☐ Yes ☐ No 31	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

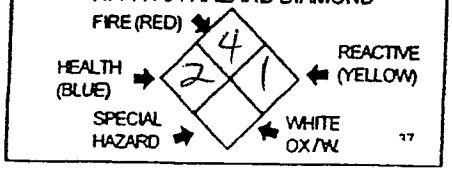
UNDOT # UN1993 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS 3 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 37



MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Material Safety Data Sheet
AC-® 131 Part B (4-Part Kit)

MSDS No: 21310-02
Effective: 01/26/09
Supercedes: 11/18/05

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

SIN # 834-100

Product ID: AC-131 Part B

Generic Description: Zirconium n-Propoxide

Product Use: Paint Surface Preparation

For customer service/technical information, contact:
Advanced Chemistry & Technology, Inc.
7341 Anaconda Ave.
Garden Grove CA 92841 - 2921
714 - 373 - 2837

ChemTrec Emergency

1 - 800 - 424 - 9300

HAZARD RATINGS		
	HMIS	NFPA
Health	2*	2*
Fire	4	4
Reactivity	1	1
	* = Chronic	

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMMON NAME	CAS #	Approximate % (w/w)
Zirconium n-Propoxide	23519-77-9	>65
n-Propanol	71-23-8	>25
Non - hazardous and other ingredients below reportable levels	Proprietary	Balance

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: FLAMMABLE LIQUID AND VAPOR. INHALATION MAY CAUSE DIZZINESS, HEADACHE AND LOSS OF COORDINATION. INGESTION CAN CAUSE DIZZINESS, FAINTNESS, HEADACHE AND LOSS OF COORDINATION. MAY CAUSE IMMEDIATE OR DELAYED SEVERE EYE IRRITATION. MAY CAUSE RESPIRATORY TRACT IRRITATION. MAY CAUSE DIGESTIVE TRACT IRRITATION. INGESTION MAY CAUSE NAUSEA, VOMITING, PAIN, UPSET STOMACH, DIARRHEA. INHALATION MAY CAUSE NAUSEA, VOMITING, UPSET STOMACH. PROLONGED OR REPEATED CONTACT MAY CAUSE SKIN IRRITATION. PROLONGED OR REPEATED CONTACT MAY DRY SKIN AND CAUSE IRRITATION. See sections 3, 5, & 6.

PRIMARY ROUTES OF EXPOSURE: Eye. Skin. Inhalation (breathing).

EYE CONTACT: May cause immediate or delayed severe eye irritation. Can cause burning sensation, tearing and redness.

SKIN CONTACT: Prolonged or repeated contact may cause irritation. Prolonged or repeated contact may dry the skin and lead to irritation (i.e. dermatitis).

INHALATION (Breathing): Irritating to the eyes, nose, and respiratory tract. Can cause dizziness, headaches, and loss of coordination. Nausea, vomiting, and stomach upset can occur. Can cause anesthetic and/or narcotic effects.

INGESTION (Swallowing): Irritating to the mouth, throat, and stomach. May cause nausea, vomiting, pain, and stomach upset (e.g., diarrhea). Can cause dizziness. Faintness, headache, and loss of coordination.

TARGET ORGANS/CHRONIC EFFECTS: Lungs and respiratory system. Eyes. Skin.

CONDITIONS AGGRAVATED BY EXPOSURE: Nervous system. Lungs and respiratory system. Skin.

CARCINOGENICITY:

	ACGIH	IARC	NTP	OSHA
Zirconium n-Propoxide	N	N	N	N
n-Propanol	N	N	N	N

4. FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation persists.

SKIN CONTACT: Immediately flush with water. Remove contaminated clothing and shoes. Get medical attention if irritation persists. Professionally wash clothing and shoes before re - use.

INHALATION (Breathing): Remove to fresh air. If symptoms develop, seek immediate medical attention. If not breathing, give artificial respiration.

INGESTION (Swallowing): Seek medical attention. DO NOT induce vomiting. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIANS: Treatment should be directed at preventing absorption, administering to symptoms (if they occur), and providing supportive therapy.

5. FIRE FIGHTING METHODS

Flash Point:	72°F (22°C)		Method:	
Explosive Limits:	(n-propanol) LEL(%)	2.2	UEL(%)	13.7
Autoignition:	N/A			

HAZARDOUS COMBUSTION AND DECOMPOSITION PRODUCTS: Smoke, soot, and toxic/irritating fumes (i.e., carbon dioxide, carbon monoxide, etc.).

FIRE AND EXPLOSION HAZARDS: High temperatures can cause sealed containers to rupture due to a build up of internal pressure. Cool with water. Vapors can travel to a source of ignition (flame, electric motor, hot surface, cigarette, etc.) and flash back. During a fire, irritating and highly toxic gases may be generated during combustion or decomposition.

EXTINGUISHING MEDIA: SMALL FIRES: Dry chemical, carbon dioxide, halon, water spray, or foam. LARGE FIRES: Water spray, fog, or alcohol foam.

FIRE FIGHTING PROCEDURES/EQUIPMENT: Fire fighters and others who may be exposed to the products of combustion should be equipped with NIOSH - approved positive pressure self - contained breathing apparatus (SCBA) and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

EVACUATION: Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Eliminate all sources of ignition.

CONTAINMENT: Safely stop discharge. Contain material, as necessary, with a dike or barrier. Stop material from contaminating soil, or from entering sewers or bodies of water.

CLEAN - UP/PERSONAL PROTECTION EQUIPMENT: Appropriate safety measures and protective equipment should be used. Use supplied air respirator or self - contained breathing apparatus in enclosed spaces or if airborne exposure limits can be exceeded. See Section 8.

COLLECTION AND DISPOSAL: Stop discharge, if safe to do so. Use proper protective equipment. Use non - sparking tools and/or explosion - proof equipment. Stop ignition sources. Cover spills with absorbent clay or sawdust and place in closed chemical waste containers. Dispose of according to applicable local, state and federal regulations.

REPORTING: Spills of this material in excess of a component's RQ must be reported to the National Response Center (1 - 800 - 424 - 8802) and to the appropriate state and local emergency response organizations.

7. HANDLING AND STORAGE

Storage Temperature < 102°F/ 39°C

STORAGE CONDITIONS: Store in cool, dry, well ventilated area away from heat, ignition sources, and direct sunlight. Keep containers tightly closed. WARNING: Hot organic chemical vapors or mists can suddenly and without warning combust when mixed with air. Ignition can occur at typical elevated temperature process conditions. Any use in such processes should be evaluated thoroughly to assure safe operating conditions.

TRANSFER: Containers should be supported and grounded before opening, dispensing, mixing, pouring, and emptying. Open with non - sparking tools. If container is warm, open bung slowly to release internal pressure.

PERSONAL HYGIENE: Wash thoroughly after handling, especially before eating, drinking, smoking, and using rest room facilities. Wash contaminated goggles face shield, and gloves. Professionally launder contaminated clothing before re - using.

EMPTY CONTAINER PRECAUTIONS: Attention! This container hazardous when empty. Follow label warnings even after container is emptied since empty containers may retain product residues. Do not use heat, sparks, open flames, torches, cigarettes on or near empty container. Do not reuse empty container without professional cleaning for food, clothing, or products for human or animal consumption or where skin contact can occur.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE GUIDELINES:

ACGIH - TLV		
Zirconium n-Propoxide (as Zirconium)	5	mg/m^3
n-Propanol	200	ppm.
ACGIH - STEL		
Zirconium n-Propoxide (as Zirconium)	5	mg/m^3
n-Propanol	250	ppm
OSHA - PEL		
Zirconium n-Propoxide	Not Established	
n-Propanol	200	ppm.
OSHA - STEL		
Zirconium n-Propoxide	Not Established	
n-Propanol	250	ppm

ENGINEERING CONTROLS/VENTILATION: Local exhaust ventilation is recommended when vapors, mists, or dusts can be released in excess of established airborne exposure limits (TLVs or PELs).

EYE PROTECTION: Wear chemical splash goggles. An eye wash facility should be readily available.

SKIN PROTECTION: Wear protective clothing and appropriate impervious gloves. Because a variety of protective gloves exist, consult glove manufacturer to determine the proper type for a specific operation.

RESPIRATORY PROTECTION: Avoid breathing vapor and/or mists. Wear NIOSH/MSHA - approved equipment. Determine the appropriate type by consulting the respirator manufacturer. High airborne concentrations may necessitate the use of self - contained breathing apparatus (SCBA) or a supplied air respirator. Respiratory protection programs must be in compliance with 29 CFR 1910.134.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Light amber liquid	Odor	Characteristic
Physical State	Liquid	Solubility	Reacts with water
pH	N/A	VOC Material	318
Specific Gravity	1.05	% Non - Vol(w/w)	30
Vapor Density	2.1 (n-Propanol)		

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under normal conditions of use.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: High temperatures.

INCOMPATIBILITY WITH OTHER MATERIALS: Oxidizers. Acids.

11. TOXICITY INFORMATION

COMPONENTS:

Zirconium n-Propoxide	Not Applicable	

n-Propanol		
LDLo	Oral wmn	5700 mg/kg
LD50	Oral Rat	1870 mg/kg

12. ECOLOGICAL INFORMATION

No data are available on this product.

13. DISPOSAL CONSIDERATIONS

DISPOSAL: When a decision is made to discard this material as supplied, it meets RCRA's characteristic definition of ignitability.

GENERAL STATEMENTS: Federal regulations may apply to empty container. State and/or local regulations may be different.

GENERAL RECOMMENDATIONS: Of the methods of disposal currently available, it is recommended that an alternative be selected according to the following order of preference, based upon environmental acceptability: (1) recycle or rework, if feasible; (2) incinerate at an authorized facility; or (3) treat at an acceptable waste treatment facility.

SPECIAL INSTRUCTIONS: Be sure to contact the appropriate government environmental agencies if further guidance is required.

14. TRANSPORT INFORMATION

Weight (lb.)	Shipping Name	49 CFR	IATA	IMO
	Flammable Liquid, N.O.S. (Contains n-Propanol)	Y	Y	Y

DOT Label	Flammable Liquid	UN/NA Id Number	UN1993
Hazard Class	3	Packing Group	II

15. REGULATORY INFORMATION

FEDERAL:
This product is considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

SARA Title III - Section 311/312 - Hazard Categories:

Y - Fire
N - Pressure
N - Reactivity
Y - Acute
Y - Chronic

Ozone - Depleting Chemicals - No regulated ingredients.

SARA Section 302 Extremely Hazardous Mat - No regulated ingredients.

SARA Section 313 Toxic Chemicals - None

TSCA Section 12(b) Export Notification - None

TSCA Section 8(d) Data Reporting Rule - None

CHEMICAL LISTING - Listed on the following Country's Chemical Inventories:

United States — Toxic Substance Control Act
Chemical component(s) in this product are on the section 8(b) Chemical Substance Inventory List (40 CFR 710).

STATE RIGHT - TO - KNOW:

Pennsylvania - New Jersey R - T - K

COMMON NAME	CAS #	Approximate % (w/w)
Zirconium n-Propanol	23519-77-9	>65
n-Propanol	71-23-8	>25
Non - hazardous and other ingredients below reportable levels	Proprietary	Balance

California - California Proposition 65 - No regulated ingredients.

CONEG - No data available.

CANADA:
This is a "controlled product" under the Canadian Workplace Hazardous Materials Information System (WHMIS).
Class B Division 2 — Class D Division 2 Sub - division B

CEPA - NPRI

16. OTHER INFORMATION

USER RESPONSIBILITY: A bulletin such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions - in addition to those described herein - are required. Any health hazard and safety information herein should be passed on to your customers or employees, as the case may be.

DISCLAIMER OF LIABILITY: The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of suitability of the chemical is the sole responsibility of the user. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or any other nature are made thereunder with respect to the information contained herein or the chemical to which the information refers. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.

End of Material Safety Data Sheet

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☒ REVISED 1 Page ____ of ____ 2

FACILITY ID# 30 0 35 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: Material Storage Area 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 6 | GRID # G2-G7 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: AL-130 Part B | WASTE ☐ Yes 8 | TRADE SECRET ☒ Yes ☐ No 11 (* If EPCRA see instructions)

COMMON NAME: SAME 9 | An EHS Chemical ☐ Yes ☒ No 12 (*If EHS is "Yes", all amounts must be LBS)

CAS # 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☒ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH 18

AVERAGE DAILY AMOUNT: 5 19 | MAXIMUM DAILY AMOUNT: 50 20 | ANNUAL WASTE AMOUNT: NONE 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET ☒ c. POUNDS ☐ d. TONS 23 (If EHS, amount must be in pounds.) | DAYS ON SITE: 365 DAYS 24 | LARGEST CONTAINER: 5 Gal Pail 25

STORAGE CONTAINER (Check all that apply) 26
☐ a. ABOVEGROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BLDG ☐ d STEEL DRUM ☐ e. PLASTIC DRUM ☐ f. NONMETALLIC DRUM ☐ g. METAL CONTAINER ☐ h. CARBOY ☐ i. VAT ☐ l. FIBER DRUM ☐ l. BAG(S) ☐ l. BOX(S) ☐ m CYLINDER ☐ n. GLASS CONTAINER ☐ o PLASTIC CONTAINER ☐ p. IN MACH OR EQUIP ☐ q. TANK WAGON ☐ r. RAIL CAR ☐ s. TOTE BIN ☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	73-77 29	ZIRCONIUM n-PROPOXIDE 30	☐ Yes ☐ No 31	23519-77-9 32
2	23-27 29	n-PROPANOL 30	☐ Yes ☐ No 31	71-23-8 32
3	balance 29	TRADE SECRET 30	☐ Yes ☐ No 31	N.A. 32
4	29	30	☐ Yes ☐ No 31	32
5	29	30	☐ Yes ☐ No 31	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

UNDOT # UN 1993 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS 3 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 37
FIRE (RED) 4
HEALTH (BLUE) 2
REACTIVE (YELLOW) 1
SPECIAL HAZARD WHITE OX/W

MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Revised 2/02 -- haz-inven2.doc

Material Safety Data Sheet
AC-® 130 Part B

MSDS No: 21300-03
Effective: 01/26/09
Supercedes: 06/14/07

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

SIN # 834-100

Product ID: AC-130 Part B

Generic Description: Zirconium n-Propoxide

Product Use: Adhesion Promoter

HAZARD RATINGS		
	HMIS	NFPA
Health	2*	2*
Fire	4	4
Reactivity	1	1
	* = Chronic	

For customer service/technical information, contact:
Advanced Chemistry & Technology, Inc.
7341 Anaconda Ave.
Garden Grove CA 92841 - 2921
714 - 373 - 2837

ChemTrec Emergency

1 - 800 - 424 - 9300

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMMON NAME	CAS #	Approximate % (w/w)
Zirconium n-Propoxide	23519-77-9	73 – 77
n-Propanol	71-23-8	23 – 27
Non - hazardous and other ingredients below reportable levels	Proprietary	Balance

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: FLAMMABLE LIQUID AND VAPOR. INHALATION MAY CAUSE DIZZINESS, HEADACHE AND LOSS OF COORDINATION. INGESTION CAN CAUSE DIZZINESS, FAINTNESS, HEADACHE AND LOSS OF COORDINATION. MAY CAUSE IMMEDIATE OR DELAYED SEVERE EYE IRRITATION. MAY CAUSE RESPIRATORY TRACT IRRITATION. MAY CAUSE DIGESTIVE TRACT IRRITATION. INGESTION MAY CAUSE NAUSEA, VOMITING, PAIN, UPSET STOMACH, DIARRHEA. INHALATION MAY CAUSE NAUSEA, VOMITING, UPSET STOMACH. PROLONGED OR REPEATED CONTACT MAY CAUSE SKIN IRRITATION. PROLONGED OR REPEATED CONTACT MAY DRY SKIN AND CAUSE IRRITATION. See sections 3, 5, & 6.

PRIMARY ROUTES OF EXPOSURE: Eye. Skin. Inhalation (breathing).

EYE CONTACT: May cause immediate or delayed severe eye irritation. Can cause burning sensation, tearing and redness.

SKIN CONTACT: Prolonged or repeated contact may cause irritation. Prolonged or repeated contact may dry the skin and lead to irritation (i.e. dermatitis).

INHALATION (Breathing): Irritating to the eyes, nose, and respiratory tract. Can cause dizziness, headaches, and loss of coordination. Nausea, vomiting, and stomach upset can occur. Can cause anesthetic and/or narcotic effects.

INGESTION (Swallowing): Irritating to the mouth, throat, and stomach. May cause nausea, vomiting, pain, and stomach upset (e.g., diarrhea). Can cause dizziness. Faintness, headache, and loss of coordination.

TARGET ORGANS/CHRONIC EFFECTS: Lungs and respiratory system. Eyes. Skin.

CONDITIONS AGGRAVATED BY EXPOSURE: Nervous system. Lungs and respiratory system. Skin.

CARCINOGENICITY:

	ACGIH	IARC	NTP	OSHA
Zirconium n-Propoxide	N	N	N	N
n-Propanol	N	N	N	N

4. FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation persists.

SKIN CONTACT: Immediately flush with water. Remove contaminated clothing and shoes. Get medical attention if irritation persists. Professionally wash clothing and shoes before re - use.

INHALATION (Breathing): Remove to fresh air. If symptoms develop, seek immediate medical attention. If not breathing, give artificial respiration.

INGESTION (Swallowing): Seek medical attention. DO NOT induce vomiting. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIANS: Treatment should be directed at preventing absorption, administering to symptoms (if they occur), and providing supportive therapy.

5. FIRE FIGHTING METHODS

Flash Point:	72°F (22°C)		Method:	
Explosive Limits:	(n-propanol) LEL(%)	2.2	UEL(%)	13.7
Autoignition:	N/A			

HAZARDOUS COMBUSTION AND DECOMPOSITION PRODUCTS: Smoke, soot, and toxic/irritating fumes (i.e., carbon dioxide, carbon monoxide, etc.).

FIRE AND EXPLOSION HAZARDS: High temperatures can cause sealed containers to rupture due to a build up of internal pressure. Cool with water. Vapors can travel to a source of ignition (flame, electric motor, hot surface, cigarette, etc.) and flash back. During a fire, irritating and highly toxic gases may be generated during combustion or decomposition.

EXTINGUISHING MEDIA: SMALL FIRES: Dry chemical, carbon dioxide, halon, water spray, or foam. LARGE FIRES: Water spray, fog, or alcohol foam.

FIRE FIGHTING PROCEDURES/EQUIPMENT: Fire fighters and others who may be exposed to the products of combustion should be equipped with NIOSH - approved positive pressure self - contained breathing apparatus (SCBA) and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

EVACUATION: Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Eliminate all sources of ignition.

CONTAINMENT: Safely stop discharge. Contain material, as necessary, with a dike or barrier. Stop material from contaminating soil, or from entering sewers or bodies of water.

CLEAN - UP/PERSONAL PROTECTION EQUIPMENT: Appropriate safety measures and protective equipment should be used. Use supplied air respirator or self - contained breathing apparatus in enclosed spaces or if airborne exposure limits can be exceeded. See Section 8.

COLLECTION AND DISPOSAL: Stop discharge, if safe to do so. Use proper protective equipment. Use non - sparking tools and/or explosion - proof equipment. Stop ignition sources. Cover spills with absorbent clay or sawdust and place in closed chemical waste containers. Dispose of according to applicable local, state and federal regulations.

REPORTING: Spills of this material in excess of a component's RQ must be reported to the National Response Center (1 - 800 - 424 - 8802) and to the appropriate state and local emergency response organizations.

7. HANDLING AND STORAGE

Storage Temperature < 102°F/ 39°C

STORAGE CONDITIONS: Store in cool, dry, well ventilated area away from heat, ignition sources, and direct sunlight. Keep containers tightly closed. WARNING: Hot organic chemical vapors or mists can suddenly and without warning combust when mixed with air. Ignition can occur at typical elevated temperature process conditions. Any use in such processes should be evaluated thoroughly to assure safe operating conditions.

TRANSFER: Containers should be supported and grounded before opening, dispensing, mixing, pouring, and emptying. Open with non - sparking tools. If container is warm, open bung slowly to release internal pressure.

PERSONAL HYGIENE: Wash thoroughly after handling, especially before eating, drinking, smoking, and using rest room facilities. Wash contaminated goggles face shield, and gloves. Professionally launder contaminated clothing before re - using.

EMPTY CONTAINER PRECAUTIONS: Attention! This container hazardous when empty. Follow label warnings even after container is emptied since empty containers may retain product residues. Do not use heat, sparks, open flames, torches, cigarettes on or near empty container. Do not reuse empty container without professional cleaning for food, clothing, or products for human or animal consumption or where skin contact can occur.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE GUIDELINES:

ACGIH - TLV		
Zirconium n-Propoxide (as Zirconium)	5	mg/m^3
n-Propanol	200	ppm.
ACGIH - STEL		
Zirconium n-Propoxide (as Zirconium)	5	mg/m^3
n-Propanol	250	ppm
OSHA - PEL		
Zirconium n-Propoxide	Not Established	
n-Propanol	200	ppm.
OSHA - STEL		
Zirconium n-Propoxide	Not Established	
n-Propanol	250	ppm

ENGINEERING CONTROLS/VENTILATION: Local exhaust ventilation is recommended when vapors, mists, or dusts can be released in excess of established airborne exposure limits (TLVs or PELs).

EYE PROTECTION: Wear chemical splash goggles. An eye wash facility should be readily available.

SKIN PROTECTION: Wear protective clothing and appropriate impervious gloves. Because a variety of protective gloves exist, consult glove manufacturer to determine the proper type for a specific operation.

RESPIRATORY PROTECTION: Avoid breathing vapor and/or mists. Wear NIOSH/MSHA - approved equipment. Determine the appropriate type by consulting the respirator manufacturer. High airborne concentrations may necessitate the use of self - contained breathing apparatus (SCBA) or a supplied air respirator. Respiratory protection programs must be in compliance with 29 CFR 1910.134.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Light amber liquid	Odor	Characteristic
Physical State	Liquid	Solubility	Reacts with water
pH	N/A	VOC Material, g/l	318
Specific Gravity, g/cc	1.05	% Non - Vol(w/w)	30
Vapor Density	2.1 (n-Propanol)		

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under normal conditions of use.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: High temperatures.

INCOMPATIBILITY WITH OTHER MATERIALS: Oxidizers. Acids.

11. TOXICITY INFORMATION

COMPONENTS:

Zirconium n-Propoxide	Not Applicable	

n-Propanol

LDLo	Oral wmn	5700 mg/kg
LD50	Oral Rat	1870 mg/kg

12. ECOLOGICAL INFORMATION

No ecological data on the product itself is available.

13. DISPOSAL CONSIDERATIONS

DISPOSAL: When a decision is made to discard this material as supplied, it meets RCRA's characteristic definition of ignitability.

GENERAL STATEMENTS: Federal regulations may apply to empty container. State and/or local regulations may be different.

GENERAL RECOMMENDATIONS: Of the methods of disposal currently available, it is recommended that an alternative be selected according to the following order of preference, based upon environmental acceptability: (1) recycle or rework, if feasible; (2) incinerate at an authorized facility; or (3) treat at an acceptable waste treatment facility.

SPECIAL INSTRUCTIONS: Be sure to contact the appropriate government environmental agencies if further guidance is required.

14. TRANSPORT INFORMATION

Weight (lb.)	Shipping Name	49 CFR	IATA	IMO
	Flammable Liquid, N.O.S. (Contains n-Propanol)	Y	Y	Y

DOT Label Flammable Liquid
Hazard Class 3

UN/NA Id Number UN1993
Packing Group II

15. REGULATORY INFORMATION

FEDERAL:
This product is considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

SARA Title III - Section 311/312 - Hazard Categories:
Y - Fire
N - Pressure
N - Reactivity
Y - Acute
Y - Chronic

Ozone - Depleting Chemicals - No regulated ingredients.

SARA Section 302 Extremely Hazardous Mat - No regulated ingredients.

SARA Section 313 Toxic Chemicals - None

TSCA Section 12(b) Export Notification - None

TSCA Section 8(d) Data Reporting Rule - None

CHEMICAL LISTING - Listed on the following Country's Chemical Inventories:

United States — Toxic Substance Control Act
Chemical component(s) in this product are on the section 8(b) Chemical Substance Inventory List (40 CFR 710).

STATE RIGHT - TO - KNOW:

Pennsylvania - New Jersey R - T - K

COMMON NAME	CAS #	Approximate % (w/w)
Zirconium n-Propanol	23519-77-9	73 – 77
n-Propanol	71-23-8	23 – 27
Non - hazardous and other ingredients below reportable levels	Proprietary	Balance

California - California Proposition 65 - No regulated ingredients.

CONEG - No data available.

CANADA:
This is a "controlled product" under the Canadian Workplace Hazardous Materials Information System (WHMIS).
Class B Division 2 — Class D Division 2 Sub - division B

CEPA - NPRI

EUROPEAN COMMUNITY:

Particular hazards associated with the preparation and safety recommendations:

R11 Highly flammable.
R20/22 Harmful by inhalation and if swallowed.
R36/37 Irritating to eyes and respiratory system.
S20/21 When using do not eat, drink or smoke.
S37/39 Wear suitable gloves and eye/face protection.

16. OTHER INFORMATION

USER RESPONSIBILITY: A bulletin such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions - in addition to those described herein - are required. Any health hazard and safety information herein should be passed on to your customers or employees, as the case may be.

DISCLAIMER OF LIABILITY: The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of suitability of the chemical is the sole responsibility of the user. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or any other nature are made thereunder with respect to the information contained herein or the chemical to which the information refers. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.

End of Material Safety Data Sheet

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☒ REVISED 1 Page ____ of ____ 2

FACILITY ID# 30 0035 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: Raw Material Storage 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # J5 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: FORMULA AL 190 PROOF | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☒ No 11 * If EPCRA see instructions

COMMON NAME: DENATURED ALCOHOL 9 | An EHS Chemical ☐ Yes ☐ No 12 *If EHS is "Yes", all amounts must be LBS

CAS # 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 18

AVERAGE DAILY AMOUNT 80 19 | MAXIMUM DAILY AMOUNT 200 20 | ANNUAL WASTE AMOUNT NONE 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS 23 *If EHS, amount must be in pounds. | DAYS ON SITE 365 DAYS 24 | LARGEST CONTAINER 5 GAL PAIL 25

STORAGE CONTAINER (Check all that apply) 26
☐ a. ABOVEGROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BLDG ☐ d. STEEL DRUM ☐ e. PLASTIC DRUM ☐ f. NONMETALLIC DRUM ☒ g. METAL CONTAINER ☐ h. CARBOY ☐ i. VAT ☐ l. FIBER DRUM ☐ l. BAG(S) ☐ l. BOX(S) ☐ m CYLINDER ☒ n. GLASS CONTAINER ☐ o PLASTIC CONTAINER ☐ p. IN MACH OR EQUIP ☐ q. TANK WAGON ☐ r. RAIL CAR ☐ s. TOTE BIN ☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	85.8 29	Ethanol 30	☐ Yes ☐ No 31	64-17-5 32
2	4.3 29	Methanol 30	☐ Yes ☐ No 31	67-56-1 32
3	0.9 29	Methyl Isobutyl Ketone 30	☐ Yes ☐ No 31	108-10-1 32
4	9.0 29	ISOPROPYL ALCOHOL 30	☐ Yes ☐ No 31	67-63-0 32
5	29	30	☐ Yes ☐ No 31	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

UNDOT # UN 1987 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS 3 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 37
FIRE (RED) 4
HEALTH (BLUE) 1
REACTIVE (YELLOW) 1
SPECIAL HAZARD WHITE OX/W

MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Revised 2/02 -- haz-inven2.doc

pharmco-AAPER
SUBSIDIARIES OF COMMERCIAL ALCOHOLS, INC.
The Power of Three

An ISO 9001:2000 Certified Company

Product Information (203) 740-3471 / Emergency Assistance CHEMTREC 1-800-424-9300

MATERIAL SAFETY DATA SHEETS

SECTION I
PRODUCT AND COMPANY IDENTIFICATION

PRODUCT: Formula A1, 190 Proof
This MSDS is valid for all grades and catalog #'s

Synonyms: Denatured Alcohol; Denatured Ethanol; Govt. Formula A1
Formula: Mixture
Manufacturer: Pharmco Products Inc.
58 Vale Road
Brookfield, Connecticut 06804, USA
Phone (203) 740-3471
Fax (203) 740-3481
Emergency Contact:
CHEMTREC 1-800-424-9300

SECTION II
COMPOSITION /INFORMATION ON INGREDIENTS

% vol.	Material	CAS	Exposure Limits
85.8%	Ethanol (190 Proof)	64-17-5	1000ppm TWA
4.29%	Methanol	67-56-1	200ppm TWA, OSHA/ACGIH; 250ppm STEL OSHA/ACGIH
0.905	Methyl Isobutyl Ketone	108-10-1	50ppm TWA; OSHA and ACGIH; 75ppm STEL, OSHA &ACGIH
9.0%	Isopropyl Alcohol	67-63-0	400ppm TWA; 500 ppm STEL

SECTION III
HAZARDS IDENTIFICATION

Carcinogen Status: Established uses of denatured ethanol are not considered to pose a significant cancer hazard.
Poisonous: This product contains methanol. It can not be made non-poisonous. Ingestion of 60-200ml of methanol is a fatal dose for most adults. Ingestion of 10ml may cause blindness.
Routes of Exposure:
Swallowing: May cause dizziness, faintness, drowsiness decreased awareness or responsiveness, nausea, vomiting, staggering gait, lack of coordination, blindness, coma and death.
Skin Absorption: Prolonged or widespread contact may result in the absorption of potentially harmful amounts.
Inhalation: High vapor concentration may cause burning sensation in nose and throat and stinging and watering in the eyes. At concentrations which cause irritation, dizziness, faintness, drowsiness, nausea and vomiting may also occur.
Skin Contact: Prolonged or repeated contact may cause defatting and drying of the skin.
Eye Contact: May cause irritation including stinging, tearing, and redness
Effects of Repeated Overexposure: Long term repeated oral exposure to ethanol may result in the development of progressive liver injury with fibrosis. Overexposure to methanol may cause eye damage and liver or kidney injury.
Other Health Hazards: Repeated ingestion of ethanol by pregnant mothers has been shown to adversely affect the central nervous system of the fetus, producing a collection of effects which together constitute fetal alcohol syndrome.
Medical Conditions Aggravated by Overexposure:
Repeated exposure to ethanol may aggravate liver injury produced from other causes. Skin contact may aggravate dermatitis.

SECTION IV FIRST AID

Obtain medical attention for all cases of over-exposure.
Swallowing: If patient is fully conscious, give two glasses of water. Induce vomiting. Obtain medical attention. If medical advice is delayed and the person has swallowed a few ounces, give 3-4 ounces of hard liquor such as whiskey.
Skin: Wash skin with soap and water for at least 15 minutes
Inhalation: Remove to fresh air; Give artificial respiration if not breathing; If breathing is difficult oxygen may be given by qualified personnel; Obtain medical assistance is discomfort persists.
Eye Contact: Flush eyes with water for at least 15 minutes. Obtain medical assistance.
Note to Physician: Symptoms vary with alcohol level of the blood. Mild alcohol intoxication occurs at blood levels between 0.5-.15%. Approximately 25% of individuals show signs of intoxication at these levels. Above .15% the person is definitely under the influence of ethanol; 50-95% of individuals are clinically intoxicated at these levels. Severe poisoning occurs when the blood is ethanol level is 0.3- 0.5%. Above 0.5% the individual will be comatose and death can occur. The unabsorbed ethanol should be removed by gastric lavage after intubating the patient to prevent aspiration. Avoid the use of depressant drugs or the excessive administration of fluids.

SECTION V FIRE FIGHTING MEASURES

Fire/Explosive Properties for 200 Proof Ethanol
Flash Point: 58F (14C)) Tag Closed Cup
70F (21C) Tag Open Cup
Flammable Limits in Air (% by volume):
3.3%(ethanol) - 19.0 (ethanol)
Flammability Classification: 3 (NFPA)
1993 Emergency Response Guidebook: Guide 26
1996 North American Emergency Response Guidebook: Guide 127
Extinguishing Media: Apply alcohol-type or all-purpose foam by manufacturer's recommended techniques for large fires. Use carbon dioxide or dry chemical media for small fires.
Special Fire Fighting Procedures: Use water spray to cool fire-exposed containers and structures; Use water spray to disperse vapors - re-ignition is possible; Use self-contained breathing apparatus and protective clothing.
Unusual Fire and Explosion Hazards:

- Vapors may travel to source of ignition and flash back.
- Vapors may settle in low or confined spaces.
- May produce a floating fire hazard.
- Static ignition hazard can result from handling and use.

SECTION VI
SPILL/ACCIDENTAL RELEASE MEASURES

Small spills can be flushed with large amounts of water.
Large spills: Eliminate all ignition sources; ground all equipment; do not walk through spill; stop spill if possible; prevent entry into sewers, confined spaces, etc.; use a vapor suppressing foam to reduce vapors; absorb spill with non-combustible matter and transfer to containers; use non-sparking tools to collect absorbed material.
Refer to section 11 for disposal information.

SECTION VII HANDLING AND STORAGE

- Flammable material - keep away from heat, sparks, and flame; sudden releases of hot organic vapors or mists from process equipment operating at elevated temperature may result in ignitions without the presence of obvious ignition sources.
- Avoid contact with eyes.
- Keep container closed.
- Use with adequate ventilation.
- Ground container when transferring product.
- Vapors may collect in containers; treat empty containers as hazardous.
- Wash thoroughly after handling
- Vapors may settle in low or confined areas
- Danger - may cause blindness or death if swallowed

SECTION VIII EXPOSURE CONTROLS / PERSONAL PROTECTION

Ventilation: Special, local ventilation is needed where vapors escape to the workplace air
Respiratory Protection: Use self-contained breathing apparatus in high vapor concentration
Personal Protective Equipment: gloves, lab coat or uniform, safety glasses, eye wash, safety shower

SECTION IX
PHYSICAL AND CHEMICAL PROPERTIES

(For 200 Proof Ethanol)
Appearance: clear, colorless liquid
Odor: characteristic
Vapor pressure @ 20C: 44.6 mmHg
Vapor density: 1.6 (air =1)
Boiling point @ 760mm Hg: 78.3C (172.9F)
Freezing Point: <-90C
Solubility in Water: 100% @ 20C
Specific Gravity : . @ 20C .7906
Density @ (60F) 6.61 lbs/gal
Evaporation Rate: (butyl acetate = 1) 3.3
Percent Volatiles: 100%

SECTION X
STABILITY/REACTIVITY INFORMATION

Stability: Stable Conditions to avoid: None known
Incompatibility/Materials to avoid: strong oxidizing agents; strong inorganic acids
Hazardous Combustion/Decomposition Products: Carbon monoxide and/or carbon dioxide
Hazardous Polymerization: Will not occur

SECTION XI
DISPOSAL CONSIDERATIONS

Vapors may collect in empty containers. Treat empty containers as hazardous.
Dispose of spill-clean up and other wastes in accordance with Federal, State, and local regulations.

SECTION XII TRANSPORTATION INFORMATION

Proper Shipping Name: Alcohol, nos
Hazard Class: 3
UN Number: 1987
IMO Information: Alcohols, NOS
Label of Class: 3
Packing Group II
Intermediate flashpoint group

SECTION XIII REGULATORY INFORMATION

Federal EPA

Comprehensive Environmental Response Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center of release quantities of Hazardous Substances equal to or greater than the reportable quantities (RQs) in CFR. Components present in this product at a level which could require reporting under this statute are:

Chemical	CAS Number	Upper Bound Conc. %
Acetone	67-64-1	.0002
Methyl Isobutyl Ketone	108-10-1	0.9
Methanol	67-56-1	4.29
Acetaldehyde	75-07-0	.0010

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires emergency planning based on threshold planning quantities and release reporting based on reportable quantities in 40 CFR 355 (used for SARA 302, 304, 311, and 312). Components present in this product at a level which could require reporting under this statute are: none.
Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires submission of annual reports of release of toxic chemicals that appear in 40 CFR 372 (for SARA 313). This information must be included in all MSDS's that are copied and distributed for this material. Components present in this product at a level which could require reporting under the statute are:
Methanol (67-56-1) upper bound concentration 4.29%
Toxic Substances Control Act (TSCA) Status:
The ingredients of this product are on the TSCA inventory.

State Right to Know

California Proposition 65: This product contains trace levels of acetaldehyde known to the State of California to cause cancer.
Massachusetts: Hazardous substances and extraordinarily hazardous substances must be identified. Components present which could require reporting:
Extraordinarily Hazardous (=> 0.0001%): Acetaldehyde (CAS 75-07-0) upper bound conc. .0010%
Hazardous (=>1%): Ethanol (CAS 64-17-5) upper bound conc. 85.8%
Methanol (CAS 67-56-1) upper bound conc. 4.29%
Isopropanol (CAS 67-63-0) upper bound conc. 9.0%
Pennsylvania: Hazardous substances must be identified.
Hazardous (=>1%): Ethanol (CAS 64-17-5) upper bound conc. 85.8%
Methanol (CAS 67-56-1) upper bound conc 4.29%
Isopropanol (CAS 67-63-0) upper bound conc. 9.0%
California SCAQMD Rule 443.1 (VOC's)
A Volatile Organic Compound (VOC) is any volatile compound of carbon excluding methane, carbon monoxide, carbonic acid, metallic carbides, or carbonates, ammonium carbonate, 1,1,1 tri-chloroethane, methylene chloride, (FC-23), (CFC-113), (CFC-12), (CFC-11), (CFC-22), (CFC-114) and (CFC-115).
VOC 790g/l: vapor pressure 43.6 mm Hg @ 20C for pure 200 proof ethanol

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☒ REVISED 1 Page ____ of ____ 2

FACILITY ID# 30 0 35 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: Raw Material Storage 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 6 | GRID # J5 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: REAGENT ALCOHOL | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☒ No 11 (* If EPCRA see instructions)

COMMON NAME: SAME 9 | An EHS Chemical ☐ Yes ☐ No 12 (*If EHS is "Yes", all amounts must be LBS)

CAS # 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 18

AVERAGE DAILY AMOUNT: 10 19 | MAXIMUM DAILY AMOUNT: 40 20 | ANNUAL WASTE AMOUNT: NONE 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET ☒ c. POUNDS ☐ d. TONS 23 (*If EHS, amount must be in pounds.) | DAYS ON SITE: 365 DAYS 24 | LARGEST CONTAINER: 1 GAL CAN 25

STORAGE CONTAINER (Check all that apply) 26

☐ a. ABOVEGROUND TANK	☐ e. PLASTIC DRUM	☐ i. VAT	☐ m CYLINDER	☐ q. TANK WAGON
☐ b. UNDERGROUND TANK	☐ f. NONMETALLIC DRUM	☐ l. FIBER DRUM	☐ n. GLASS CONTAINER	☐ r. RAIL CAR
☐ c. TANK INSIDE BLDG	☒ g. METAL CONTAINER	☐ l. BAG(S)	☐ o PLASTIC CONTAINER	☐ s. TOTE BIN
☐ d STEEL DRUM	☐ h. CARBOY	☐ l. BOX(S)	☐ p. IN MACH OR EQUIP	☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	90 29	ETHANOL 30	☐ Yes ☐ No 31	64-17-5 32
2	5 29	METHANOL 30	☐ Yes ☐ No 31	67-56-1 32
3	5 29	ISOPROPYL ALCOHOL 30	☐ Yes ☐ No 31	67-63-0 32
4	29	30	☐ Yes ☐ No 31	32
5	29	30	☐ Yes ☐ No 31	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

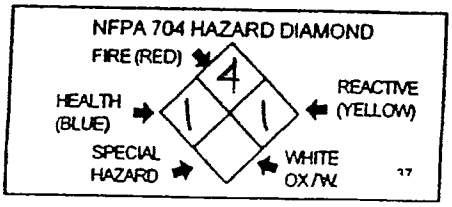
UNDOT # UN 1987 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS 3 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 37



MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Material Safety Data Sheet

Reagent Alcohol

ACC# 20087

Section 1 - Chemical Product and Company Identification

MSDS Name: Reagent Alcohol
Catalog Numbers: AC611080040, S79885, 61105-0040, A962-200, A962-4, A962F-1GAL, A962F-1GALLC, A962P-1GAL, A962P-4, A962RB-200, A962S-4, A96RB-200, A995-1, A995-4, A995POP19, A995POP200, A995POP50, A995RS-19, A995RS-200, A995RS-50, A995SS-115, A995SS-19, A995SS-200, A995SS-28, A995SS-50, HC6001GAL, NC9246702
Synonyms: Ethanol, Dehydrated Alcohol; Ethyl Hydrate; Specially Denatured Alcohol.
Company Identification:

Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410

For information, call: 201-796-7100
Emergency Number: 201-796-7100
For CHEMTREC assistance, call: 800-424-9300
For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
64-17-5	Ethyl alcohol	90.0	200-578-6
67-56-1	Methyl alcohol	5.0	200-659-6
67-63-0	Isopropyl alcohol	5.0	200-661-7

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: clear, colorless liquid.
Danger! Poison! Causes severe eye irritation. Causes respiratory tract irritation. **Flammable liquid and vapor.** May be fatal or cause blindness if swallowed. Vapor harmful. This substance has caused adverse reproductive and fetal effects in humans. May be absorbed through intact skin. May form explosive peroxides. May cause central nervous system depression. May cause liver, kidney and heart damage. Cannot be made non-poisonous. Causes moderate skin irritation.
Target Organs: Kidneys, central nervous system, liver, eyes.

Potential Health Effects
Eye: Causes severe eye irritation. May cause painful sensitization to light. May cause chemical

conjunctivitis and corneal damage.
Skin: Causes moderate skin irritation. May be absorbed through the skin. May cause cyanosis of the extremities.
Ingestion: May be fatal or cause blindness if swallowed. May cause gastrointestinal irritation with nausea, vomiting and diarrhea. May cause systemic toxicity with acidosis. May cause central nervous system depression, characterized by excitement, followed by headache, dizziness, drowsiness, and nausea. Advanced stages may cause collapse, unconsciousness, coma and possible death due to respiratory failure.
Inhalation: Causes respiratory tract irritation. May cause visual impairment and possible permanent blindness. May cause narcotic effects in high concentration. Vapors may cause dizziness or suffocation.
Chronic: Prolonged or repeated skin contact may cause defatting and dermatitis. May cause reproductive and fetal effects. Laboratory experiments have resulted in mutagenic effects. Animal studies have reported the development of tumors. Prolonged exposure may cause liver, kidney, and heart damage.

Section 4 - First Aid Measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid imme diately.
Skin: Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.
Ingestion: Call a poison control center. If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid.

Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
Notes to Physician: Effects may be delayed. Ethanol may inhibit methanol metabolism. Treat symptomatically and supportively. Persons with skin or eye disorders or liver, kidney, chronic respiratory diseases, or central and peripheral nervous sytem diseases may be at increased risk from exposure to this substance.
Antidote: Ethanol may inhibit methanol metabolism.

Section 5 - Fire Fighting Measures

General Information: Ethanol may inhibit methanol metabolism. As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors may form an explosive mixture with air. Vapors can travel to a source of ignition and flash back. Will burn if involved in a fire. Flammable Liquid. Can release vapors that form explosive mixtures at temperatures above the flashpoint. Use water spray to keep fire-exposed containers cool. Containers may explode in the heat of a fire. May form explosive peroxides. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas. Will be easily ignited by heat, sparks or flame.
Extinguishing Media: For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. For large fires, use water spray, fog, or alcohol-resistant foam. Use water spray to cool fire-exposed containers. Water may be ineffective. Do NOT use straight streams of water. For large fires, use dry chemical, carbon dioxide, alcohol-resistant foam, or water spray. Cool containers with flooding quantities of water until well after fire is out.

Flash Point: 12.8-14.4 deg C
Autoignition Temperature: 362.8 deg C (685.04 deg F)
Explosion Limits, Lower:3.3 vol %
Upper: 19 vol %
NFPA Rating: (estimated) Health: 2; Flammability: 3; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Remove all sources of ignition. Use a spark-proof tool. Provide ventilation. A vapor suppressing foam may be used to reduce vapors. Water spray may reduce vapor but may not prevent ignition in closed spaces.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use only in a well-ventilated area. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Keep away from heat, sparks and flame. Do not ingest or inhale. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.
Storage: Keep away from heat, sparks, and flame. Keep away from sources of ignition. Store in a tightly closed container. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances. Flammables-area. Do not store near perchlorates, peroxides, chromic acid or nitric acid.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Use explosion-proof ventilation equipment. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits. Use only under a chemical fume hood.
Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Ethyl alcohol	1000 ppm TWA	1000 ppm TWA; 1900 mg/m3 TWA 3300 ppm IDLH	1000 ppm TWA; 1900 mg/m3 TWA
Methyl alcohol	200 ppm TWA; 250 ppm STEL; Skin - potential significant contribution to overall exposure by the cutaneous r oute	200 ppm TWA; 260 mg/m3 TWA 6000 ppm IDLH	200 ppm TWA; 260 mg/m3 TWA

Isopropyl alcohol	200 ppm TWA; 400 ppm STEL	400 ppm TWA; 980 mg/m3 TWA 2000 ppm IDLH	400 ppm TWA; 980 mg/m3 TWA

OSHA Vacated PELs: Ethyl alcohol: 1000 ppm TWA; 1900 mg/m3 TWA Methyl alcohol: 200 ppm TWA; 260 mg/m3 TWA Isopropyl alcohol: 400 ppm TWA; 980 mg/m3 TWA
Personal Protective Equipment
Eyes: Wear chemical splash goggles.
Skin: Wear appropriate protective gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to prevent skin exposure.
Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

Section 9 - Physical and Chemical Properties

Physical State: Liquid
Appearance: clear, colorless
Odor: aromatic odor
pH: No data
Vapor Pressure: 44 mm Hg
Vapor Density: 1.24 kg/m3
Evaporation Rate: No data
Viscosity: 1.2 cp
Boiling Point: 78.5 deg C
Freezing/Melting Point:-114.1 deg C
Decomposition Temperature: Not available.
Solubility: Soluble.
Specific Gravity/Density:0.8
Molecular Formula: Solution
Molecular Weight: Not available.

Section 10 - Stability and Reactivity

Chemical Stability: Stability unknown. This material may be sensitive to peroxide formation.
Conditions to Avoid: Ignition sources, excess heat.
Incompatibilities with Other Materials: Strong oxidizing agents, strong acids, acid chlorides, active metals, alkali metals, aluminum, ammonia, halogens, hydrazine, nitric acid, peroxides, isocyanates, aliphatic amines, sodium, caustics (e.g. ammonia, ammonium hydroxide, calcium hydroxide, potassium hydroxide, sodium hydroxide), acid anhydrides, calcium hypochlorite, cyanuric chloride, chromyl chloride, nitrosyl perchlorate, diethyl zinc, bromine pentafluoride, perchloric acid, silver nitrate, chromic anhydride, mercuric nitrate, phosphorus trioxide, potassium tert-butoxide, magnesium perchlorate, platinum, uranium hexafluoride, silver oxide, iodine heptafluoride, Oxidants (such as barium perchlorate, bromine, chlorine, hydrogen peroxide, lead perchlorate, perchloric acid, sodium hypochlorite)., acetyl bromide, alkyl aluminum salts, beryllium dihydride, Attacks some forms of plastics, rubbers, and coatings., acetyl chloride, disulfur dichloride, permanganic acid, ruthenium (VIII) oxide, uranyl perchlorate, potassium dioxide.

Hazardous Decomposition Products: Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.
Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:
CAS# 64-17-5: KQ6300000
CAS# 67-56-1: PC1400000
CAS# 67-63-0: NT8050000
LD50/LC50:
CAS# 64-17-5:
Draize test, rabbit, eye: 500 mg Severe;
Draize test, rabbit, eye: 500 mg/24H Mild;
Draize test, rabbit, skin: 20 mg/24H Moderate;
Inhalation, mouse: LC50 = 39 gm/m3/4H;
Inhalation, rat: LC50 = 20000 ppm/10H;
Oral, mouse: LD50 = 3450 mg/kg;
Oral, rabbit: LD50 = 6300 mg/kg;
Oral, rat: LD50 = 7060 mg/kg;
Oral, rat: LD50 = 9000 mg/kg;

CAS# 67-56-1:
Draize test, rabbit, eye: 40 mg Moderate;
Draize test, rabbit, eye: 100 mg/24H Moderate;
Draize test, rabbit, skin: 20 mg/24H Moderate;
Inhalation, rabbit: LC50 = 81000 mg/m3/14H;
Inhalation, rat: LC50 = 64000 ppm/4H;
Oral, mouse: LD50 = 7300 mg/kg;
Oral, rabbit: LD50 = 14200 mg/kg;
Oral, rat: LD50 = 5600 mg/kg;
Skin, rabbit: LD50 = 15800 mg/kg;

CAS# 67-63-0:
Draize test, rabbit, eye: 100 mg Severe;
Draize test, rabbit, eye: 10 mg Moderate;
Draize test, rabbit, eye: 100 mg/24H Moderate;
Draize test, rabbit, skin: 500 mg Mild;
Inhalation, mouse: LC50 = 53000 mg/m3;
Inhalation, rat: LC50 = 16000 ppm/8H;
Inhalation, rat: LC50 = 72600 mg/m3;
Oral, mouse: LD50 = 3600 mg/kg;
Oral, mouse: LD50 = 3600 mg/kg;
Oral, rabbit: LD50 = 6410 mg/kg;
Oral, rat: LD50 = 5045 mg/kg;
Oral, rat: LD50 = 5000 mg/kg;
Skin, rabbit: LD50 = 12800
Carcinogenicity:
CAS# 64-17-5: Not listed by ACGIH, IARC, NTP, or CA Prop 65.
CAS# 67-56-1: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

CAS# 67-63-0: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: Methanol has been shown to produce fetotoxicity in the embryo or fetus of laboratory animals. Specific developmental abnormalities include cardiovascular, musculoskeletal, and urogenital systems.Ethanol has been shown to produce fetotoxicity in the embryo or fetus of laboratory animals.Prenatal exposure to ethanol is associated with a distinct pattern of congenital malformations that have collectively been termed the "fetal alcohol syndrome".Methanol and phenol have been shown to produce fetoxicity in the embryo or fetus in laboratory animals. Specific developmental abnormalities for methanol include the musculoskeletal, urogenital. and cardiovascular systems.
Teratogenicity: CAS# 64-17-5: Oral, Human - woman: TDLo = 41 gm/kg (female 41 week(s) after conception) Effects on Newborn - Apgar score (human only) and Effects on Newborn - other neonatal measures or effects and Effects on Newborn - drug dependence.
Reproductive Effects: CAS# 64-17-5: Intrauterine, Human - woman: TDLo = 200 mg/kg (female 5 day(s) pre-mating) Fertility - female fertility index (e.g. # females pregnant per # sperm positive females; # females pregnant per # females mated).
Mutagenicity: CAS# 64-17-5: DNA Inhibition: Human, Lymphocyte = 220 mmol/L.; Cytogenetic Analysis: Human, Lymphocyte = 1160 gm/L.; Cytogenetic Analysis: Human, Fibroblast = 12000 ppm.; Cytogenetic Analysis: Human, Leukocyte = 1 pph/72H (Continuous).; Sister Chromatid Exchange: Human, Lymphocyte = 500 ppm/72H (Continuous).
Neurotoxicity: No information found
Other Studies:

Section 12 - Ecological Information

Ecotoxicity: Fish: Rainbow trout: LC50 = 12900-15300 mg/L; 96 Hr; Flow-through @ 24-24.3° CFish: Rainbow trout: LC50 = 11200 mg/L; 24 Hr; Fingerling (Unspecified)Bacteria: Phytobacterium phosphoreum: EC50 = 34900 mg/L; 5-30 min; Microtox test CAS# 64-17-5: When spilled on land it is apt to volatilize, biodegrade, and leach into the ground water, but no data on the rates of these processes could be found. Its fate in ground water is unknown. When released into water it will volatilize and probably biodegrade. It would not be expected to adsorb to sediment or bioconcentrate in fish.
Environmental: CAS# 64-17-5: When released to the atmosphere it will photodegrade in hours (polluted urban atmosphere) to an estimated range of 4 to 6 days in less polluted areas. Rainout should be significant.
Physical: No information available.
Other: No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series:
CAS# 67-56-1: waste number U154 (Ignitable waste).

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	ALCOHOLS, N.O.S.	ALCOHOLS, N.O.S. (Ethanol, Methanol, Isopropanol)
Hazard Class:	3	3
UN Number:	UN1987	UN1987
Packing Group:	II	II

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 64-17-5 is listed on the TSCA inventory.
CAS# 67-56-1 is listed on the TSCA inventory.
CAS# 67-63-0 is listed on the TSCA inventory.

Health & Safety Reporting List

CAS# 67-63-0: Effective 12/15/86, Sunset 12/15/96

Chemical Test Rules

CAS# 67-63-0: 40 CFR 799.2325

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

CAS# 67-56-1: 5000 lb final RQ; 2270 kg final RQ

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

SARA Codes

CAS # 64-17-5: immediate, delayed, fire.
CAS # 67-56-1: immediate, fire.
CAS # 67-63-0: immediate, delayed, fire.

Section 313

This material contains Methyl alcohol (CAS# 67-56-1, 5.0%),which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

This material contains Isopropyl alcohol (CAS# 67-63-0, 5.0%),which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

Clean Air Act:

CAS# 67-56-1 is listed as a hazardous air pollutant (HAP).

This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 64-17-5 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

CAS# 67-56-1 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

CAS# 67-63-0 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

California Prop 65

WARNING: This product contains Ethyl alcohol, a chemical known to the state of California to cause developmental reproductive toxicity.

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

XN F

Risk Phrases:

R 11 Highly flammable.

R 20/21/22 Harmful by inhalation, in contact with skin and if swallowed.

R 68/20/21/22 Harmful : possible risk of irreversible effects through inhalation, in contact with skin and if swallowed.

Safety Phrases:

S 16 Keep away from sources of ignition - No smoking.

S 24/25 Avoid contact with skin and eyes.

S 36/37 Wear suitable protective clothing and gloves.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S 7 Keep container tightly closed.

WGK (Water Danger/Protection)

CAS# 64-17-5: 0

CAS# 67-56-1: 1

CAS# 67-63-0: 1

Canada - DSL/NDSL

CAS# 64-17-5 is listed on Canada's DSL List.

CAS# 67-56-1 is listed on Canada's DSL List.

CAS# 67-63-0 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of B2, D1B.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

CAS# 64-17-5 is listed on the Canadian Ingredient Disclosure List.

CAS# 67-56-1 is listed on the Canadian Ingredient Disclosure List.

CAS# 67-63-0 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 6/19/1998
Revision #9 Date: 10/29/2007

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☐ REVISED 1 Page ____ of ____ 2

FACILITY ID# 30 0 0 3 5 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: MATERIAL STORAGE AREA 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # G2 → G7 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: Polysulfide Sealant | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☒ No 11 (* If EPCRA see instructions)

COMMON NAME: AC-236 Class A Base. 9 | An EHS Chemical ☐ Yes ☒ No 12 (*If EHS is "Yes", all amounts must be LBS)

CAS # 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☑ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE 18 ☑ d. ACUTE HEALTH ☑ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT: 200 19 | MAXIMUM DAILY AMOUNT: 10,000 20 | ANNUAL WASTE AMOUNT: 100 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET 23 ☒ c. POUNDS ☐ d. TONS (*If EHS, amount must be in pounds.) | DAYS ON SITE: 365 DAYS 24 | LARGEST CONTAINER: 50 Gallon Drum 25

STORAGE CONTAINER (Check all that apply) 26
☐ a. ABOVEGROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BLDG ☐ d STEEL DRUM ☐ e. PLASTIC DRUM ☐ f. NONMETALLIC DRUM ☒ g. METAL CONTAINER ☐ h. CARBOY ☐ i. VAT ☐ l. FIBER DRUM ☐ l. BAG(S) ☐ l. BOX(S) ☐ m CYLINDER ☐ n. GLASS CONTAINER ☐ o PLASTIC CONTAINER ☐ p. IN MACH OR EQUIP ☐ q. TANK WAGON ☐ r. RAIL CAR ☐ s. TOTE BIN ☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)		EHS		CAS #	
1	20-25 29	Calcium Carbonate	30	☐ Yes	☐ No 31	471-34-1	32
2	10-20 29	Toluene	30	☐ Yes	☐ No 31	108-88-3	32
3	10-15 29	Limestone	30	☐ Yes	☐ No 31	1317-65-3	32
4	1-5 29	Titanium Dioxide	30	☐ Yes	☐ No 31	13463-67-7	32
5	29		30	☐ Yes	☐ No 31		32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

UNDOT # UN1866 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS 3 (IATA/49CFR) 3.3 IMO
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 37
FIRE (RED) 3
HEALTH (BLUE) 2
REACTIVE (YELLOW) 0
SPECIAL HAZARD WHITE OX/W

MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Material Safety Data Sheet
AC-® 236 Class A Base

MSDS No: 32361-07
Effective: 01/21/09
Supercedes: 08/31/07

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Product ID: AC-236 Class A Base
Generic Description: Polysulfide sealant
Product Use: Integral fuel tank sealant

SIN #834-100

HAZARD RATINGS		
	HMIS	NFPA
Health	2*	2
Fire	3	3
Reactivity	0	0
	* = Chronic	

For information, contact:
Advanced Chemistry & Technology
7341 Anaconda Avenue
Garden Grove, CA 92841-2921
714 - 373 - 2837

ChemTrec Emergency
1 - 800 - 424 - 9300

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMMON NAME	CAS #	Approximate % (w/w)
Calcium carbonate	471 - 34 - 1	20 – 25
Toluene	108 - 88 - 3	10 – 20
Limestone	1317 - 65 - 3	10 – 15
Titanium Dioxide	13463 - 67 - 7	1 – 5
Non - hazardous and other ingredients below reportable levels	Proprietary	Balance

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: INGESTION MAY CAUSE NAUSEA, VOMITING, PAIN, UPSET STOMACH, DIARRHEA. MAY CAUSE MECHANICAL EYE IRRITATION. DO NOT SWALLOW. See sections 3, 5, & 6.

PRIMARY ROUTES OF EXPOSURE: Eye. Skin. Inhalation (breathing).

EYE CONTACT: Causes severe irritation. Can cause burning sensation, tearing, and redness.

SKIN CONTACT: May cause slight to mild irritation. Prolonged or repeated contact may dry the skin and lead to irritation (i.e. dermatitis). Ma be absorbed through the skin.

INHALATION (Breathing): Irritation to the eyes, nose, and respiratory tract. Can cause dizziness, headaches, and incoordination. Nausea, vomiting, and stomach upset can occur.

INGESTION (Swallowing): Irritation to the mouth, throat, and stomach. May cause nausea, vomiting, pain, and stomach upset (e.g., diarrhea). Can cause dizziness, faintness, headache, and incoordination.

TARGET ORGANS/CHRONIC EFFECTS: Liver. Kidneys. Nervous system. Eyes. Skin.

CONDITIONS AGGRAVATED BY EXPOSURE: Nervous system. Skin.

CARCINOGENICITY:

	ACGIH	IARC	NTP	OSHA
Limestone	No	No	No	No
Toluene	No	No	No	No
Calcium Carbonate	No	No	No	No
Titanium Dioxide	No	No	No	No

4. FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

SKIN CONTACT: Immediately flush with water. Remove contaminated clothing and shoes. Get medical attention if irritation persists. Professionally wash clothing and shoes before re-use.

INHALATION (Breathing): Remove to fresh air. If symptoms develop, seek immediate medical attention. If not breathing, give artificial respiration.

INGESTION (Swallowing): Seek medical attention. Immediately induce vomiting, as directed by medical personnel. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIANS: Treatment should be directed at preventing absorption, administering to symptoms (if they occur), and providing supportive therapy.

5. FIRE FIGHTING METHODS

Flash Point:	41°F (5°C)	Method: Setaflash Closed Cup
Explosive Limits:	LEL (%) Not Determined UEL (%) Not Determined	
Autoignition:	Not Determined	

HAZARDOUS COMBUSTION AND DECOMPOSITION PRODUCTS: Smoke, soot, and toxic/irritating fumes (i.e., carbon dioxide, carbon monoxide, etc.). Formaldehyde and/or other aldehydes. Oxides of sulfur. Hydrogen sulfide. Low molecular weight hydrocarbons.

FIRE AND EXPLOSION HAZARDS: During a fire, irritating and highly toxic gases may be generated during combustion or decomposition. High temperatures can cause sealed containers to rupture die to a build up of internal pressure. Cool with water. Vapors can travel to a source of ignition (fume, electric motor, hot surface, cigarette, etc.) and flash back.

EXTINGUISHING MEDIA: SMALL FIRES: Dry chemical, carbon dioxide, halon, water spray, or foam. LARGE FIRES: Water spray, fog, or alcohol foam.

FIRE FIGHTING PROCEDURES/EQUIPMENT: Fire fighters and others who may be exposed to the products of combustion should be equipped with NIOSH-approved positive pressure self-contained breathing apparatus (SCBA) and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

EVACUATION: Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Eliminate all sources of ignition.

CONTAINMENT: Safely stop discharge. Contain material, as necessary, with a dike or barrier. Stop material from contaminating soil, or from entering sewers or bodies of water.

CLEAN-UP/PERSONAL PROTECTION EQUIPMENT: Appropriate safety measures and protective equipment should be used. Use supplied air respirator or self-contained breathing apparatus in enclosed spaces or if airborne exposure limits can be exceeded. See Section 8.

COLLECTION AND DISPOSAL: Stop discharge, if safe to do so. Use proper protective equipment. Use non-sparking tools and/or explosion-proof equipment. Stop ignition sources. Cover spills with absorbent clay or sawdust and place in closed chemical waste containers. Dispose of according to applicable local, state and federal regulations.

REPORTING: Spills of this material in excess of a component's RQ must be reported to the National Response Center (1-800-424-8802) and to the appropriate state and local emergency response organizations.

Toluene	RQ = 1000 LB

7. HANDLING AND STORAGE

STORAGE CONDITIONS: Store in cool, dry, well ventilated area away form heat, ignition sources, and direct sunlight. Keep containers tightly closed. **WARNING**: Hot organic chemical vapors or mists can suddenly and without warning combust when mixed with air. Ignition can occur at typical elevated temperature process conditions. Any use in such processes should be elevated thoroughly to assure safe operating conditions.

TRANSFER: Containers should be supported and grounded before opening, dispensing, mixing, pouring, and emptying. Open with non-sparking tools. If container is warm, open bung slowly to release internal pressure.

PERSONAL HYGIENE: Wash thoroughly after handling, especially before eating, drinking, smoking, and using restroom facilities. Wash contaminated goggles, face-shield, and gloves. Professionally launder contaminated clothing before re-use.

EMPTY CONTAINER PRECAUTIONS: **Attention!** This container can be hazardous when empty. Follow label warnings even after container is emptied since empty containers may retain product residues. Do not use heat, sparks, open flames, torches, cigarettes on or near empty container. Do not re-use empty container without professional cleaning for food, clothing, or products for human or animal consumption or where skin contact can occur.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE GUIDELINES:

ACGIH - TLV			
	Limestone	10	mg/M^3 Total dust
	Toluene	50	Ppm – skin
	Calcium carbonate	10	mg/M^3 Total dust
	Titanium Dioxide	10	mg/M^3
OSHA - PEL			
	Limestone	5	mg/M^3 Resp. dust
	Toluene	100	ppm
	Calcium carbonate	5	mg/M^3 Resp. dust
	Titanium Dioxide	10	mg/M^3
OSHA - STEL			
	Toluene	150	ppm

ENGINEERING CONTROLS/VENTILATION: Local exhaust ventilation is recommended when vapors, mists, or dusts can be released in excess of established airborne exposure limits (TLV's or PEL's).

EYE PROTECTION: Wear chemical splash goggles or safety glasses with side shields. An eye wash facility should be readily available.

SKIN PROTECTION: Wear protective clothing and appropriate impervious gloves. Because a variety of protective gloves exist, consult glove manufacturer to determine the proper type for a specific operation. An emergency shower should be readily available.

RESPIRATORY PROTECTION: Wear NIOSH/MSHA-approved equipment. Determine the appropriate type by consulting the respirator manufacturer. High airborne concentrations may necessitate the use of self-contained breathing apparatus (SCBA) or a supplied air respirator. Respiratory protection programs must be in compliance with 29 CFR 1910.134.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance.....:	Off-white	Odor.....:	Sulfide
Physical State....:	Paste/liquid	Solubility.....:	Insoluble
pH.....:	Not Applicable	VOC Material.....:	191 g/L 1.6 lbs./gal
Specific Gravity...:	1.47	% Non – Vol. (w/w):	87

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under normal conditions of use.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: High temperatures.

INCOMPATIBILITY WITH OTHER MATERIALS: Oxidizers. Reducers. Strong bases. Acids.

11. TOXICITY INFORMATION

COMPONENTS:

Limestone:
Repeated exposure to dusts can lead to particulate deposition in the lungs (i.e., pneumoconiosis). Can contain trace amounts of crystalline silica as an impurity.

Toluene:

Oral LD50	Rat	5,000 mg/kg
Dermal LD50	Rabbit	12,124 mg/kg
Inhalation LC50	Mouse	5,320 ppm/8-hours

Calcium carbonate:
Repeated exposure to dusts can lead to particulate deposition in the lungs (i.e., pneumoconiosis).

Titanium Dioxide:
In a 2-year study in rats, an increase in benign and malignant lung tumors were observed at 250-mg/M^3 respirable dust level. This level is 50 times the current occupational exposure level and is not expected to correlate to human exposures.

12. ECOLOGICAL INFORMATION

No ecological data on the product itself is available.

The product must not be allowed to run into drains or waterways.

Ecotoxicity:

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

13. DISPOSAL CONSIDERATIONS

DISPOSAL: When a decision is made to discard this material as supplied, it meets RCRA's characteristic definition of ignitability.

GENERAL STATEMENTS: Federal regulations may apply to empty container. State and/or local regulations may be different.

GENERAL RECOMMENDATIONS: Of the methods of disposal currently available, it is recommended that an alternative be selected according to the following order of preference, based upon environmental acceptability: (1) recycle or rework, if feasible; (2) incinerate at an authorized facility; or (3) treat at an acceptable waste treatment facility.

SPECIAL INSTRUCTIONS: Be sure to contact the appropriate government environmental agencies if further guidance is required.

14. TRANSPORT INFORMATION

Weight (lb.)	Shipping Name	49 CFR	IATA	IMO

Resin solution		Y	Y	Y

DOT Label: Flammable Liquid
Hazard Class: 3 (IATA/49CFR) 3.3 (IMO)
Packaging Group: II
UN/NA Id Num: UN 1866
USPS Mailability No

All the information in this section is for non-bulk packaging (119 gallons or less; 882 lbs. or less for solids).

15. REGULATORY INFORMATION

FEDERAL:

This product is considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

SARA Title III - Section 311/312 - Hazard Categories:
Y - Fire Hazard
N - Sudden Release of Pressure Hazard
N - Reactivity Hazard
Y - Immediate (acute) Health Hazard
Y - Delayed (chronic) Health Hazard

Ozone - Depleting Chemicals - No regulated ingredients.

SARA Section 302 Extremely Hazardous Mat

SARA Section 313 Toxic Chemicals
Toluene

TSCA Section 8(d) Data Reporting Rule
Toluene

CHEMICAL LISTING - Listed on the following Country's Chemical Inventories:

United States Toxic Substance Control Act
Chemical component(s) in this product are on the section 8(b) Chemical Substance Inventory List (40 CFR 710).

STATE RIGHT - TO - KNOW:

Pennsylvania - New Jersey R - T - K

Limestone	1317-65-3	10 – 15
Toluene Environmental Hazard.	108-88-3	10 – 20
Calcium carbonate	471-34-1	20 – 25
Titanium Dioxide	13463-67-7	1 – 5
Non - hazardous trade secret ingredient(s)	Proprietary	Balance

California - California Proposition 65 -
WARNING: This product contains a chemical(s) known to the State of California to cause cancer and birth defects or other reproductive harm.

Toluene Reproductive Hazard.	108-88-3	10 - 20
Quartz (crystalline silica) Cancer Hazard.	14808-60-7	< 0.1
Formaldehyde Cancer Hazard.	50-00-0	< 0.01*

*Trace = present at less than 0.01 percent.

CONEG - No data available.

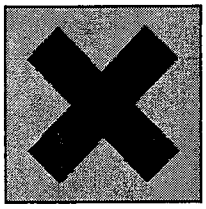
CANADA:
This is a "controlled product" under the Canadian Workplace Hazardous Materials information System (WHMIS).

Class B Division 2

Class D Division 2 Sub-division A
Class D Division 2 Sub-division B

CEPA - NPRI -
Toluene.

EUROPEAN COMMUNITY:
Preparation classification:
Harmful. Highly flammable.



Contains:
601-021-00-3 TOLUENE
Particular hazards associated with the preparation and safety recommendations:

R 52/53	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R 11	Highly flammable.
R 63	Possible risk of harm to the unborn child.
S 36/37	Wear suitable protective clothing and gloves.
S 16	Keep away from sources of ignition - no smoking.
S 60	This material and its container must be disposed of as hazardous waste.
S 61	Avoid release to the environment. Refer to special instructions/Safety data sheets.
S 9	Keep container in a well-ventilated place.

16. OTHER INFORMATION

USER RESPONSIBILITY: A bulletin such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions - in addition to those described herein - are required. Any health hazard and safety information herein should be passed on to your customers or employees, as the case may be.

DISCLAIMER OF LIABILITY: The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of suitability of the chemical is the sole responsibility of the user. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or any other nature are made hereunder with respect to the information contained herein or the chemical to which the information refers. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.

End of Material Safety Data Sheet

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☒ REVISED 1 Page ____ of ____ 2

FACILITY ID# 30 035 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: Material Storage Area 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 MAP # 1 6 GRID # G-2-G7 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: AC-215 Class A BASE WASTE ☐ Yes 8 TRADE SECRET ☒ Yes ☐ No 11 * If EPCRA see instructions

COMMON NAME: SAME 9 An EHS Chemical ☐ Yes ☒ No 12 *If EHS is "Yes", all amounts must be LBS

CAS # 10 FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 RADIOACTIVE ☐ Yes ☒ No 15 CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 FED HAZARD CATEGORIES ☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE 18 ☒ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT: 0.2 19 MAXIMUM DAILY AMOUNT: 150 20 ANNUAL WASTE AMOUNT: 5 21 STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET 23 ☒ c. POUNDS ☐ d. TONS If EHS, amount must be in pounds. DAYS ON SITE: 365 DAYS 24 LARGEST CONTAINER: 50 Gal Drum 25

STORAGE CONTAINER (Check all that apply) 26

☐ a. ABOVEGROUND TANK	☐ e. PLASTIC DRUM	☐ i. VAT	☐ m CYLINDER	☐ q. TANK WAGON
☐ b. UNDERGROUND TANK	☐ f. NONMETALLIC DRUM	☐ I. FIBER DRUM	☐ n. GLASS CONTAINER	☐ r. RAIL CAR
☐ c. TANK INSIDE BLDG	☒ g. METAL CONTAINER	☐ I. BAG(S)	☐ o PLASTIC CONTAINER	☐ s. TOTE BIN
☐ d STEEL DRUM	☐ h. CARBOY	☐ I. BOX(S)	☐ p. IN MACH OR EQUIP	☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	20-25 29	Calcium Carbonate 30	☐ Yes ☐ No 31	471-34-1 32
2	5-10 29	Toluene 30	☐ Yes ☐ No 31	108-88-3 32
3	1-5 29	Titanium Dioxide 30	☐ Yes ☐ No 31	13463-67-7 32
4	1-5 29	Terphenyl, hydrogenated 30	☐ Yes ☐ No 31	61788-32-7 32
5	balance 29a	Trade Secret 30	☐ Yes ☐ No 31	N/A 32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

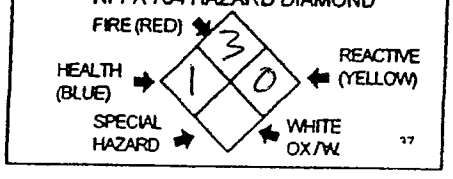
UNDOT # UN 1866 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS 3 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 37



MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Material Safety Data Sheet
AC-® 215 Class A Base

MSDS No: 32151-04
Effective: 01/26/09
Supercedes: 05/09/08

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

SIN #834-100

Product ID: AC-215 Class A Base
Generic Description: Polysulfide sealant
Product Use: Access door sealant

For information, contact:
Advanced Chemistry & Technology
Preparer: David Jordan, Director of R&D
7341 Anaconda Avenue
Garden Grove, CA 92841-2921
714 - 373 - 2837

ChemTrec Emergency
1 - 800 - 424 - 9300

HAZARD RATINGS		
	HMIS	NFPA
Health	1*	1
Fire	3	3
Reactivity	0	0
	* = Chronic	

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMMON NAME	CAS #	Approximate % (w/w)
Calcium carbonate	471-34-1	20 – 25
Toluene	108-88-3	5 – 10
Titanium Dioxide	13463 - 67 - 7	1 – 5
Terphenyl, hydrogenated	61788 - 32 - 7	1 – 5
Non - hazardous and other ingredients below reportable levels	Proprietary	Balance

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: INGESTION MAY CAUSE NAUSEA, VOMITING, PAIN, UPSET STOMACH, DIARRHEA. MAY CAUSE EYE IRRITATION. PROLONGED OR REPEATED CONTACT MAY CAUSE SKIN IRRITATION. PROLONGED EXPOSURE MAY CAUSE EYE, NOSE AND RESPIRATORY TRACT IRRITATION. DO NOT SWALLOW.
See sections 3, 5, & 6.

PRIMARY ROUTES OF EXPOSURE: Eye. Skin. Inhalation (breathing).

EYE CONTACT: May cause slight to mild irritation.

SKIN CONTACT: Prolonged or repeated contact may cause irritation.

INHALATION (Breathing): Can be irritation to eyes, nose, and respiratory tract following prolonged exposure. Can cause dizziness, headaches, and loss of coordination. Nausea, vomiting, and stomach upset can occur. Can cause anesthetic and/or narcotic effects.

INGESTION (Swallowing): Exposure is unlikely. May cause nausea, vomiting, pain, and stomach upset (e.g., diarrhea).

TARGET ORGANS / CHRONIC EFFECTS: Lungs and respiratory system.

CONDITIONS AGGRAVATED BY EXPOSURE: Lungs and respiratory system.

CARCINOGENICITY:	ACGIH	IARC	NTP	OSHA
Calcium carbonate	No	No	No	No
Toluene	No	No	No	No
Titanium Dioxide	No	No	No	No
Terphenyl, hydrogenated	No	No	No	No

4. FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation persists.

SKIN CONTACT: Immediately flush with water. Remove contaminated clothing and shoes. Get medical attention if irritation persists. Professionally wash clothing and shoes before re - use.

INHALATION (Breathing): Remove to fresh air. If symptoms develop, seek immediate medical attention. If not breathing, give artificial respiration.

INGESTION (Swallowing): Seek medical attention. Immediately induce vomiting, as directed by medical personnel. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIANS: Treatment should be directed at preventing absorption, administering to symptoms (if they occur), and providing supportive therapy.

5. FIRE FIGHTING METHODS

Flash Point:	40°F (4°C)	Method:	Setaflash Closed Cup
Explosive Limits:	LEL(%) Not Determined		UEL(%) Not Determined
Autoignition:	Not Determined		

HAZARDOUS COMBUSTION AND DECOMPOSITION PRODUCTS: Smoke, soot, and toxic/irritating fumes (i.e., carbon dioxide, carbon monoxide, etc.). Other aldehydes. Oxides of sulfur. Hydrogen sulfide.

FIRE AND EXPLOSION HAZARDS: During a fire, irritating and highly toxic gases may be generated during combustion or decomposition.

EXTINGUISHING MEDIA: SMALL FIRES: Dry chemical, carbon dioxide, halon, water spray, or foam. LARGE FIRES: Water spray, fog, or alcohol foam.

FIRE FIGHTING PROCEDURES/EQUIPMENT: Fire fighters and others who may be exposed to the products of combustion should be equipped with NIOSH - approved positive pressure self - contained breathing apparatus (SCBA) and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

EVACUATION: Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Eliminate all sources of ignition.

CONTAINMENT: Safely stop discharge. Contain material, as necessary, with a dike or barrier. Stop material from contaminating soil, or from entering sewers or bodies of water.

CLEAN - UP/PERSONAL PROTECTION EQUIPMENT: Appropriate safety measures and protective equipment should be used. Use supplied air respirator or self - contained breathing apparatus in enclosed spaces or if airborne exposure limits can be exceeded. See Section 8.

COLLECTION AND DISPOSAL: Stop discharge, if safe to do so. Use proper protective equipment. Cover spills with absorbent clay or sawdust and place in closed chemical waste containers. Dispose of according to applicable local, state and federal regulations.

REPORTING: Spills of this material in excess of a component's RQ must be reported to the National Response Center (1 - 800 - 424 - 8802) and to the appropriate state and local emergency response organizations.

Toluene	RQ = 1000 LB

7. HANDLING AND STORAGE

STORAGE CONDITIONS: Store below 100°F. Store in cool, dry, well ventilated area.

TRANSFER: No special precautions are needed. Follow good manufacturing and handling practices.

PERSONAL HYGIENE: Wash thoroughly after handling, especially before eating, drinking, smoking, and using restroom facilities. Wash contaminated goggles, face-shield, and gloves. Professionally launder contaminated clothing before re - use.

EMPTY CONTAINER PRECAUTIONS: Attention! This container can be hazardous when empty. Follow label warnings even after container is emptied since empty containers may retain product residues. Do not reuse empty container without professional cleaning for food, clothing, or products for human or animal consumption or where skin contact can occur.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE GUIDELINES:

ACGIH - TLV		
Calcium carbonate	10	mg/M^3 Total dust
Titanium Dioxide	10	mg/M^3
Toluene	50	ppm.
Terphenyl, hydrogenated	0.5	ppm - Ceiling
OSHA - PEL		
Calcium carbonate	5	mg/M^3 Resp. dust
Titanium Dioxide	10	mg/M^3
Toluene	100	ppm
Terphenyl, hydrogenated	0.5	ppm
OSHA – STEL		
Toluene	150	ppm

ENGINEERING CONTROLS/VENTILATION: Local exhaust ventilation is recommended when vapors, mists, or dusts can be released in excess of established airborne exposure limits (TLVs or PELs).

EYE PROTECTION: Wear chemical splash goggles or safety glasses with side shields. An eye wash facility should be readily available.

SKIN PROTECTION: Wear protective clothing and appropriate impervious gloves. Because a variety of protective gloves exist, consult glove manufacturer to determine the proper type for a specific operation.

RESPIRATORY PROTECTION: Wear NIOSH/MSHA - approved equipment. Determine the appropriate type by consulting the respirator manufacturer. High airborne concentrations may necessitate the use of self - contained breathing apparatus (SCBA) or a supplied air respirator. Respiratory protection programs must be in compliance with 29 CFR 1910.134.

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Red	Odor:	Sulfide
Physical State:	Paste	Solubility:	Insoluble
pH:	Not Applicable	Vapor Pressure:	Not Applicable
Vapor Density:	Not Applicable	Evaporation Rate:	Not Applicable
VOC Material:	80 g/l (0.67 lbs./gal)	Specific Gravity:	1.47
%Non - Vol.(w/w).....:	94		

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under normal conditions of use.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Not applicable.

INCOMPATIBILITY WITH OTHER MATERIALS: Oxidizers. Reducers. Acids.

11. TOXICITY INFORMATION

COMPONENTS:

Toluene:				
Oral LD50	Rat		5,000	mg/kg
Dermal LD50	Rabbit		12,124	mg/kg
Inhalation LC50	Mouse	5,320	ppm/8-Hours	

Calcium carbonate:
Repeated exposure to dusts can lead to particulate deposition in the lungs (i.e., pneumoconiosis).

Titanium Dioxide:
In a 2 - year study in rats, an increase in benign and malignant lung tumors was observed at 250-mg/M3 respirable dust level. This level is 50 times the current occupational exposure level and is not expected to correlate to human exposures.

Hydrogenated Terphenyl:			
Terphenyl, hydrogenated:			
Oral LD50	Rat	17,500	mg/kg
	Mouse	12,500	mg/kg
Dermal LD50	Rabbit	> 2,000	mg/kg
Terphenyl:			
Oral LD50	Rat	13,200	mg/kg

12 ECOLOGICAL INFORMATION

No ecological data on the product itself is available.

The product must not be allowed to run into drains or waterways.

Ecotoxicity:

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

13. DISPOSAL CONSIDERATIONS

DISPOSAL: Dispose in accordance with all local, state, and federal regulations.

GENERAL STATEMENTS: Federal regulations may apply to empty container. State and/or local regulations may be different.

GENERAL RECOMMENDATIONS: Of the methods of disposal currently available, it is recommended that an alternative be selected according to the following order of preference, based upon environmental acceptability: (1) recycle or rework, if feasible; (2) incinerate at an authorized facility; or (3) treat at an acceptable waste treatment facility.

SPECIAL INSTRUCTIONS: Be sure to contact the appropriate government environmental agencies if further guidance is required.

14. TRANSPORT INFORMATION

Weight (lb.)	Shipping Name	49 CFR	IATA	IMO
	Resin solution	Y	Y	Y
DOT Label:	Flammable Liquid	UN/NA Id Number:	UN 1866	
Hazard Class:	3 (IATA/49CFR) 3.3 (IMO)	USPS Mailability	No	
Packaging Group:	II			

All the information in this section is for non-bulk packaging (119 gallons or less; 882 lbs. or less for solids).

15. REGULATORY INFORMATION

FEDERAL:

This product is considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

SARA Title III - Section 311/312 - Hazard Categories:
Y - Fire Hazard
N - Sudden Release of Pressure Hazard
N - Reactivity Hazard
Y - Immediate (acute) Health Hazard
Y - Delayed (chronic) Health Hazard

Ozone - Depleting Chemicals - No regulated ingredients.

SARA Section 302 Extremely Hazardous Mat - No regulated ingredients.

TSCA Section 8(d) Data Reporting Rule
Toluene

SARA Section 313 Toxic Chemicals –
Toluene

STATE RIGHT - TO - KNOW:
Pennsylvania - New Jersey R - T - K

Calcium carbonate	471-34-1	20 – 25
Toluene	108-88-3	5 – 10
Titanium Dioxide	13463 - 67 - 7	1 – 5
Terphenyl, hydrogenated	61788 - 32 - 7	1 – 5
Non - hazardous trade secret ingredient(s)	Proprietary	Balance

California - California Proposition 65
WARNING: This product contains a chemical(s) known to the State of California to cause cancer and birth defects or other reproductive harm.

Quartz (crystalline silica)	14808 - 60 - 7	< 0.01*
Toluene	108-88-3	5 - 10

Cancer Hazard or Reproductive Hazard.
* Trace = present at less than 0.01 percent.

CONEG - No data available.

CANADA:
This is a "controlled product" under the Canadian Workplace Hazardous Materials Information System (WHMIS).

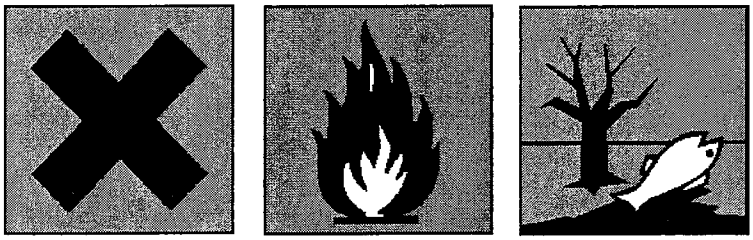
Class B Division 2

Class D Division 2 Sub-division A
Class D Division 2 Sub-division B

CEPA - NPRI - Toluene

European Union:
Preparation classification:

Xn **F** **N**



Harmful **Highly Flammable** **Dangerous for Environment**

Contains:
601-021-00-3 TOLUENE

Particular hazards associated with the preparation and safety recommendations:

R 11	Highly flammable.
R20/22	Harmful by inhalation and if swallowed.
R 52/53	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R 63	Possible risk of harm to the unborn child.
S 9	Keep container in a well-ventilated place.
S 16	Keep away from sources of ignition - no smoking.
S 25	Avoid contact with eyes.
S 36/37	Wear suitable protective clothing and gloves.
S 60	This material and its container must be disposed of as hazardous waste.
S 61	Avoid release to the environment. Refer to special instructions/Safety data sheets.

16. OTHER INFORMATION

USER RESPONSIBILITY: A bulletin such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions - in addition to those described herein - are required. Any health hazard and safety information herein should be passed on to your customers or employees, as the case may be.

DISCLAIMER OF LIABILITY: The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of suitability of the chemical is the sole responsibility of the user. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or any other nature are made hereunder with respect to the information contained herein or the chemical to which the information refers. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.

End of Material Safety Data Sheet

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☐ REVISED 1 Page ____ of ____ 2

FACILITY ID# 30035 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: Class I Room 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 MAP # 1 6 GRID # I2 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: AC-145 Adhesion Promoter

WASTE ☐ Yes 8

TRADE SECRET ☒ Yes ☐ No 11 * If EPCRA see instructions

COMMON NAME: SAME 9

An EHS Chemical ☐ Yes ☒ No 12 *If EHS is "Yes", all amounts must be LBS

CAS # 10

FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14

RADIOACTIVE ☐ Yes ☒ No 15

CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17

FED HAZARD CATEGORIES ☑ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☑ d. ACUTE HEALTH ☑ e. CHRONIC HEALTH 18

AVERAGE DAILY AMOUNT: 0.7 19

MAXIMUM DAILY AMOUNT: 100 20

ANNUAL WASTE AMOUNT: 1 21

STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET ☒ c. POUNDS ☐ d. TONS 23 If EHS, amount must be in pounds.

DAYS ON SITE: 365 DAYS 24

LARGEST CONTAINER: 30 Gallons 25

STORAGE CONTAINER (Check all that apply) 26

☐ a. ABOVEGROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BLDG ☐ d STEEL DRUM ☐ e. PLASTIC DRUM ☐ f. NONMETALLIC DRUM ☐ g. METAL CONTAINER ☐ h. CARBOY ☐ i. VAT ☐ l. FIBER DRUM ☐ k. BAG(S) ☐ l. BOX(S) ☐ m CYLINDER ☐ n. GLASS CONTAINER ☒ o PLASTIC CONTAINER ☐ p. IN MACH OR EQUIP ☐ q. TANK WAGON ☐ r. RAIL CAR ☐ s. TOTE BIN ☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)		EHS		CAS #	
1	20-25 29	METHYL ETHYL KETONE	30	☐ Yes	☐ No 31	78-93-3	32
2	5-10 29	METALLIC ESTER	30	☐ Yes	☐ No 31	Trade Secret	32
3	1-5 29	ISOPROPYL ALCOHOL	30	☐ Yes	☐ No 31	67-63-0	32
4	balance 29	TRADE SECRET	30	☐ Yes	☐ No 31	Trade Secret	32
5	60-65 29	WATER	30	☐ Yes	☐ No 31	7732-18-5	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

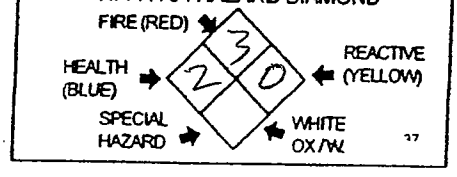
UNDOT # UN 1866 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS 3 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND



37

MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Material Safety Data Sheet
AC-®145 Adhesion Promoter

MSDS No: 11450-06
Effective: 01/26/09
Supercedes: 08/02/04

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

SIN #834-100

Product ID: AC-145 Adhesion promoter
Generic Description: Titanium Chelate
Product Use: Adhesion promoter

For information, contact:
Advanced Chemistry & Technology
7341 Anaconda Avenue
Garden Grove, CA 92841-2921
714 - 373 - 2837

ChemTrec Emergency
1 - 800 - 424 - 9300

HAZARD RATINGS		
	HMIS	NFPA
Health	2*	2
Fire	3	3
Reactivity	0	0
	* = Chronic	

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMMON NAME	CAS #	Approximate % (w/w)
Methyl ethyl ketone	78 - 93 - 3	20 – 25
Metallic esters	Proprietary	5 – 10
Isopropyl Alcohol	67 - 63 - 0	1 – 5
Non - hazardous and other ingredients below reportable levels	Proprietary	Balance
Water	7732 - 18 - 5	60 – 65

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: FLAMMABLE LIQUID AND VAPOR. INHALATION MAY CAUSE DIZZINESS, HEADACHE AND LOSS OF COORDINATION. INGESTION CAN CAUSE DIZZINESS, FAINTNESS, HEADACHE AND LOSS OF COORDINATION. MAY CAUSE MODERATE EYE IRRITATION. MAY CAUSE RESPIRATORY TRACT IRRITATION. MAY CAUSE DIGESTIVE TRACT IRRITATION. INGESTION MAY CAUSE NAUSEA, VOMITING, PAIN, UPSET STOMACH, DIARRHEA. INHALATION MAY CAUSE NAUSEA, VOMITING, UPSET STOMACH. PROLONGED OR REPEATED CONTACT MAY CAUSE SKIN IRRITATION. PROLONGED OR REPEATED CONTACT MAY DRY SKIN AND CAUSE IRRITATION. See sections 3, 5, & 6.

PRIMARY ROUTES OF EXPOSURE: Eye. Skin. Inhalation (breathing).

EYE CONTACT: May cause moderate irritation. May cause corneal opacity (clouding of the eye surface). Can cause burning sensation, tearing and redness.

SKIN CONTACT: Prolonged or repeated contact may cause irritation. Prolonged or repeated contact may dry the skin and lead to irritation (i.e. dermatitis).

INHALATION (Breathing): Irritating to the eyes, nose, and respiratory tract.
Can cause dizziness, headaches, and incoordination. Nausea, vomiting, and stomach upset can occur. Can cause anesthetic and/or narcotic effects.

INGESTION (Swallowing): Irritating to the mouth, throat, and stomach. May cause nausea, vomiting, pain, and stomach upset (e.g., diarrhea). Can cause dizziness. Faintness, headache, and incoordination.

TARGET ORGANS/CHRONIC EFFECTS: Nervous system. Lungs and respiratory system. Eyes. Skin.

CONDITIONS AGGRAVATED BY EXPOSURE: Nervous system. Lungs and respiratory system. Skin.

CARCINOGENICITY:

	ACGIH	IARC	NTP	OSHA
Methyl ethyl ketone	No	No	No	No
Metallic esters	No	No	No	No
Isopropyl alcohol	No	No	No	No

4. FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation persists.

SKIN CONTACT: Immediately flush with water. Remove contaminated clothing and shoes. Get medical attention if irritation persists. Professionally wash clothing and shoes before re - use.

INHALATION (Breathing): Remove to fresh air. If symptoms develop, seek immediate medical attention. If not breathing, give artificial respiration.

INGESTION (Swallowing): Seek medical attention. Immediately induce vomiting, as directed by medical personnel. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIANS: Treatment should be directed at preventing absorption, administering to symptoms (if they occur), and providing supportive therapy.

5. FIRE FIGHTING METHODS

Flash Point.....:	23F - 5C	Method:.....:	Setaflash Closed Cup
Explosive Lmts.....:	LEL(%)Not Determined UEL(%)Not Determined		
Autoignition.....:	Not Determined		

HAZARDOUS COMBUSTION AND DECOMPOSITION PRODUCTS: Smoke, soot, and toxic/irritating fumes (i.e., carbon dioxide, carbon monoxide, etc.).

FIRE AND EXPLOSION HAZARDS: High temperatures can cause sealed containers to rupture due to a build up of internal pressure. Cool with water. Vapors can travel to a source of ignition (flame, electric motor, hot surface, cigarette, etc.) and flash back. During a fire, irritating and highly toxic gases may be generated during combustion or decomposition.

EXTINGUISHING MEDIA: SMALL FIRES: Dry chemical, carbon dioxide, halon, water spray, or foam. LARGE FIRES: Water spray, fog, or alcohol foam.

FIRE FIGHTING PROCEDURES/EQUIPMENT: Fire fighters and others who may be exposed to the products of combustion should be equipped with NIOSH - approved positive pressure self - contained breathing apparatus (SCBA) and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

EVACUATION: Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Eliminate all sources of ignition.

CONTAINMENT: Safely stop discharge. Contain material, as necessary, with a dike or barrier. Stop material from contaminating soil, or from entering sewers or bodies of water.

CLEAN - UP/PERSONAL PROTECTION EQUIPMENT: Appropriate safety measures and protective equipment should be used. Use supplied air respirator or self - contained breathing apparatus in enclosed spaces or if airborne exposure limits can be exceeded. See Section 8.

COLLECTION AND DISPOSAL: Stop discharge, if safe to do so. Use proper protective equipment. Use non - sparking tools and/or explosion - proof equipment. Stop ignition sources. Cover spills with absorbent clay or sawdust and place in closed chemical waste containers. Dispose of according to applicable local, state and federal regulations.

REPORTING: Spills of this material in excess of a component's RQ must be reported to the National Response Center (1 - 800 - 424 - 8802) and to the appropriate state and local emergency response organizations.

Methyl ethyl ketone RQ = 5000 LB

7. HANDLING AND STORAGE

Storage Temperature < 100F 37.7C

STORAGE CONDITIONS: Store in cool, dry, well ventilated area away from heat, ignition sources, and direct sunlight. Keep containers tightly closed. WARNING: Hot organic chemical vapors or mists can suddenly and without warning combust when mixed with air. Ignition can occur at typical elevated temperature process conditions. Any use in such processes should be evaluated thoroughly to assure safe operating conditions.

TRANSFER: Containers should be supported and grounded before opening, dispensing, mixing, pouring, and emptying. Open with non - sparking tools. If container is warm, open bung slowly to release internal pressure.

PERSONAL HYGIENE: Wash thoroughly after handling, especially before eating, drinking, smoking, and using rest room facilities. Wash contaminated goggles face shield, and gloves. Professionally launder contaminated clothing before re - using.

EMPTY CONTAINER PRECAUTIONS: Attention! This container hazardous when empty. Follow label warnings even after container is emptied since empty containers may retain product residues. Do not use heat, sparks, open flames, torches, cigarettes on or near empty container. Do not reuse empty container without professional cleaning for food, clothing, or products for human or animal consumption or where skin contact can occur.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE GUIDELINES:

ACGIH - TLV	
Methyl ethyl ketone	200 ppm
Isopropyl alcohol	400 ppm
ACGIH - STEL	
Methyl ethyl ketone	300 ppm
Isopropyl alcohol	500 ppm
OSHA - PEL	
Methyl ethyl ketone	200 ppm
Isopropyl alcohol	400 ppm
OSHA - STEL	
Methyl ethyl ketone	300 ppm
Isopropyl alcohol	500 ppm

ENGINEERING CONTROLS/VENTILATION: Local exhaust ventilation is recommended when vapors, mists, or dusts can be released in excess of established airborne exposure limits (TLVs or PELs).

EYE PROTECTION: Wear chemical splash goggles. An eye wash facility should be readily available.

SKIN PROTECTION: Wear protective clothing and appropriate impervious gloves. Because a variety of protective gloves exist, consult glove manufacturer to determine the proper type for a specific operation.

RESPIRATORY PROTECTION: Avoid breathing vapor and/or mists. Wear NIOSH/MSHA - approved equipment. Determine the appropriate type by consulting the respirator manufacturer. High airborne concentrations may necessitate the use of self - contained breathing apparatus (SCBA) or a supplied air respirator. Respiratory protection programs must be in compliance with 29 CFR 1910.134.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance.....:	Blue	Odor.....:	Slight
Physical State.....:	Liquid	Solubility.....:	Slightly soluble
pH.....:	Not Applicable	VOC Material (Rule 1124):	240 g/l (2.01 lbs/gal)
Specific Gravity...:	0.95	VOC Coating (Rule 1124):	680 g/l (5.70 lbs/gal)

% Non - Vol(w/w).....: 6.5

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under normal conditions of use.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: High temperatures.

INCOMPATIBILITY WITH OTHER MATERIALS: Oxidizers. Acids.

11. TOXICITY INFORMATION

COMPONENTS:

Methyl ethyl ketone:

Oral LD50	Rat	2,737	mg/kg
	Mouse	4,050	mg/kg
Dermal LD50	Rabbit	6,480	mg/kg
Inhalation LC50	Mouse	40,000	ppm/2 - Hours
	Rat	23,500	mg/M3 - 8 - hours

Metallic esters:
Eye, skin, and respiratory tract irritant.

Isopropyl alcohol:

Oral LD50	Rat	5,045	mg/kg
	Dog	4,797	mg/kg
	Mouse	3,600	mg/kg
Dermal LD50	Rabbit	12,800	mg/kg
Inhalation LC50	Rat	12,000	ppm/8 - Hours

12. ECOLOGICAL INFORMATION

No data are available on this product.

13. DISPOSAL CONSIDERATIONS

DISPOSAL: When a decision is made to discard this material as supplied, it meets RCRA's characteristic definition of ignitability.

GENERAL STATEMENTS: Federal regulations may apply to empty container. State and/or local regulations may be different.

GENERAL RECOMMENDATIONS: Of the methods of disposal currently available, it is recommended that an alternative be selected according to the following order of preference, based upon environmental acceptability: (1) recycle or rework, if feasible; (2) incinerate at an authorized facility; or (3) treat at an acceptable waste treatment facility.

SPECIAL INSTRUCTIONS: Be sure to contact the appropriate government environmental agencies if further guidance is required.

14. TRANSPORT INFORMATION

Weight (lb.)	Shipping Name	49 CFR	IATA	IMO
	Resin solution	Y	Y	Y

DOT Label.....: Flammable Liquid UN/NA Id Num....: UN 1866

Hazard Class.....: 3 (IATA/49CFR) 3.2 (IMO)
Packing Group....: II

USPS Mailability..: No

15. REGULATORY INFORMATION

FEDERAL:

This product is considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

SARA Title III - Section 311/312 - Hazard Categories:
Y - Fire Hazard
N - Sudden Release of Pressure Hazard
N - Reactivity Hazard
Y - Immediate (acute) Health Hazard
Y - Delayed (chronic) Health Hazard

Ozone - Depleting Chemicals - No regulated ingredients.

SARA Section 302 Extremely Hazardous Mat - No regulated ingredients.

SARA Section 313 Toxic Chemicals - Methyl ethyl ketone

TSCA Section 12(b) Export Notification - Isopropyl alcohol

TSCA Section 8(d) Data Reporting Rule - Methyl ethyl ketone

CHEMICAL LISTING - Listed on the following Country's Chemical Inventories:

United States — Toxic Substance Control Act
Chemical component(s) in this product are on the section 8(b) Chemical Substance Inventory List (40 CFR 710).

STATE RIGHT - TO - KNOW:

Pennsylvania - New Jersey R - T - K

Water	7732 - 18 - 5	60 – 65
Methyl ethyl ketone Environmental Hazard	78 - 93 - 3	20 – 25
Metallic esters	Proprietary (NJ Trade Secret Reg # 00850201001-5522P)	5 – 10
Isopropyl alcohol	67 - 63 - 0	1 – 5
Non - hazardous trade secret ingredient(s)	Proprietary	Balance

California - California Proposition 65 - No regulated ingredients.

CONEG - No data available.

CANADA:
This is a "controlled product" under the Canadian Workplace Hazardous Materials Information System (WHMIS).

Class B Division 2 — Class D Division 2 Sub - division B

CEPA - NPRI
Methyl ethyl ketone
Isopropyl alcohol

16. OTHER INFORMATION

USER RESPONSIBILITY: A bulletin such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions - in addition to those described herein - are required. Any health hazard and safety information herein should be passed on to your customers or employees, as the case may be.

DISCLAIMER OF LIABILITY: The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of suitability of the chemical is the sole responsibility of the user. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or any other nature are made thereunder with respect to the information contained herein or the chemical to which the information refers. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.

End of Material Safety Data Sheet

NSN:
8030-00-560-8756

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☒ REVISED 1 Page ____ of ____ 2

FACILITY ID# 3 0 0 3 5 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: Class I Room 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 MAP # 1 6 GRID # Ot I2 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: AC-137 Red Adhesion Prom. WASTE ☐ Yes 8 TRADE SECRET ☒ Yes ☐ No 11 * If EPCRA see instructions

COMMON NAME: Same 9 An EHS Chemical ☐ Yes ☒ No 12 *If EHS is "Yes", all amounts must be LBS

CAS # 10 FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 RADIOACTIVE ☐ Yes ☒ No 15 CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 FED HAZARD CATEGORIES ☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE 18 ☒ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT: 0.1 19 MAXIMUM DAILY AMOUNT: 10 20 ANNUAL WASTE AMOUNT: 1 21 STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET 23 ☒ c. POUNDS ☐ d. TONS If EHS, amount must be in pounds. DAYS ON SITE: 365 DAYS 24 LARGEST CONTAINER: Gallon 25

STORAGE CONTAINER (Check all that apply) 26
☐ a. ABOVEGROUND TANK ☐ e. PLASTIC DRUM ☐ i. VAT ☐ m CYLINDER ☐ q. TANK WAGON
☐ b. UNDERGROUND TANK ☐ f. NONMETALLIC DRUM ☐ l. FIBER DRUM ☒ n. GLASS CONTAINER ☐ r. RAIL CAR
☐ c. TANK INSIDE BLDG ☐ g. METAL CONTAINER ☐ l. BAG(S) ☐ o PLASTIC CONTAINER ☐ s. TOTE BIN
☐ d STEEL DRUM ☐ h. CARBOY ☐ l. BOX(S) ☐ p. IN MACH OR EQUIP ☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	70-90 29	ETHANOL 30	☐ Yes ☐ No 31	64-17-5 32
2	5-15 29	TITANATE ESTER 30	☐ Yes ☐ No 31	Trade Secret 32
3	1-5 29	METHANOL 30	☐ Yes ☐ No 31	67-56-1 32
4	1-5 29	ISOPROPYL ALCOHOL 30	☐ Yes ☐ No 31	67-63-0 32
5	balance 29	TRADE SECRET 30	☐ Yes ☐ No 31	N.A. 32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

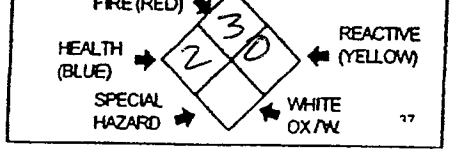
UNDOT # UN 1170 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS 3 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 37



MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Material Safety Data Sheet AC-® 137 Red, Adhesion Promoter

MSDS No: 11370-03
Effective: 01/26/09
Supercedes: 08/09/05

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

SIN #834-100

Product ID: AC-137 Red Adhesion promoter
Generic Description: Titanate mixture
Product Use: Adhesion promoter

For information, contact:
Advanced Chemistry & Technology
7341 Anaconda Avenue
Garden Grove, CA 92841-2921
714 - 373 - 2837

ChemTrec Emergency
1 - 800 - 424 - 9300

HAZARD RATINGS		
	HMIS	NFPA
Health	2*	2
Fire	3	3
Reactivity	0	0
	* = Chronic	

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMMON NAME	CAS #	Approximate % (w/w)
Ethanol	64 – 17 - 5	70 - 90
Titanate ester	Proprietary	5 - 15
Methyl Alcohol	67 – 56 - 1	1 - 5
Isopropyl Alcohol	67 – 63 - 0	1 - 5
Non - hazardous and other ingredients below reportable levels	Proprietary	Balance

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: FLAMMABLE LIQUID AND VAPOR. CAUSES SEVERE EYE IRRITATION. CAUSES SEVERE SKIN IRRITATION. INHALATION MAY CAUSE DIZZINESS, HEADACHE AND INCOORDINATION. MAY CAUSE RESPIRATORY TRACT IRRITATION. MAY CAUSE DIGESTIVE TRACT IRRITATION. PROLONGED OR REPEATED CONTACT MAY DRY SKIN AND CAUSE IRRITATION. See sections 3, 5, & 6.

PRIMARY ROUTES OF EXPOSURE: Eye. Skin. Inhalation (breathing).

EYE CONTACT: Causes severe irritation.

SKIN CONTACT: Causes severe irritation. Prolonged or repeated contact may dry the skin and lead to irritation (i.e. dermatitis).

INHALATION (Breathing): Irritating to the eyes, nose, and respiratory tract. Can cause dizziness headaches, and loss of coordination.

INGESTION (Swallowing): Irritating to the mouth, throat, and stomach.

TARGET ORGANS/CHRONIC EFFECTS: Eyes. Skin. Heart, Central Nervous System, Liver.

CONDITIONS AGGRAVATED BY EXPOSURE: Liver. Kidneys. Skin.

CARCINOGENICITY:

	ACGIH	IARC	NTP	OSHA
Ethanol	No	No	No	No
Titanate ester	No	No	No	No
Methyl alcohol	No	No	No	No
Isopropyl Alcohol	No	Group 3	No	No

4. FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Get prompt medical attention.

SKIN CONTACT: Immediately flush with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get prompt medical attention. Professionally wash clothing before re - use.

INHALATION (Breathing): Remove to fresh air. If symptoms develop, seek immediate medical attention. If not breathing, give artificial respiration.

INGESTION (Swallowing): Seek medical attention. Immediately induce vomiting, as directed by medical personnel. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIANS: Treatment should be directed at preventing absorption, administering to symptoms (if they occur), and providing supportive therapy.

5. FIRE FIGHTING METHODS

Flash Point.....:	55°F (13°C)	Method.....:	Tag Closed Cup
Explosive Limits.....:	LEL(%) 3.3 UEL(%) 19		
Autoignition.....:	685°F		

HAZARDOUS COMBUSTION AND DECOMPOSITION PRODUCTS: Smoke, soot, and toxic/irritating fumes (i.e., carbon dioxide, carbon monoxide, etc.).

FIRE AND EXPLOSION HAZARDS: High temperatures can cause sealed containers to rupture due to a build up of internal pressure. Cool with water. Vapors can travel to a source of ignition (flame, electric motor, hot surface, cigarette, etc.) and flash back. During a fire, irritating and highly toxic gases may be generated during combustion or decomposition.

EXTINGUISHING MEDIA: SMALL FIRES: Dry chemical, carbon dioxide, halon, water spray, or foam. LARGE FIRES: Water spray, fog, or alcohol foam.

FIRE FIGHTING PROCEDURES/EQUIPMENT: Fire fighters and others who may be exposed to the products of combustion should be equipped with NIOSH - approved positive pressure self - contained breathing apparatus (SCBA) and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

EVACUATION: Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Eliminate all sources of ignition.

CONTAINMENT: Safely stop discharge. Contain material, as necessary, with a dike or barrier. Stop material from contaminating soil, or from entering sewers or bodies of water.

CLEAN - UP/PERSONAL PROTECTION EQUIPMENT: Appropriate safety measures and protective equipment should be used. Use supplied air respirator or self - contained breathing apparatus in enclosed spaces or if airborne exposure limits can be exceeded. See Section 8.

COLLECTION AND DISPOSAL: Stop discharge, if safe to do so. Use proper protective equipment. Use non - sparking tools and/or explosion - proof equipment. Stop ignition sources. Cover spills with absorbent clay or sawdust and place in closed chemical waste containers. Dispose of according to applicable local, state and federal regulations.

REPORTING: Spills of this material in excess of a component's RQ must be reported to the National Response Center (1 - 800 - 424 - 8802) and to the appropriate state and local emergency response organizations. No regulated ingredients.

7. HANDLING AND STORAGE

Storage Temperature < 100°F (38.8°C)

STORAGE CONDITIONS: Store in cool, dry, well ventilated area away from heat, ignition sources, and direct sunlight. Keep containers tightly closed. WARNING: Hot organic chemical vapors or mists can suddenly and without warning combust when mixed with air. Ignition can occur at typical elevated temperature process conditions. Any use in such processes should be evaluated thoroughly to assure safe operating conditions.

TRANSFER: Containers should be supported and grounded before opening, dispensing, mixing, pouring, and emptying. Open with non - sparking tools. If container is warm, open bung slowly to release internal pressure.

PERSONAL HYGIENE: Wash thoroughly after handling, especially before eating, drinking, smoking, and using rest room facilities. Wash contaminated goggles, face shield, and gloves. Professionally launder contaminated clothing before re - use.

EMPTY CONTAINER PRECAUTIONS: Attention! This container hazardous when empty. Follow label warnings even after container is emptied since empty containers may retain product residues. Do not use heat, sparks, open flames, torches, cigarettes on or near empty container. Do not reuse empty container without professional cleaning for food, clothing, or products for human or animal consumption or where skin contact can occur.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE GUIDELINES:

ACGIH - TLV		
Ethanol	1000	ppm
Methyl Alcohol	200	ppm
Isopropyl Alcohol	400	ppm
ACGIH - STEL		
Ethanol	1000	ppm
Methyl Alcohol	200	ppm
Isopropyl Alcohol	400	ppm
OSHA - PEL		
Ethanol	1000	ppm
Methyl Alcohol	200	ppm
Isopropyl Alcohol	400	ppm
OSHA - STEL		
Ethanol	1000	ppm
Methyl Alcohol	200	ppm
Isopropyl Alcohol	400	ppm

ENGINEERING CONTROLS/VENTILATION: Local exhaust ventilation is recommended when vapors, mists, or dusts can be released in excess of established airborne exposure limits (TLVs or PELs).

EYE PROTECTION: Wear chemical splash goggles. An eye wash facility should be readily available.

SKIN PROTECTION: Wear protective clothing and appropriate impervious gloves. Because a variety of protective gloves exist, consult glove manufacturer to determine the proper type for a specific operation.

RESPIRATORY PROTECTION: Avoid breathing vapor and/or mists. Wear NIOSH/MSHA - approved equipment. Determine the appropriate type by consulting the respirator manufacturer. High airborne concentrations may necessitate the use of self - contained breathing apparatus (SCBA) or a supplied air respirator. Respiratory protection programs must be in compliance with 29 CFR 1910.134.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance.....:	Red	Odor.....:	Strong
Physical State...:	Liquid	Solubility.....:	Insoluble
pH.....:	Not Applicable	Boiling Point.....:	Not Established
Vapor Pressure.:	Not Established	Vapor Density.....:	Approximately 5
Evaporation Rt..:	Not Established	VOC Material.....:	719 g/l
Specific Gravity.:	0.81	% Non - Vol(w/w)..:	89%

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under normal conditions of use.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: High temperatures.

INCOMPATIBILITY WITH OTHER MATERIALS: Oxidizers.

11. TOXICITY INFORMATION

COMPONENTS:

Titanate ester:				
	Oral LD50	Rat	11,000	mg/kg
	Dermal LD50	Rabbit	> 16	ml/Kg
	Inhalation LC50	Rat	7.78	mg/L/4 - hours
Methyl Alcohol				
	Oral LD50	Rat	5,628	mg/kg
	Inhalation LC50	Rat	64,000	ppm
Isopropanol				
	Oral LD50	Mouse	3600	mg/kg
	Oral LD50	Rabbit	6410	mg/kg
	Oral LD50	Rat	5045	mg/kg
	Dermal LD50	Rabbit	12800	mg/kg

12. ECOLOGICAL INFORMATION

No data are available on this product.

13. DISPOSAL CONSIDERATIONS

DISPOSAL: When a decision is made to discard this material as supplied, it meets RCRA's characteristic definition of ignitability.

GENERAL STATEMENTS: Federal regulations may apply to empty container. State and/or local regulations may be different.

GENERAL RECOMMENDATIONS: Of the methods of disposal currently available, it is recommended that an alternative be selected according to the following order of preference, based upon environmental acceptability: (1) recycle or rework, if feasible; (2) incinerate at an authorized facility; or (3) treat at an acceptable waste treatment facility.

SPECIAL INSTRUCTIONS: Be sure to contact the appropriate government environmental agencies if further guidance is required.

14. TRANSPORT INFORMATION

Weight (lb.)	Shipping Name	49 CFR	IAYA	IMO
	ETHANOL SOLUTIONS	Y	Y	Y

DOT Label.....: Flammable Liquid
Hazard Class.....: 3 (IATA/49CFR) 3.2 (IMO)
Packing Group.....: II

UN/NA Id Num....: UN 1170
USPS Mailability..: No

15. REGULATORY INFORMATION

FEDERAL:

This product is considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

SARA Title III - Section 311/312 - Hazard Categories:
Y - Fire Hazard
N - Sudden Release of Pressure Hazard
N - Reactivity Hazard
Y - Immediate (acute) Health Hazard
Y - Delayed (chronic) Health Hazard

Ozone - Depleting Chemicals - No regulated ingredients.

SARA Section 302
(TPQ) - No regulated ingredients.

SARA Section 313 Toxic Chemicals - No regulated ingredients.

CHEMICAL LISTING - Listed on the following Country's Chemical Inventories:

United States Toxic Substance Control Act
Chemical component(s) in this product are on the section 8(b) Chemical Substance Inventory List (40 CFR 710).

STATE RIGHT - TO - KNOW:

Pennsylvania - New Jersey R - T - K

Reagent Alcohol	64 – 17 - 5	70 - 90
Titanate ester	Proprietary	5 - 10
Methyl Alcohol	67 – 56 - 1	1 - 5
Isopropyl Alcohol	67 – 63 - 0	1 - 5
Non - hazardous trade secret ingredient(s)	Proprietary	Balance

California - California Proposition 65 – This product contains Reagent alcohol, a chemical known to the state of California to cause birth defects or other reproductive harm.

New Jersey Trade Secret Registry Number: 346515 - 5227P

Florida -

Reagent Alcohol	64 – 17 - 5	70 - 90
Methyl Alcohol	67 – 56 - 1	1 - 5
Isopropyl Alcohol	67 – 63 - 0	1 - 5

CONEG - No data available.

CANADA:

CEPA - NPRI - No regulated ingredients.

Canadian Chemical Inventory

Domestic Substance List
Listed - NDSL.

WHMIS – B2, D2B

16. OTHER INFORMATION

USER RESPONSIBILITY: A bulletin such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions - in addition to those described herein - are required. Any health hazard and safety information herein should be passed on to your customers or employees, as the case may be.

DISCLAIMER OF LIABILITY: The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of suitability of the chemical is the sole responsibility of the user. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or any other nature are made thereunder with respect to the information contained herein or the chemical to which the information refers. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.

End of Material Safety Data Sheet

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☐ REVISED 1 Page ____ of ____ 2

FACILITY ID# 30035 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: MATERIAL STORAGE AREA 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # G2 → G7 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: Polysulfide Sealant | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☒ No 11 * If EPCRA see instructions

COMMON NAME: AC-730 Class RV Base 9 | An EHS Chemical ☐ Yes ☒ No 12 *If EHS is "Yes", all amounts must be LBS

CAS # 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☐ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☒ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH 18

AVERAGE DAILY AMOUNT: 15 19 | MAXIMUM DAILY AMOUNT: 200 20 | ANNUAL WASTE AMOUNT: 15 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET ☒ c. POUNDS ☐ d. TONS 23 *If EHS, amount must be in pounds. | DAYS ON SITE: 365 DAYS 24 | LARGEST CONTAINER: 50 Gallon Drum 25

STORAGE CONTAINER (Check all that apply) 26

☐ a. ABOVEGROUND TANK	☐ e. PLASTIC DRUM	☐ i. VAT	☐ m CYLINDER	☐ q. TANK WAGON
☐ b. UNDERGROUND TANK	☐ f. NONMETALLIC DRUM	☐ i. FIBER DRUM	☐ n. GLASS CONTAINER	☐ r. RAIL CAR
☐ c. TANK INSIDE BLDG	☒ g. METAL CONTAINER	☐ i. BAG(S)	☐ o PLASTIC CONTAINER	☐ s. TOTE BIN
☐ d STEEL DRUM	☐ h. CARBOY	☐ i. BOX(S)	☐ p. IN MACH OR EQUIP	☐ i. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	25-30 29	Toluene 30	☐ Yes ☐ No 31	108-88-3 32
2	10-15 29	Calcium Carbonate 30	☐ Yes ☐ No 31	471-34-1 32
3	1-5 29	Zinc Salt 30	☐ Yes ☐ No 31	Proprietary 32
4	29	30	☐ Yes ☐ No 31	32
5	29	30	☐ Yes ☐ No 31	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

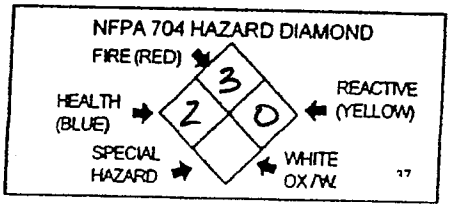
UNDOT # UN 1866 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS 3(IATA/CFR49) 3.2(IMO) 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 37



MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Material Safety Data Sheet
AC-® 730 Class RV Base

MSDS No: 37309-01
Effective: 01/27/09
Supercedes: 05/13/05

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

SIN #834-100

Product ID: AC-® 730 Class RV Base
Generic Description: Polysulfide sealant
Product Use: Aircraft sealant

For information, contact:
Advanced Chemistry & Technology
7341 Anaconda Avenue
Garden Grove, CA 92841-2921
714 - 373 - 2837

ChemTrec Emergency
1 - 800 - 424 - 9300

HAZARD RATINGS		
	HMIS	NFPA
Health	2*	2
Fire	3	3
Reactivity	0	0
	* = Chronic	

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMMON NAME	CAS #	Approximate % (w/w)
Toluene	108 – 88 – 3	25 – 30
Calcium carbonate	471 – 34 – 1	10 – 15
Zinc salt	Proprietary	1 – 5
Non-hazardous and other ingredients below reportable levels	Proprietary	Balance

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: FLAMMABLE LIQUID AND VAPOR. INHALATION MAY CAUSE DIZZINESS, HEADACHE AND INCOORDINATION. INGESTION CAN CAUSE DIZZINESS, FAINTNESS, HEADACHE AND LOSS OF COORDINATION. MAY CAUSE RESPIRATORY TRACT IRRITATION. MAY CAUSE DIGESTIVE TRACT IRRITATION. INGESTION MAY CAUSE NAUSEA, VOMITING, PAIN, UPSET STOMACH, DIARRHEA. INHALATION MAY CAUSE NAUSEA, VOMITING, UPSET STOMACH. MAY CAUSE EYE IRRITATION. MAY CAUSE SKIN IRRITATION. PROLONGED OR REPEATED CONTACT MAY DRY SKIN AND CAUSE IRRITATION. See sections 3, 5, & 6.

PRIMARY ROUTES OF EXPOSURE: Eye. Skin. Inhalation (breathing).

EYE CONTACT: May cause slight to mild irritation. May cause corneal opacity (clouding of the eye surface). Can cause burning sensation, tearing, and redness.

SKIN CONTACT: May cause slight to mild irritation. Prolonged or repeated contact may dry the skin and lead to irritation (i.e. dermatitis).

INHALATION (Breathing): Irritating to the eyes, nose, and respiratory tract. Can cause dizziness, headaches, and loss of coordination. Nausea, vomiting, and stomach upset can occur.

INGESTION (Swallowing): Irritating to the mouth, throat, and stomach. May cause nausea, vomiting, pain, and stomach upset (e.g., diarrhea). Can cause dizziness, faintness, headache, and loss of coordination.

TARGET ORGANS/CHRONIC EFFECTS: Liver. Kidneys. Blood and/or blood-forming organs. Lungs and respiratory system. Eyes. Skin.

CONDITIONS AGGRAVATED BY EXPOSURE: Liver. Kidneys. Blood and/or blood-forming organs. Lungs and respiratory system. Skin.

CARCINOGENICITY:

	ACGIH	IARC	NTP	OSHA
Calcium carbonate	No	No	No	No
Toluene	No	No	No	No
Zinc salt	No	No	No	No

4. FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Get immediate medical attention if irritation persists.

SKIN CONTACT: Immediately flush with water. Remove contaminated clothing and shoes. Get medical attention if irritation persists. Professionally wash clothing and shoes before re-use.

INHALATION (Breathing): Remove to fresh air. If symptoms develop, seek immediate medical attention. If not breathing, give artificial respiration.

INGESTION (Swallowing): Seek medical attention. Immediately induce vomiting, as directed by medical personnel. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIANS: Treatment should be directed at preventing absorption, administering to symptoms (if they occur), and providing supportive therapy.

5. FIRE FIGHTING METHODS

Flash Point.....: 40°F(4°C) Method.....: Setaflash Closed Cup
Explosive Lmts: LEL(%) Not Established UEL(%) Not Established
Autoignition....: Not Established

HAZARDOUS COMBUSTION AND DECOMPOSITION PRODUCTS: Smoke, soot, and toxic/irritating fumes (i.e., carbon dioxide, carbon monoxide, etc.). Formaldehyde and/or other aldehydes. Oxides of sulfur. Hydrogen sulfide.

FIRE AND EXPLOSION HAZARDS: High temperatures can cause sealed containers to rupture due to a build up of internal pressure. Cool with water. Vapors can travel to a source of ignition (flame, electric motor, hot surface, cigarette, etc.) and flashback. During a fire, irritating and highly toxic gases may be generated during combustion or decomposition.

EXTINGUISHING MEDIA: SMALL FIRES: Dry chemical, carbon dioxide, halon, water spray, or foam. LARGE FIRES: Water spray, fog, or alcohol foam.

FIRE FIGHTING PROCEDURES/EQUIPMENT: Fire fighters and others who may be exposed to the products of combustion should be equipped with NIOSH-approved positive pressure self-contained breathing apparatus (SCBA) and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

EVACUATION: Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Eliminate all sources of ignition.

CONTAINMENT: Safely stop discharge. Contain material, as necessary, with a dike or barrier. Stop material from contaminating soil, or from entering sewers or bodies of water.

CLEAN-UP/PERSONAL PROTECTION EQUIPMENT: Appropriate safety measures and protective equipment should be used. Use supplied air respirator or self-contained breathing apparatus in enclosed spaces or if airborne exposure limits can be exceeded. See Section 8.

COLLECTION AND DISPOSAL: Stop discharge, if safe to do so. Use proper protective equipment. Cover spills with absorbent clay or sawdust and place in closed chemical waste containers. Dispose of according to applicable local, state and federal regulations.

REPORTING: Spills of this material in excess of a component's RQ must be reported to the National Response Center (1-800-424-8802) and to the appropriate state and local emergency response organizations.

Toluene RQ = 1000 LB

7. HANDLING AND STORAGE

STORAGE CONDITIONS: Store in cool, dry, well ventilated area away from heat, ignition sources, and direct sunlight. Keep containers tightly closed. **WARNING!** Hot organic chemical vapors or mists can suddenly and without warning combust when mixed with air. Ignition can occur at typical elevated temperature process conditions. Any use in such processes should be evaluated thoroughly to assure safe operating conditions.

TRANSFER: Containers should be supported and grounded before opening, dispensing, mixing pouring, and emptying. Open with non-sparking tools. If container is warm, open bung slowly to release internal pressure.

PERSONAL HYGIENE: Wash thoroughly after handling, especially before eating, drinking, smoking, and using restroom facilities. Wash contaminated goggles face-shield, and gloves. Professionally launder contaminated clothing before re-use.

EMPTY CONTAINER PRECAUTIONS: **Attention!** This container hazardous when empty. Follow label warnings even after container is emptied since empty since container may retain product residues. Do not use heat, sparks, open flames, torches, cigarettes on or near empty container. Do not re-use empty container without professional cleaning for food, clothing, or products for human or animal consumption or where skin contact can occur.

SPECIAL INSTRUCTIONS: See container and/or technical data sheet for instructions on use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE GUIDELINES:

ACGIH - TLV		
Calcium carbonate	10	mg/M^3 Total dust
Toluene	50	Ppm (skin)
OSHA - PEL		
Calcium carbonate	5	mg/M^3 Resp. dust
Toluene	100 ppm	
OSHA - STEL		
Toluene	150	ppm

ENGINEERING CONTROLS/VENTILATION: Local exhaust ventilation is recommended when vapors, mists, or dusts can be released in excess of established airborne exposure limits (TLVs or PELs).

EYE PROTECTION: Wear chemical splash goggles or safety glasses with side shields. An eye wash facility should be readily available.

SKIN PROTECTION: Wear rubber boots and apron, protective clothing, and impervious gloves. Because a variety of protective glovers exist, consult glove manufacturer to determine the proper type for a specific operation.

RESPIRATORY PROTECTION: Avoid breathing vapor and/or mists. Wear NIOSH/MSHA-approved equipment. Determine the appropriate type by consulting the respirator manufacturer. High airborne concentrations may necessitate the use of self-contained breathing apparatus (SCBA) or a supplied air respirator. Respiratory protection programs must be in compliance with 29 CFR 1910.134.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Beige	Odor:	Mercaptan
Physical State:	Liquid	Solubility:	Insoluble
pH:	Not Applicable	Vapor Pressure:	Not Applicable
Vapor Density:	Not Applicable	Evaporation Rate:	Not Applicable
VOC Material:	Approximately 250 g/l (2.10 lbs./gal)	Specific Gravity:	1.31
VOC Mixed Material:	Approximately 244 g/l (2.05 lbs./gal)	%Non-Vol (w/w):	84

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under normal conditions of use.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: High temperatures.

INCOMPATIBILITY WITH OTHER MATERIALS: Oxidizers. Reducers. Acids. Strong bases.

11. TOXICITY INFORMATION

COMPONENTS:

Calcium carbonate:
Repeated exposure to dusts can lead to particulate deposition in the lungs (i.e., pneumoconiosis).

Toluene:

Oral LD50	Rat	5,000	mg/kg
Dermal LD50	Rabbit	12,124	mg/kg
Inhalation LC50	Mouse	5,320	ppm/8-Hours

Zinc salt:
May cause transient irritation to eyes and/or skin. Zinc salts may cause liver and kidney damage.

12. ECOLOGICAL INFORMATION

No data are available on this product.

13. DISPOSAL CONSIDERATIONS

DISPOSAL: When a decision is made to discard this material as supplied, it meets RCRA's characteristic definition of ignitagility.

GENERAL STATEMENTS: Federal regulations may apply to empty container. State and/or local regulations may be different.

GENERAL RECOMMENDATIONS: Of the methods of disposal currently available, it is recommended that an alternative be selected according to the following order of preference, based upon environmental acceptability: (1) recycle or rework, if feasible; (2) incinerate at an authorized facility; or (3) treat at an acceptable waste treatment facility.

SPECIAL INSTRUCTIONS: Be sure to contact the appropriate government environmental agencies if further guidance is required.

14. TRANSPORT INFORMATION

Weight (lb.)	Shipping Name	49 CFR	IATA	IMO
	Resin solution	Y	Y	Y

DOT Label.....: Flammable Liquid
Hazard Class.....: 3 (IATA/49CFR) 3.2 (IMO)
Packing Group....: II
UN/NA Id Num..: UN 1866
USPS Mailability: No
For a two compartment container that contains parts A and B. See above information.

15. REGULATORY INFORMATION

FEDERAL:
This product is considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

SARA Title III - Section 311/312 - Hazard Categories:
Y - Fire Hazard
N - Sudden Release of Pressure Hazard
N - Reactivity Hazard
Y - Immediate (acute) Health Hazard
Y - Delayed (chronic) Health Hazard

Ozone-Depleting Chemicals - No regulated ingredients.

SARA Section 302 Extremely Hazardous Mat – None

SARA Section 313 Toxic Chemicals
Zinc salt
Zinc compounds

TSCA Section 12(b) Export Notification: None

STATE RIGHT-TO-KNOW:

Pennsylvania - New Jersey R-T-K

Calcium carbonate	471 - 34 - 1	10 – 15
Toluene	108-88-3	25 – 30
Environmental Hazard.		
Zinc salt	Proprietary	1 – 5
Environmental and Special Hazard.		
Non-hazardous trade secret ingredient(s)	Proprietary	Balance

California - California Proposition 65
WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

Formaldehyde	50 - 00 - 0	< 0.01*
Cancer Hazard		

* Trace = present at less than 0.01 percent

CONEG - No data available.

CANADA:
This is a "controlled product" under the Canadian Workplace Hazardous Materials Information System (WHMIS).
Class B Division 2
Class D Division 2 Sub-division A
Class D Division 2 Sub-division B

CEPA - NPRI
Toluene
Zinc salt
Zinc compounds

16. OTHER INFORMATION

USER RESPONSIBILITY: A bulletin such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions - in addition to those described herein - are required. Any health hazard and safety information herein should be passed on to your customers or employees, as the case may be.

DISCLAIMER OF LIABILITY: The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of suitability of the chemical is the sole responsibility of the user. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or any other nature are made hereunder with respect to the information contained herein or the chemical to which the information refers. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.

End of Material Safety Data Sheet

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☐ REVISED 1 Page ____ of ____ 2

FACILITY ID# 30035 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: MATERIAL STORAGE AREA 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # G2 → G7 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: Polysulfide Sealant | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☒ No 11 (* If EPCRA see instructions)

COMMON NAME: AC-730 Class C Base 9 | An EHS Chemical ☐ Yes ☒ No 12 (*If EHS is "Yes", all amounts must be LBS)

CAS # 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☑ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☑ d. ACUTE HEALTH ☑ e. CHRONIC HEALTH 18

AVERAGE DAILY AMOUNT 100 19 | MAXIMUM DAILY AMOUNT 5,000 20 | ANNUAL WASTE AMOUNT 250 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET ☒ c. POUNDS ☐ d. TONS 23 (*If EHS, amount must be in pounds.) | DAYS ON SITE 365 DAYS 24 | LARGEST CONTAINER 50 Gallon Drum 25

STORAGE CONTAINER (Check all that apply) 26
☐ a. ABOVEGROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BLDG ☐ d STEEL DRUM
☐ e. PLASTIC DRUM ☒ f. NONMETALLIC DRUM ☐ g. METAL CONTAINER ☐ h. CARBOY
☐ i. VAT ☐ j. FIBER DRUM ☐ k. BAG(S) ☐ l. BOX(S)
☐ m CYLINDER ☐ n. GLASS CONTAINER ☐ o PLASTIC CONTAINER ☐ p. IN MACH OR EQUIP
☐ q. TANK WAGON ☐ r. RAIL CAR ☐ s. TOTE BIN ☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)		EHS		CAS #	
1	15-20 29	Calcium Carbonate	30	☐ Yes ☐ No	31	471-34-1	32
2	1-5 29	Toluene	30	☐ Yes ☐ No	31	108-88-3	32
3	1-5 29	Zinc Compound	30	☐ Yes ☐ No	31	Proprietary	32
4	29		30	☐ Yes ☐ No	31		32
5	29		30	☐ Yes ☐ No	31		32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

UNDOT # UN 1866 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS 3 (IATA/CFR49) 3.2 (IMO) 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 37
FIRE (RED) 3
HEALTH (BLUE) 1
REACTIVE (YELLOW) 0
SPECIAL HAZARD WHITE OX/W

MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Material Safety Data Sheet
AC-®730 Class C Base

MSDS No: 37303-07
Effective: 01/27/09
Supercedes: 09/20/04

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

SIN #834-100

Product ID: AC-730 Class C Base
Generic Description: Polysulfide sealant
Product Use: Aircraft sealant

For information, contact:
Advanced Chemistry & Technology
7341 Anaconda Avenue
Garden Grove, CA 92841-2921
714 - 373 - 2837

ChemTrec Emergency
1 - 800 - 424 - 9300

HAZARD RATINGS		
	HMIS	NFPA
Health	1*	1
Fire	3	3
Reactivity	0	0
	* = Chronic	

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMMON NAME	CAS #	Approximate % (w/w)
Calcium carbonate	471 – 34 – 1	15 – 20
Toluene	108 – 88 – 3	1 – 5
Zinc compound	Proprietary	1 – 5
Non-hazardous and other ingredients below reportable levels	Proprietary	Balance

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: FLAMMABLE LIQUID AND VAPOR. INHALATION MAY CAUSE DIZZINESS, HEADACHE AND INCOORDINATION. INGESTION CAN CAUSE DIZZINESS, FAINTNESS, HEADACHE AND LOSS OF COORDINATION. MAY CAUSE RESPIRATORY TRACT IRRITATION. MAY CAUSE DIGESTIVE TRACT IRRITATION. INGESTION MAY CAUSE NAUSEA, VOMITING, PAIN, UPSET STOMACH, DIARRHEA. INHALATION MAY CAUSE NAUSEA, VOMITING, UPSET STOMACH. MAY CAUSE EYE IRRITATION. MAY CAUSE SKIN IRRITATION. PROLONGED OR REPEATED CONTACT MAY DRY SKIN AND CAUSE IRRITATION. See sections 3, 5, & 6.

PRIMARY ROUTES OF EXPOSURE: Eye. Skin. Inhalation (breathing).

EYE CONTACT: May cause slight to mild irritation. May cause corneal opacity (clouding of the eye surface). Can cause burning sensation, tearing, and redness.

SKIN CONTACT: May cause slight to mild irritation. Prolonged or repeated contact may dry the skin and lead to irritation (i.e. dermatitis).

INHALATION (Breathing): Irritating to the eyes, nose, and respiratory tract. Can cause dizziness, headaches, and loss of coordination. Nausea, vomiting, and stomach upset can occur.

INGESTION (Swallowing): Irritating to the mouth, throat, and stomach. May cause nausea, vomiting, pain, and stomach upset (e.g., diarrhea). Can cause dizziness, faintness, headache, and loss of coordination.

TARGET ORGANS/CHRONIC EFFECTS: Liver. Kidneys. Blood and/or blood-forming organs. Lungs and respiratory system. Eyes. Skin.

CONDITIONS AGGRAVATED BY EXPOSURE: Liver. Kidneys. Blood and/or blood-forming organs. Lungs and respiratory system. Skin.

CARCINOGENICITY:

	ACGIH	IARC	NTP	OSHA
Calcium carbonate	No	No	No	No
Toluene	No	No	No	No
Zinc compound	No	No	No	No

4. FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Get immediate medical attention if irritation persists.

SKIN CONTACT: Immediately flush with water. Remove contaminated clothing and shoes. Get medical attention if irritation persists. Professionally wash clothing and shoes before re-use.

INHALATION (Breathing): Remove to fresh air. If symptoms develop, seek immediate medical attention. If not breathing, give artificial respiration.

INGESTION (Swallowing): Seek medical attention. Immediately induce vomiting, as directed by medical personnel. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIANS: Treatment should be directed at preventing absorption, administering to symptoms (if they occur), and providing supportive therapy.

5. FIRE FIGHTING METHODS

Flash Point.....: 67°F (19.4°C) Method.....: Setaflash Closed Cup
Explosive Lmts: LEL(%) Not Established UEL(%) Not Established
Autoignition....: Not Established

HAZARDOUS COMBUSTION AND DECOMPOSITION PRODUCTS: Smoke, soot, and toxic/irritating fumes (i.e., carbon dioxide, carbon monoxide, etc.). Formaldehyde and/or other aldehydes. Oxides of sulfur. Hydrogen sulfide.

FIRE AND EXPLOSION HAZARDS: High temperatures can cause sealed containers to rupture due to a build up of internal pressure. Cool with water. Vapors can travel to a source of ignition (flame, electric motor, hot surface, cigarette, etc.) and flashback. During a fire, irritating and highly toxic gases may be generated during combustion or decomposition.

EXTINGUISHING MEDIA: SMALL FIRES: Dry chemical, carbon dioxide, halon, water spray, or foam. LARGE FIRES: Water spray, fog, or alcohol foam.

FIRE FIGHTING PROCEDURES/EQUIPMENT: Fire fighters and others who may be exposed to the products of combustion should be equipped with NIOSH-approved positive pressure self-contained breathing apparatus (SCBA) and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

EVACUATION: Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Eliminate all sources of ignition.

CONTAINMENT: Safely stop discharge. Contain material, as necessary, with a dike or barrier. Stop material from contaminating soil, or from entering sewers or bodies of water.

CLEAN-UP/PERSONAL PROTECTION EQUIPMENT: Appropriate safety measures and protective equipment should be used. Use supplied air respirator or self-contained breathing apparatus in enclosed spaces or if airborne exposure limits can be exceeded. See Section 8.

COLLECTION AND DISPOSAL: Stop discharge, if safe to do so. Use proper protective equipment. Cover spills with absorbent clay or sawdust and place in closed chemical waste containers. Dispose of according to applicable local, state and federal regulations.

REPORTING: Spills of this material in excess of a component's RQ must be reported to the National Response Center (1-800-424-8802) and to the appropriate state and local emergency response organizations.

Toluene RQ = 1000 LB

7. HANDLING AND STORAGE

STORAGE CONDITIONS: Store in cool, dry, well ventilated area away from heat, ignition sources, and direct sunlight. Keep containers tightly closed. **WARNING!** Hot organic chemical vapors or mists can suddenly and without warning combust when mixed with air. Ignition can occur at typical elevated temperature process conditions. Any use in such processes should be evaluated thoroughly to assure safe operating conditions.

TRANSFER: Containers should be supported and grounded before opening, dispensing, mixing pouring, and emptying. Open with non-sparking tools. If container is warm, open bung slowly to release internal pressure.

PERSONAL HYGIENE: Wash thoroughly after handling, especially before eating, drinking, smoking, and using restroom facilities. Wash contaminated goggles face-shield, and gloves. Professionally launder contaminated clothing before re-use.

EMPTY CONTAINER PRECAUTIONS: **Attention!** This container hazardous when empty. Follow label warnings even after container is emptied since empty since container may retain product residues. Do not use heat, sparks, open flames, torches, cigarettes on or near empty container. Do not re-use empty container without professional cleaning for food, clothing, or products for human or animal consumption or where skin contact can occur.

SPECIAL INSTRUCTIONS: See container and/or technical data sheet for instructions on use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE GUIDELINES:

ACGIH - TLV		
Calcium carbonate	10	mg/M^3 Total dust
Toluene	50	ppm
Zinc compound	10	mg/M^3 Total dust
OSHA - PEL		
Calcium carbonate	5	mg/M^3 Resp. dust
Toluene	100	ppm
Zinc compound	10	mg/M^3 Total dust
OSHA - STEL		
Toluene	150	ppm

ENGINEERING CONTROLS/VENTILATION: Local exhaust ventilation is recommended when vapors, mists, or dusts can be released in excess of established airborne exposure limits (TLVs or PELs).

EYE PROTECTION: Wear chemical splash goggles or safety glasses with side shields. An eye wash facility should be readily available.

SKIN PROTECTION: Wear rubber boots and apron, protective clothing, and impervious gloves. Because a variety of protective glovers exist, consult glove manufacturer to determine the proper type for a specific operation.

RESPIRATORY PROTECTION: Avoid breathing vapor and/or mists. Wear NIOSH/MSHA-approved equipment. Determine the appropriate type by consulting the respirator manufacturer. High airborne concentrations may necessitate the use of self-contained breathing apparatus (SCBA) or a supplied air respirator. Respiratory protection programs must be in compliance with 29 CFR 1910.134.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Beige	Odor:	Mercaptan
Physical State:	Liquid	Solubility:	Insoluble
PH:	Not Applicable	Vapor Pressure:	Not Applicable
Vapor Density:	Not Applicable	Evaporation Rt.:	Not Applicable
VOC Material:	Approximately 68 g/l (0.57 lbs./gal)	Specific Gravity:	1.41
%Non-Vol (w/w):	94		

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under normal conditions of use.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: High temperatures.

INCOMPATIBILITY WITH OTHER MATERIALS: Oxidizers. Reducers. Acids. Strong bases.

11. TOXICITY INFORMATION

COMPONENTS:

Calcium carbonate:
Repeated exposure to dusts can lead to particulate deposition in the lungs (i.e., pneumoconiosis).

Toluene:

Oral LD50	Rat	5,000	mg/kg
Dermal LD50	Rabbit	12,124	mg/kg
Inhalation LC50	Mouse	5,320	ppm/8-Hours

Zinc compound:
May cause transient irritation to eyes and/or skin.

12. ECOLOGICAL INFORMATION

No data are available on this product.

13. DISPOSAL CONSIDERATIONS

DISPOSAL: When a decision is made to discard this material as supplied, it meets RCRA's characteristic definition of ignitagility.

GENERAL STATEMENTS: Federal regulations may apply to empty container. State and/or local regulations may be different.

GENERAL RECOMMENDATIONS: Of the methods of disposal currently available, it is recommended that an alternative be selected according to the following order of preference, based upon environmental acceptability: (1) recycle or rework, if feasible; (2) incinerate at an authorized facility; or (3) treat at an acceptable waste treatment facility.

SPECIAL INSTRUCTIONS: Be sure to contact the appropriate government environmental agencies if further guidance is required.

14. TRANSPORT INFORMATION

Weight (lb.)	Shipping Name	49 CFR	IATA	IMO
	Resin solution	Y	Y	Y

DOT Label: Flammable Liquid
Hazard Class: 3 (IATA/49CFR) 3.2 (IMO)
Packing Group: II
UN/NA Id Number: UN 1866
USPS Mailability: No
For a two-compartment container that contains parts A and B. See above information.

15. REGULATORY INFORMATION

FEDERAL:
This product is considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

SARA Title III - Section 311/312 - Hazard Categories:
Y - Fire Hazard
N - Sudden Release of Pressure Hazard
N - Reactivity Hazard
Y - Immediate (acute) Health Hazard
Y - Delayed (chronic) Health Hazard

Ozone-Depleting Chemicals - No regulated ingredients.

SARA Section 302 Extremely Hazardous Mat

SARA Section 313 Toxic Chemicals
Toluene
Zinc compound
Zinc compounds

TSCA Section 8(d) Data Reporting Rule
Toluene

TSCA Section 12(b) Export Notification - None

STATE RIGHT-TO-KNOW:

Pennsylvania - New Jersey R-T-K

Calcium carbonate	471 - 34 - 1	10 – 20
Toluene	108-88-3	1 – 5
Environmental Hazard.		
Zinc compound	Proprietary	1 – 5
Environmental and Special Hazard.		
Non-hazardous trade secret ingredient(s)	Proprietary	Balance

California - California Proposition 65
WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

Formaldehyde	50 - 00 - 0	< 0.01*
Cancer Hazard		

* Trace = present at less than 0.01 percent

CONEG - No data available.

CANADA:
This is a "controlled product" under the Canadian Workplace Hazardous Materials Information System (WHMIS).
Class B Division 2
Class D Division 2 Sub-division A
Class D Division 2 Sub-division B

CEPA - NPRI
Toluene
Zinc compound
Zinc compounds

16. OTHER INFORMATION

USER RESPONSIBILITY: A bulletin such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions - in addition to those described herein - are required. Any health hazard and safety information herein should be passed on to your customers or employees, as the case may be.

DISCLAIMER OF LIABILITY: The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of suitability of the chemical is the sole responsibility of the user. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or any other nature are made hereunder with respect to the information contained herein or the chemical to which the information refers. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.

End of Material Safety Data Sheet

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☐ REVISED 1 Page ____ of ____ 2

FACILITY ID# 30035 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: MATERIAL STORAGE AREA 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # G2 → G7 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: Polysulfide Sealant | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☒ No 11 (* If EPCRA see instructions)

COMMON NAME: AC-635 Class A Base 9 | An EHS Chemical ☐ Yes ☒ No 12 (*If EHS is "Yes", all amounts must be LBS)

CAS # 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☑ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☑ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH 18

AVERAGE DAILY AMOUNT: 2 19 | MAXIMUM DAILY AMOUNT: 500 20 | ANNUAL WASTE AMOUNT: 10 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET 23 ☒ c. POUNDS ☐ d. TONS (*If EHS, amount must be in pounds.) | DAYS ON SITE: 365 DAYS 24 | LARGEST CONTAINER: 50 Gallon Drum 25

STORAGE CONTAINER (Check all that apply) 26

☐ a. ABOVEGROUND TANK	☐ e. PLASTIC DRUM	☐ i. VAT	☐ m CYLINDER	☐ q. TANK WAGON	
☐ b. UNDERGROUND TANK	☐ f. NONMETALLIC DRUM	☐ l. FIBER DRUM	☐ n. GLASS CONTAINER	☐ r. RAIL CAR	
☐ c. TANK INSIDE BLDG	☒ g. METAL CONTAINER	☐ l. BAG(S)	☐ o PLASTIC CONTAINER	☐ s. TOTE BIN	
☐ d STEEL DRUM	☐ h. CARBOY	☐ l. BOX(S)	☐ p. IN MACH OR EQUIP	☐ t. OTHER____	

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	15-20 29	Calcium Carbonate 30	☐ Yes ☐ No 31	471-34-1 32
2	5-10 29	Toluene 30	☐ Yes ☐ No 31	108-88-3 32
3	1-5 29	Calcium Chromate 30	☐ Yes ☐ No 31	3765-19-0 32
4	1-5 29	Strontium Chromate 30	☐ Yes ☐ No 31	7789-06-2 32
5	29	30	☐ Yes ☐ No 31	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

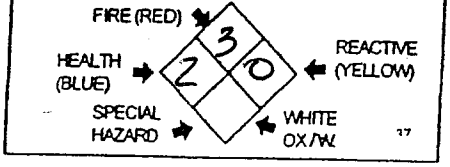
UNDOT # UN 1866 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS 3(IATA/CFR49) 3.3(IMO
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____
If EPCRA, Please Sign Here 36

NFPA 704 HAZARD DIAMOND 17



MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Material Safety Data Sheet
AC-®635 Class A Base

MSDS No: 36351-08
Effective: 03/16/09
Supersedes: 01/27/09

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

SIN #834-100

Product ID: AC-635 Class A Base
Generic Description: Polysulfide sealant
Product Use: Aircraft sealant

For information, contact:
Advanced Chemistry & Technology
7341 Anaconda Avenue
Garden Grove, CA 92841-2921
714 - 373 - 2837

ChemTrec Emergency
1 - 800 - 424 - 9300

HAZARD RATINGS		
	HMIS	NFPA
Health	2*	2
Fire	3	3
Reactivity	0	0
	* = Chronic	

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMMON NAME	CAS #	Approximate % (w/w)
Calcium carbonate	471-34-1	15 – 20
Toluene	108-88-3	5 – 10
Calcium chromate	13765 - 19 - 0	1 – 5
Strontium chromate	7789-06-2	1 – 5
Non-hazardous and other ingredients below reportable levels	Proprietary	Balance

3.HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: FLAMMABLE LIQUID AND VAPOR. MAY CAUSE ALLERGIC SKIN REACTION AND SENSITIZATION. CAUSES SEVERE EYE IRRITATION. CAUSES SEVERE SKIN IRRITATION. CAUSES SEVERE DIGESTIVE TRACT IRRITATION. INHALATION MAY CAUSE DIZZINESS, HEADACHE AND LOSS OF COORDINATION. INGESTION CAN CAUSE DIZZINESS, FAINTNESS, HEADACHE AND INCOORDINATION. MAY CAUSE RESPIRATORY TRACT IRRITATION. INGESTION MAY CAUSE NAUSEA, VOJMITING, PAIN, UPSET STOMACH, DIARRHEA. INHALATION MAY CAUSE NAUSEA, VOMITING, UPSET STOMACH. See sections 3, 5, & 6.

PRIMARY ROUTES OF EXPOSURE: Eye. Skin. Inhalation (breathing).

EYE CONTACT: Causes severe irritation. Can cause burning sensation, tearing, and redness.

SKIN CONTACT: Causes severe irritation. May be absorbed through the skin. May cause allergic skin reactions and sensitization.

INHALATION (Breathing): Irritating to the eyes, nose, and respiratory tract. Can cause dizziness, headaches, and loss of coordination. Nausea, vomiting, and stomach upset can occur.

INGESTION (Swallowing): Severely irritating to the mouth, throat, and stomach. May cause nausea, vomiting, pain, and stomach upset (e.g., diarrhea). Can cause dizziness, faintness, headache, and loss of coordination.

TARGET ORGANS/CHRONIC EFFECTS: Liver. Kidneys. Nervous system. Eyes. Skin.

CONDITIONS AGGRAVATED BY EXPOSURE: Liver. Kidneys., Nervous system. Blood and/or blood-forming organs. Lungs and respiratory system. Skin. Immune systems and/or specific chemical allergies..

CARCINOGENICITY:

	ACGIH	IARC	NTP	OSHA
Calcium carbonate	No	No	No	No
Toluene	No	No	No	No
Calcium chromate	A1	1	Yes	No
Strontium chromate	A1	1	Yes	No

4. FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Get immediate medical attention.

SKIN CONTACT: Immediately flush with plenty of water for at least 15 minutes. For large exposures use an emergency shower. Remove contaminated clothing and shoes. Get immediate medical attention. Professionally wash clothing and shoes before re-use.

INHALATION (Breathing): Remove to fresh air. If symptoms develop, seek immediate medical attention. If not breathing, give artificial respiration.

INGESTION (swallowing): Seek medical attention. Immediately induce vomiting, as directed by medical personnel. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIANS: Treatment should be directed at preventing absorption, administering to symptoms (if they occur), and providing supportive therapy.

5. FIRE FIGHTING METHODS

Flash Point:	62°F 16.6°C	Method:	Setaflash Closed Cup
Explosive Limits:	LEL (%) Not Determined	UEL(%)	Not Determined
Autoignition:	Not Determined		

HAZARDOUS COMBUSTION AND DECOMPOSITION PRODUCTS: Smoke, soot, and toxic/irritating fumes (i.e., carbon dioxide, carbon monoxide, etc.). Formaldehyde and/or other aldehydes. Oxides of sulfur. Hydrogen sulfide. Low molecular weight hydrocarbons.

FIRE AND EXPLOSION HAZARDS: High temperatures can cause sealed containers to rupture due to a build up of internal pressure. Cool with water. Vapors can travel to a source of ignition (flame, electric motor, hot surface, cigarette, etc. (and flash back. During a fire irritating and highly toxic gases may be generated during combustion or decomposition.

EXTINGUISHING MEDIA: SMALL FIRES: Dry chemical or carbon dioxide. LARGE FIRES: Water spray, fog, or foam.

FIRE FIGHTING PROCEDURES/EQUIPMENT: Fire fighters and others who may be exposed to the products of combustion should be equipped with NIOSH-approved positive pressure self-contained breathing apparatus (SCBA) and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

EVACUATION: Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Eliminate all sources of ignition.

CONTAINMENT: Safely stop discharge. Contain material, as necessary, with a dike or barrier. Stop material from contaminating soil, or from entering sewers or bodies of water.

CLEAN-UP/PERSONAL PROTECTION EQUIPMENT: Appropriate safety measures and protective equipment should be used. Use supplied air respirator or self-contained breathing apparatus in enclosed spaces or if airborne exposure limits can be exceeded. See Section 8.

COLLECTION AND DISPOSAL: Stop discharge, if safe to do so. Use proper protective equipment. Use non-sparking tools and/or explosion-proof equipment. Stop ignition sources. Cover spills with absorbent clay or sawdust and place in closed chemical waste containers. Dispose of according to applicable local, state and federal regulations.

REPORTING: Spills of this material in excess of a component's RQ must be reported to the National Response Center (1-800-424-8802) and to the appropriate state and local emergency response organizations.

Toluene RQ = 1000 LB
Calcium chromate RQ = 10 LB
Strontium chromate RQ = 10 LB

7. HANDLING AND STORAGE

STORAGE CONDITIONS: Store in cool, dry, well ventilated area away from heat, ignition sources, and direct sunlight. Keep containers tightly closed. **WARNING:** Hot organic chemical vapors or mists can suddenly and without warning combust when mixed with air. Ignition can occur at typical elevated temperature process conditions. Any use in such processes should be evaluated thoroughly to assure safe operating conditions.

TRANSFER: Containers should be supported and grounded before opening, dispensing, mixing, pouring, and emptying. Open with non-sparking tools. If container is warm, open bung slowly to release internal pressure.

PERSONAL HYGIENE: Wash thoroughly after handling, especially before eating, drinking, smoking, and using restroom facilities. Wash contaminated goggles face-shield, and gloves. Professionally launder contaminated clothing before re-use .

EMPTY CONTAINER PRECAUTIONS: **Attention!** This container hazardous when empty. Follow label warnings even after container is emptied since empty containers may retain product residues. Do not use heat, sparks, open flames, torches, cigarettes on or near empty container. Do not reuse empty container without professional cleaning for food, clothing, or products for human or animal consumption or where skin contact can occur.

8. EXPOSURE: CONTROL/PERSONAL PROTECTION

EXPOSURE GUIDELINES:

ACGIH - TLV		
Calcium carbonate	10	mg/M^3 Total dust
Toluene	50	ppm – Skin
Calcium chromate	0.01	mg/M^3
Strontium chromate	0.5	ug/M^3
OSHA - PEL		
Calcium carbonate	5	mg/M^3 Resp. dust
Toluene	100	ppm
Calcium chromate	0.1	mg/M^3-Ceiling
Strontium chromate	0.1	mg/M^3 Ceiling
Chromium (VI) insoluble cpds., as Cr		
OSHA - STEL		
Toluene	150	ppm

ENGINEERING CONTROLS/VENTILATION: Local exhaust ventilation is recommended when vapors, mists, or dusts can be released in excess of established airborne exposure limits (TLVs or PELs).

EYE PROTECTION: An eye wash facility should be readily available. Wear chemical splash goggles.

SKIN PROTECTION: Wear protective clothing, and appropriate impervious gloves. Because a variety of protective gloves exist, consult glove manufacturer to determine the proper type for a specific operation. An emergency shower should be readily available.

RESPIRATORY PROTECTION: Avoid breathing vapor and/or mists. Wear NIOSH/MSHA-approved equipment. Determine the appropriate type by consulting the respirator manufacturer. High airborne concentrations may necessitate the use of self-contained breathing apparatus (SCBA) or a supplied air respirator. Respiratory protection programs must be in compliance with 29 CFR 1910.134.

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Yellow	Odor:	Sulfide
Physical State:	Liquid	Solubility:	Insoluble
pH:	Not Applicable	VOC Base:	123 g/L (1.1 lbs./gal.)
VOC Material:	111 g/l (0.93 lb/gal)	Vapor density:	Heavier than air
Specific Gravity:	1.41	%Non-Vol.(w/w):	91

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under normal conditions of use.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: High temperatures.

INCOMPATIBILITY WITH OTHER MATERIALS: Oxidizers. Reducers. Strong bases. Acids.

11. TOXICITY INFORMATION

COMPONENTS:

Toluene:

Oral LD50	Rat	5,000	mg/kg
Dermal LD50	Rabbit	12,124	mg/kg
Inhalation LC50	Mouse	5,320	ppm/8-Hours

Calcium carbonate:
Repeated exposure to dusts can lead to particulate deposition in the lungs (i.e. pneumoconiosis).

Strontium chromate:
Can cause liver and kidney injury. Possible skin and respiratory sensitizer. Penetrating slow healing ulcers may occur after contact with non-intact skin or mucous membranes. Chromate dusts have been shown to cause lung and other cancers in humans and laboratory animals. The product has the strontium chromate fully encapsulated, so dusts are not anticipated.

Oral LD50	Rat	3,118	mg/kg

Calcium chromate:
Can cause liver and kidney injury. Penetrating slow healing ulcers may occur after contact with non-intact skin or mucous membranes. Chromate dusts have been shown to cause lung and other cancers in humans and laboratory animals. Possible skin and respiratory sensitizer. The calcium chromate is fully encapsulated so there is no dust.

12. ECOLOGICAL INFORMATION

No ecological data on the product itself is available.

The product must not be allowed to run into drains or waterways.

Ecotoxicity:

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

13. DISPOSAL CONSIDERATIONS

DISPOSAL: When a decision is made to discard this material as supplied, it meets RCRA's characteristic definition of ignitability.

GENERAL STATEMENTS: Federal regulations may apply to empty container. State and/or local regulations may be different.

GENERAL RECOMMENDATIONS: Of the methods of disposal currently available, it is recommended that an alternative be selected according to the following order of preference, based upon environmental acceptability: (l) recycle or rework, if feasible; (2) incinerate at an authorized facility; or (3) treat at an acceptable waste treatment facility.

SPECIAL INSTRUCTIONS: Be sure to contact the appropriate government environmental agencies if further guidance is required.

14. TRANSPORT INFORMATION

Weight (lb.)	Shipping Name	49 CFR	IATA	IMO
< 294	Resin solution Flammable	Y	Y	Y
>= 295	RQ Resin solution (calcium chromate, strontium chromate)	Y	Y	Y

DOT Label.....: Flammable Liquid
Hazard Class.....: 3 (IATA/49CFR) 3.3 (IMO)

UN/NA Id Num...: UN 1866
USPS Mailability: No

Packing Group.....: II

All the information in this section is for non-bulk packaging (119 gallons or less; 882 lbs. or less for solids).

15. REGULATORY INFOR5IATION

FEDERAL:

This product is considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

SARA Title III - Section 311/312 - Hazard Categories:

Y - Fire Hazard
N - Sudden Release of Pressure Hazard
N - Reactivity Hazard
Y - Immediate (acute) Health Hazard
Y - Delayed (chronic) Health Hazard

Ozone-Depleting Chemicals - No regulated ingredients.

SARA Section 302 Extremely Hazardous Mat - none

SARA Section 313 Toxic Chemicals
Toluene
Strontium chromate
Chromium compounds

TSCA Section 8(d) Data Reporting Rule
Toluene

STATE RIGHT-TO-KNOW:

Pennsylvania - New Jersey R - T - K

Calcium carbonate	471 - 34 - 1	15 – 20
Toluene	108 - 88 - 3	5 - 10
Environmental Hazard.		
Calcium chromate	13765 - 19 - 0	1 – 5
Strontium chromate	7789 - 06 - 2	1 – 5
Environmental and Special Hazard.		
Titanium Dioxide	13463 - 67 - 7	1 – 5
Non-hazardous trade secret ingredient(s)	Proprietary	Balance

California - California Proposition 65

WARNING: This product contains a chemical(s) known to the State of California to cause cancer and birth defects or other reproductive harm.

Toluene	108 - 88 - 3	10 – 20
Reproductive Hazard.		
Calcium chromate	13765 - 19 - 0	1 – 5
Strontium chromate	7789 - 06 - 2	1 – 5
Cancer Hazard.		
Formaldehyde	50 - 00 - 0	< 0.01
Cancer Hazard.		

* Trace = present at less than 0.01 percent.

CONEG - No data available.

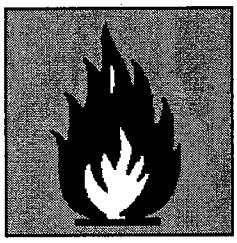
CANADA:

This is a "controlled product" under the Canadian Workplace Hazardous Materials Information System (WHMIS).
Class B Division 2 Class D Division 2 Sub-division A
Class D Division 2 Sub-division B

CEPA - NPRI
Toluene
Strontium chromate
Calcium chromate
Chromium compounds

European Union:
Preparation classification:

T F N


Toxic **Highly Flammable** **Dangerous for Environment**

Contains:
601-021-00-3 TOLUENE

Particular hazards associated with the preparation and safety recommendations:

R 11	Highly flammable.
R20/22	Harmful by inhalation and if swallowed.
R 45	May cause cancer.
R 52/53	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R 63	Possible risk of harm to the unborn child.
S 9	Keep container in a well-ventilated place.
S 16	Keep away from sources of ignition - no smoking.
S 25	Avoid contact with eyes.
S 36/37	Wear suitable protective clothing and gloves.
S 57	Use appropriate containment to avoid environmental contamination.
S 60	This material and its container must be disposed of as hazardous waste.
S 61	Avoid release to the environment. Refer to special instructions/Safety data sheets.

16. 0THER INFORMATION

USER RESPONSIBILITY: A bulletin such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions - in addition to those described herein - are required. Any health hazard and safety information herein should be passed on to your customers or employees, as the case may be.

DISCCAIMER OF LIABILITY: The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of suitability of the chemical is the sole responsibility of the user. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or any other nature are made hereunder with respect to the information contained herein or the chemical to which the information refers. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.

Material Safety Data Sheet
AC–®635 Class A Base

END OF MATERIAL SAFETY DATA SHEET

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☐ REVISED 1 Page ____ of ____ 2

FACILITY ID# 3 0 0 3 5 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: MATERIAL STORAGE AREA 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # G2 → G7 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: Polysulfide Sealant | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☒ No 11 (* If EPCRA see instructions)

COMMON NAME: AC-615 Class A Base 9 | An EHS Chemical ☐ Yes ☒ No 12 (*If EHS is "Yes", all amounts must be LBS)

CAS # 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☑ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☒ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH 18

AVERAGE DAILY AMOUNT 3 19 | MAXIMUM DAILY AMOUNT 250 20 | ANNUAL WASTE AMOUNT 50 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET 23 ☒ c. POUNDS ☐ d. TONS (*If EHS, amount must be in pounds.) | DAYS ON SITE 365 DAYS 24 | LARGEST CONTAINER 50 Gallon Drum 25

STORAGE CONTAINER (Check all that apply) 26
☐ a. ABOVEGROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BLDG ☐ d STEEL DRUM
☐ e. PLASTIC DRUM ☐ f. NONMETALLIC DRUM ☒ g. METAL CONTAINER ☐ h. CARBOY
☐ i. VAT ☐ j. FIBER DRUM ☐ k. BAG(S) ☐ l. BOX(S)
☐ m CYLINDER ☐ n. GLASS CONTAINER ☐ o PLASTIC CONTAINER ☐ p. IN MACH OR EQUIP
☐ q. TANK WAGON ☐ r. RAIL CAR ☐ s. TOTE BIN ☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)		EHS		CAS #	
1	25-35 29	Limestone	30	☐ Yes	☐ No 31	1317-65-3	32
2	10-20 29	Toluene	30	☐ Yes	☐ No 31	108-88-3	32
3	1-5 29	Strontium Chromate	30	☐ Yes	☐ No 31	7789-06-2	32
4	29		30	☐ Yes	☐ No 31		32
5	29		30	☐ Yes	☐ No 31		32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

UNDOT # UN 1866 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS 3 / IATA / (CFR49) 3.3 (IMO)
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 17
FIRE (RED) 3
HEALTH (BLUE) 2
REACTIVE (YELLOW) 0
SPECIAL HAZARD WHITE OX/W

MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Material Safety Data Sheet
AC-®615 Class A Base

MSDS No: 36151-06
Effective: 01/27/09
Supercedes: 12/17/08

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

SIN #834-100

Product ID: AC-615 Class A Base
Generic Description: Polysulfide sealant
Product Use: Access door sealant

For information, contact:
Advanced Chemistry & Technology
7341 Anaconda Avenue
Garden Grove, CA 92841-2921
714 - 373 - 2837

ChemTrec Emergency
1 - 800 - 424 - 9300

HAZARD RATINGS		
	HMIS	NFPA
Health	2*	2
Fire	3	3
Reactivity	0	0
	* = Chronic	

2. COMPOSITION/INFOMRATION ON INGREDIENTS

COMMON NAME	CAS#	Approximate % (w/w)
Limestone	1317 – 65 – 3	25 – 35
Toluene	108 – 88 – 3	10 – 20
Strontium chromate	7789 – 06 – 2	1 – 5
Non-hazardous and other ingredients below reportable levels	Proprietary	Balance

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: FLAMMABLE LIQUID AND VAPOR. MAY CAUSE ALLERGIC SKIN REACTION AND SENSITIZATION. CAUSES SEVERE EYE IRRITATION. CAUSES SEVERE SKIN IRRITATION. CAUSES SEVERE DIGESTIVE TRACT IRRITATION. INHALATION MAY CAUSE DIZZINESS, HEADACHE AND LOSS OF COORDINATION. INGESTION CAN CAUSE DIZZINESS, FAINTNESS, HEADACHE AND LOSS OF COORDINATION. MAY CAUSE RESPIRATORY TRACT IRRITATION. INGESTION MAY CAUSE NAUSEA, VOMITING, PAIN, UPSET STOMACH, DIARRHEA. INHALATION MAY CAUSE NAUSEA, VOMITING, UPSET STOMACH. PROLONGED OR REPEATED CONTACT MAY DRY SKIN AND CAUSE IRRITATION. See sections 3, 5, & 6.

PRIMARY ROUTES OF EXPOSURE: Eye. Skin. Inhalation (breathing).

EYE CONTACT: Causes severe irritation. Can cause burning sensation, tearing, and redness.

SKIN CONTACT: Causes severe irritation. Prolonged or repeated contact may dry the skin and lead to irritation (i.e. dermatitis). May be absorbed through the skin. May cause allergic skin reactions and sensitization.

INHALATION (Breathing): Irritating to the eyes, nose, and respiratory tract. Can cause dizziness, headaches, and loss of coordination. Nausea, vomiting, and stomach upset can occur.

INGESTION (Swallowing): Severely irritating to the mouth, throat, and stomach. May cause nausea, vomiting, pain, and stomach upset (e.g., diarrhea). Can cause dizziness, faintness, headache, and loss of coordination.

TARGET ORGANS/CHRONIC EFFECTS: Liver. Kidneys. Nervous system. Eyes. Skin.

CONDITIONS AGGRAVATED BY EXPOSURE: Liver. Kidneys. Nervous system. Blood and/or blood - forming organs. Lungs and respiratory system. Skin. Immune systems and/or specific chemical allergies.

CARCINOGENICITY:

	ACGIH	IARC	NTP	OSHA
Limestone	No	No	No	No
Toluene	No	No	No	No
Strontium chromate	A1	1	Yes	No
Aromatic carboxylic ester	No	No	No	No

4. FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Get immediate medical attention.

SKIN CONTACT: Immediately flush with plenty of water for at least 15 minutes. For large exposures use an emergency shower. Remove contaminated clothing and shoes. Get immediate medical attention. Professionally wash clothing before re - use.

INHALATION (Breathing): Remove to fresh air. If symptoms develop, seek immediate medical attention. If not breathing, give artificial respiration.

INGESTION (Swallowing): Seek medical attention. Immediately induce vomiting, as directed by medical personnel. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIANS: Treatment should be directed at preventing absorption, administering to symptoms (if they occur), and providing supportive therapy.

5. FIRE FIGHTING METHODS

Flash Point.....:	91F 32.7C			Method.....:	Setaflash Closed Cup
Explosive Lmts..:		LEL(%)	Not Determined	UEL(%)	Not Determined
Autoignition.....:	Not Determined				

HAZARDOUS COMBUSTION AND DECOMPOSITION PRODUCTS: Smoke, soot, and toxic/irritating fumes (i.e., carbon dioxide, carbon monoxide, etc.). Formaldehyde and/or other aldehydes. Oxides of sulfur. Hydrogen sulfide. Low molecular weight hydrocarbons.

FIRE AND EXPLOSION HAZARDS: High temperatures can cause sealed containers to rupture due to a build up of internal pressure. Cool with water. Vapors can travel to a source of ignition (flame, electric motor, hot surface, cigarette, etc.) and flash back. During a fire, irritating and highly toxic gases may be generated during combustion or decomposition.

EXTINGUISHING MEDIA: SMALL FIRES: Dry chemical or carbon dioxide. LARGE FIRES: water spray, fog, or foam.

FIRE FIGHTING PROCEDURES/EQUIPMENT: Fire fighters and others who may be exposed to the products of combustion should be equipped with NIOSH - approved positive pressure self - contained breathing apparatus (SCBA) and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

EVACUATION: Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Eliminate all sources of ignition.

CONTAINMENT: Safely stop discharge. Contain material, as necessary, with a dike or barrier. Stop material from contaminating soil, or from entering sewers or bodies of water.
CLEAN - UP/PERSONAL PROTECTION EQUIPMENT: Appropriate safety measures and protective equipment should be used. Use supplied air respirator or self - contained breathing apparatus in enclosed spaces or if airborne exposure limits can be exceeded. See Section 8.

COLLECTION AND DISPOSAL: Stop discharge, if safe to do so. Use proper protective equipment. Use non - sparking tools and/or explosion - proof equipment. Stop ignition sources. Cover spills with absorbent clay or sawdust and place in closed chemical waste containers. Dispose of according to applicable local, state and federal regulations.

REPORTING: Spills of this material in excess of a components' RQ must be reported to the National Response Center (1 - 800 - 424 - 8802) and to the appropriate state and local emergency response organizations.

Toluene	RQ = 1000 LB
Strontium chromate	RQ = 10 LB

7. HANDLING AND STORAGE

Storage Temperature < 120°F 48.8°C

STORAGE CONDITIONS: Store in cool, dry, well ventilated area away from heat, ignition sources, and direct sunlight. Keep containers tightly closed. **WARNING:** Hot organic chemical vapors or mists can suddenly and without warning combust when mixed with air. Ignition can occur at typical elevated temperature process conditions. Any use in such processes should be evaluated thoroughly to assure safe operating conditions.

TRANSFER: Containers should be supported and grounded before opening, dispensing, mixing, pouring, and emptying. Open with non - sparking tools. If container is warm, open bung slowly to release internal pressure.

PERSONAL HYGIENE: Wash thoroughly after handling, especially before eating, drinking, smoking, and using restroom facilities. Wash contaminated goggles face-shield, and gloves. Professionally launder contaminated clothing before re - use.

EMPTY CONTAINER PRECAUTIONS: **Attention!** This container hazardous when empty. Follow label warnings even after container is emptied since empty containers may retain product residues. Do not use heat, sparks, open flames, torches, cigarettes on or near empty container. Do not reuse empty container without professional cleaning for food, clothing, or products for human or animal consumption or where skin contact can occur.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE GUIDELINES:

ACGIH - TLV			
	Limestone	10	mg/M^3 Total dust
	Toluene	50	ppm - Skin
	Strontium chromate	0.5	ug/M^3
	Aromatic carboxylic ester	5	Mg/M^3
OSHA - PEL			
	Limestone	5	mg/M^3 Resp. dust
	Toluene	100	ppm
	Strontium chromate	0.1	mg/M^3 - Ceiling
		Chromium (VI) insoluble cpds., as Cr	
	Aromatic carboxylic ester	5	Mg/M^3
OSHA - STEL			
	Toluene	150	ppm

ENGINEERING CONTROLS/VENTILATION: Local exhaust ventilation is recommended when vapors, mists, or dusts can be released in excess of established airborne exposure limits (TLVs or PELs).

EYE PROTECTION: Wear chemical splash goggles and a full - face shield. An eye wash facility should be readily available.

SKIN PROTECTION: Wear protective clothing and appropriate impervious gloves. Because a variety of protective gloves exist, consult glove manufacturer to determine the proper type for a specific operation. Neoprene gloves. Butyl rubber gloves. An emergency shower should be readily available.

RESPIRATORY PROTECTION: Avoid breathing vapor and/or mists. Industrial hygiene consultation is recommended because airborne exposure levels vary depending on the nature of the operation performed. Wear NIOSH/MSHA - approved equipment. Determine the appropriate type by consulting the respirator manufacturer. High airborne concentrations may necessitate the use of self - contained breathing apparatus (SCBA) or a supplied air respirator. Respiratory protection programs must be in compliance with 29 CFR 1910.134.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance.....:	Red	Odor.....:	Sulfide
Physical State...:	Liquid	Solubility.....:	Insoluble
pH.....:	Not Applicable	VOC Material.....:	192 g/L (1.6 lbs./gal)
Specific Gravity.:	1.47	%Non - Vol (w/w):	87

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under normal conditions of use.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: High temperatures.

INCOMPATIBILITY WITH OTHER MATERIALS: Oxidizers. Reducers. Acids. Strong bases.

11. TOXICITY INFORMATION

COMPONENTS:

Limestone:
Repeated exposure to dusts can lead to particulate deposition in the lungs (i.e., pneumoconiosis). Can contain trace amounts of crystalline silica as an impurity.

Toluene:

Oral LD50	Rat	5,000	mg/kg
Dermal LD50	Rabbit	12,124	mg/kg
Inhalation LC50	Mouse	5,320	ppm/8 - Hours

Strontium chromate:
Can cause liver and kidney injury. Possible skin and respiratory sensitized. Penetrating slow healing ulcers may occur after contact with non - intact skin or mucous membranes. Chromate dusts have been shown to cause lung and other cancers in humans and laboratory animals.

Oral LD50	Rat	3,118	mg/kg

Aromatic carboxylic ester: DINP administered to rats caused liver enlargement and tumors of the liver and testes.

12. ECOLOGICAL INFORMATION

No data is available on this product.

13. DISPOSAL CONSIDERATIONS

DISPOSAL: When a decision is made to discard this material as supplied, it meets RCRA's characteristic definition of ignitability.

GENERAL STATEMENTS: Federal regulations may apply to empty container. State and/or local regulations may be different.

GENERAL RECOMMENDATIONS: Of the methods of disposal currently available, it is recommended that an alternative be selected according to the following order of preference, based upon environmental acceptability: (1) recycle or rework, if feasible; (2) incinerate at an authorized facility; or (3) treat at an acceptable waste treatment facility.

SPECIAL INSTRUCTIONS: Be sure to contact the appropriate government environmental agencies if further guidance is required.

14 TRANSPORT INFORMATION

Weight (lb.)	Shipping Name	49 CFR	IATA	IMO
< 286	Resin solution	Y	Y	Y
>= 286	RQ Resin solution (strontium chromate)	Y	Y	Y

DOT Label.....: Flammable Liquid
Hazard Class.....: 3 (IATA/49CFR) 3.3 (IMO)
Packing Group....: III

UN/NA Id Num. : UN 1866
USPS Mailability.....: No

All the information in this section is for non - bulk packaging (119 gallons or less: 882 lbs. or less for solids).

15. REGULATORY INFORMATION

FEDERAL:

This product is considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

SARA Title III - Section 311/312 - Hazard Categories:

Y- Fire Hazard
N- Sudden Release of Pressure Hazard
N- Reactivity Hazard
Y- Immediate (acute) Health Hazard
Y- Delayed (chronic) Health Hazard

Ozone - Depleting Chemicals - No regulated ingredients.

SARA Section 302 Extremely Hazardous Mat - No regulated ingredients.

SARA Section 313 Toxic Chemicals
Toluene
Strontium chromate
Chromium compounds

TSCA Section 8(d) Data Reporting Rule
Toluene

STATE RIGHT – TO - KNOW:
Pennsylvania - New Jersey R – T - K

Limestone	1317 – 65 – 3	25 – 35
Toluene	108 – 88 – 3	10 – 20
Environmental Hazard.		
Strontium chromate	7789 – 06 – 2	1 – 5
Aromatic carboxylic ester	Proprietary	1 – 5
Non-hazardous trade secret ingredient(s)	Proprietary	Balance

California - California Proposition 65
WARNING: This product contains a chemical(s) known to the State of California to cause cancer and birth defects or other reproductive harm.

Toluene	108 – 88 – 3	25 – 35
Reproductive Hazard.		
Strontium chromate	7789 – 06 – 2	10 – 20
Cancer Hazard.		
Quartz (crystalline silica)	14808 – 60 – 7	< 0.01*
Cancer Hazard.		

* Trace = present at less than 0.01 percent.

CONEG - No data available.

CANADA:
This is a "controlled product" under the Canadian Workplace Hazardous Materials Information System (WHMIS).
Class B Division 2
Class D Division 2 Sub - division A
Class D Division 2 Sub - division B

CEPA - NPRI
Toluene
Strontium chromate
Chromium compounds

16. OTHER INFORMATION

USER RESPONSIBILITY: A bulletin such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions - in addition to those described herein - are required. Any health hazard and safety information herein should be passed on to your customers or employees, as the case may be.

DISCLAIMER OF LIABILITY: The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of suitability of the chemical is the sole responsibility of the user. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or any other nature are made hereunder with respect to the information contained herein or the chemical to which the information refers. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.

End of Material Safety Data Sheet

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☐ REVISED 1 Page ____ of ____ 2

FACILITY ID# 30035 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION 4: MATERIAL STORAGE AREA

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # G2 → G7 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: Polysulfide Sealant | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☒ No 11 (* If EPCRA see instructions)

COMMON NAME 9: AC-360 Class A Base | An EHS Chemical ☐ Yes ☒ No 12 (*If EHS is "Yes", all amounts must be LBS)

CAS # 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only): ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only): ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17

FED HAZARD CATEGORIES: ☑ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE 18 ☑ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT 10 19 | MAXIMUM DAILY AMOUNT 2,000 20 | ANNUAL WASTE AMOUNT 150 21 | STATE WASTE CODE 22

UNITS: ☐ a. GALLONS ☐ b. CUBIC FEET 23 ☒ c. POUNDS ☐ d. TONS (*If EHS, amount must be in pounds.) | DAYS ON SITE 24: 365 DAYS | LARGEST CONTAINER 25: 50 Gallon Drum

STORAGE CONTAINER (Check all that apply) 26:
☐ a. ABOVEGROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BLDG ☐ d STEEL DRUM ☐ e. PLASTIC DRUM ☒ f. NONMETALLIC DRUM ☐ g. METAL CONTAINER ☐ h. CARBOY ☐ i. VAT ☐ l. FIBER DRUM ☐ l. BAG(S) ☐ l. BOX(S) ☐ m CYLINDER ☐ n. GLASS CONTAINER ☐ o PLASTIC CONTAINER ☐ p. IN MACH OR EQUIP ☐ q. TANK WAGON ☐ r. RAIL CAR ☐ s. TOTE BIN ☐ t. OTHER____

STORAGE PRESSURE 27: ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT

STORAGE TEMPERATURE 28: ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	10-15 29	Calcium Carbonate 30	☐ Yes ☐ No 31	471-34-1 32
2	10-15 29	Toluene 30	☐ Yes ☐ No 31	108-88-3 32
3	5-10 29	Titanium dioxide 30	☐ Yes ☐ No 31	13463-67-7 32
4	29	30	☐ Yes ☐ No 31	32
5	29	30	☐ Yes ☐ No 31	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

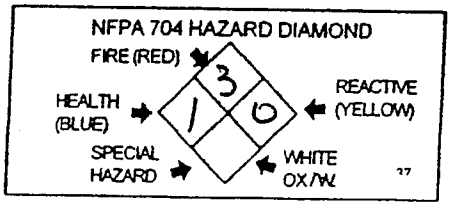
UNDOT # UN 1866 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS 3 (IATA/CFR) 3.3 (IMO) 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 37



MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Material Safety Data Sheet
AC–® 360 Class A Base

MSDS No: 33601-08
Effective: 01/26/09
Supercedes: 02/01/08

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

SIN #834-100

Product ID: AC-360 Class A Base
Generic Description: Polysulfide sealant
Product Use: Aircraft sealant

For information, contact:
Advanced Chemistry & Technology
7341 Anaconda Avenue
Garden Grove, CA 92841-2921
714 - 373 - 2837

ChemTrec Emergency
1 - 800 - 424 - 9300

HAZARD RATINGS		
	HMIS	NFPA
Health	1	1
Fire	3	3
Reactivity	0	0
	* = Chronic	

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMMON NAME	CAS #	Approximate % (w/w)
Calcium carbonate	471-34-1	10 – 15
Toluene	108-88-3	10 – 15
Titanium dioxide	13463-67-7	5 – 10
Non-hazardous and other ingredients below reportable levels	Proprietary	Balance

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: FLAMABLE LIQUID AND VAPOR. INHALATION MAY CAUSE DIZZINESS, HEADACHE AND LOSS OF COORDINATION. INGESTION CAN CAUSE DIZZINESS, FAINTNESS, HEADACHE AND LOSS OF COORDINATION. MAY CAUSE RESPIRATORY TRACT IRRITATION. MAY CAUSE DIGESTIVE TRACT IRRITATION. INGESTION MAY CAUSE NAUSEA, VOMITING, PAIN, UPSET STOMACH, DIARRHEA. INHALATION MAY CAUSE NAUSEA, VOMITING, UPSET STOMACH. MAY CAUSE EYE IRRITATION. MAY CAUSE SKIN IRRITATION. PROLONGED OR REPEATED CONTACT MAY DRY SKIN AND CAUSE IRRITATION. See sections 3, 5, & 6.

PRIMARY ROUTES OF EXPOSURE: Eye. Skin. Inhalation (breathing).
EYE CONTACT: May cause slight to mild irritation. Can cause burning sensation, tearing, and redness.

SKIN CONTACT: May cause slight to mild irritation. Prolonged or repeated contact may dry the skin and lead to irritation (i.e. dermatitis).

INHALATION (Breathing): Irritating to the eyes, nose, and respiratory tract. Inhalation can cause dizziness, headaches, and loss of coordination. Nausea, vomiting, and stomach upset can occur. Can cause anesthetic and/or narcotic effects.

INGESTION (Swallowing): Irritating to the mouth, throat, and stomach. May cause nausea, vomiting, pain, and stomach upset (e.g., diarrhea). Can cause dizziness, faintness, headache, and loss of coordination.

TARGET ORGANS/CHRONIC EFFECTS: Liver. Kidneys. Lungs and respiratory system. Eyes. Skin.

CONDITIONS AGGRAVATED BY EXPOSURE: Lungs and respiratory system. Skin.

CARCINOGENICITY:

	ACGIH	IARC	NTP	OSHA
Titanium Dioxide	No	No	No	No
Toluene	No	No	No	No
Calcium carbonate	No	No	No	No

4. FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation persists.

SKIN CONTACT: Immediately flush with water. Remove contaminated clothing and shoes. Get medical attention if irritation persists. Professionally wash clothing and shoes before re-use.

INHALATION (Breathing): Remove to fresh air. If symptoms develop, seek immediate medical attention. If not breathing, give artificial respiration.

INGESTION (Swallowing): Seek medical attention. Immediately induce vomiting, as directed by medical personnel. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIANS: Treatment should be directed at preventing absorption, administering to symptoms (if they occur), and providing supportive therapy.

5. FIRE FIGHTING METHODS

Flash Point.....:	41°F (5°C)	Method.....:	Setaflash Closed Cup
Explosive Lmts.....:	LEL(%) Not Determined		UEL(%) Not Determined
Autoignition.....:	Not Determined		

HAZARDOUS COMBUSTION AND DECOMPOSITION PRODUCTS: Smoke, soot, and toxic/irritating fumes (i.e., carbon dioxide, carbon monoxide, etc.). Formaldehyde and/or other aldehydes. Oxides of sulfur. Hydrogen sulfide.

FIRE AND EXPLOSION HAZARDS: High temperatures can cause sealed containers to rupture due to a build up of internal pressure. Cool with water. During a fire, irritating and highly toxic gases may be generated during combustion or decomposition.

EXTINGUISHING MEDIA: SMALL FIRES: Dry chemical, carbon dioxide, halon, water spray, or foam. LARGE FIRES: Water spray, fog, or alcohol foam.

FIRE FIGHTING PROCEDURES/EQUIPMENT: Fire fighters and others who may be exposed to the products of combustion should be equipped with NIOSH-approved positive pressure self-contained breathing apparatus (SCBA) and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

EVACUATION: Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Eliminate all sources of ignition.

CONTAINMENT: Safely stop discharge. Contain material, as necessary, with a dike or barrier. Stop material from contaminating soil, or from entering sewers or bodies of water.

CLEAN-UP/PERSONAL PROTECTION EQUIPMENT: Appropriate safety measures and protective equipment should be used. Use supplied air respirator or self-contained breathing apparatus in enclosed spaces or if airborne exposure limits can be exceeded. See Section 8.

COLLECTION AND DISPOSAL: Stop discharge, if safe to do so. Use proper protective equipment. Use non-sparking tools and/or explosion-proof equipment. Stop ignition sources. Cover spills with absorbent clay or sawdust and place in closed chemical waste containers. Dispose of according to applicable local, state and federal regulations.

REPORTING: Spills of this material in excess of a component's RQ must be reported to the National Response Center (1-800-424-8802) and to the appropriate state and local emergency response organizations.

Toluene	RQ = 1000 lb

7. HANDLING AND STORAGE

STORAGE CONDITIONS: Store in cool, dry, well ventilated area away from heat, ignition sources, and direct sunlight. Keep containers tightly closed. WARNING: Hot organic chemical vapors or mists can suddenly and without warning combust when mixed with air. Ignition can occur at typical elevated temperature process conditions. Any use in such processes should be evaluated thoroughly to assure safe operating conditions.

TRANSFER: Containers should be supported and grounded before opening, dispensing, mixing, pouring, and emptying. Open with non-sparking tools. If container is warm, open bung slowly to release internal pressure.

PERSONAL HYGIENE: Wash thoroughly after handling, especially before eating, drinking, smoking, and using restroom facilities. Wash contaminated goggles, face-shield, and gloves. Professionally launder contaminated clothing before re-use.

EMPTY CONTAINER PRECAUTIONS: Attention! This container hazardous when empty. Follow label warnings even after container is emptied since empty containers may retain product residues. Do not use heat, sparks, open flames, torches, cigarettes on or near empty container. Do not reuse empty container without professional cleaning for food, clothing, or products for human or animal consumption or where skin contact can occur.

SPECIAL INSTRUCTIONS: See container and/or technical data sheet for instructions on use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE GUIDELINES:

ACGIH - TLV		
Titanium Dioxide	10	mg/M^3
Toluene	50	ppm - Skin
Calcium carbonate	10	mg/M^3 Total dust
OSHA - PEL		
Titanium Dioxide	10	mg/M^3
Toluene	100	ppm
Calcium carbonate	5	mg/M^3 Resp. dust
OSHA - STEL		
Toluene	150	ppm

ENGINEERING CONTROLS/VENTILATION: Local exhaust ventilation is recommended when vapors, mists, or dusts can be released in excess of established airborne exposure limits (TLVs or PELs).

EYE PROTECTION: Wear chemical splash goggles. An eye wash facility should be readily available.

SKIN PROTECTION: Wear protective clothing and appropriate impervious gloves. Because a variety of protective gloves exist, consult glove manufacturer to determine the proper type for a specific operation. Neoprene gloves. Butyl rubber gloves. An emergency shower should be readily available.

RESPIRATORY PROTECTION: Avoid breathing vapor and/or mists. Wear NIOSH/MSHA-approved equipment. Determine the appropriate type by consulting the respirator manufacturer. High airborne concentrations may necessitate the use of self-contained breathing apparatus (SCBA) or a supplied air respirator. Respiratory protection programs must be in compliance with 29 CFR 1910.134. Organic vapor/mist respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance.....:	White Liquid	Odor:	Solvent
Physical State.....:	Liquid	Solubility:	Insoluble
pH.....:	Not Applicable	Vapor Pressure:	Not Established
Vapor Density.....:	Heavier than air	Evaporation Rate:	Not Established
VOC Material.....:	150 g/l (1.26 lbs/gal)	Specific Gravity:	1.30
%Non-Vol(w/w).....:	88%		

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under normal conditions of use.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: High temperatures.

INCOMPATIBILITY WITH OTHER MATERIALS: Oxidizers. Reducers. Acids. Strong bases.

11. TOXICITY INFORMATION

COMPONENTS:

Titanium Dioxide:
In a 2-year study in rats, an increase in benign and malignant lung tumors were observed at 250-mg/M^3 respirable dust level. This level is 50 times the current occupational exposure level and is not expected to correlate to human exposures.

Calcium carbonate:
Repeated exposure to dusts can lead to particulate deposition in the lungs (i.e., pneumoconiosis).

Toluene:

Oral LD50	Rat	5,000	mg/kg
Dermal LD50	Rabbit	12,124	mg/kg
Inhalation LC50	Mouse	5,320	ppm/8-Hours

12. ECOLOGICAL INFORMATION

No ecological data on the product itself is available.

The product must not be allowed to run into drains or waterways.

Ecotoxicity:

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

13. DISPOSAL CONSIDERATIONS

DISPOSAL: When a decision is made to discard this material as supplied, it meets RCRA's characteristic definition of ignitability.

GENERAL STATEMENTS: Federal regulations may apply to empty container. State and/or local regulations may be different.

GENERAL RECOMMENDATIONS: Of the methods of disposal currently available, it is recommended that an alternative be selected according to the following order of preference, based upon environmental acceptability: (1) recycle or rework, if feasible; (2) incinerate at an authorized facility; or (3) treat at an acceptable waste treatment facility.

SPECIAL INSTRUCTIONS: Be sure to contact the appropriate government environmental agencies if further guidance is required.

14. TRANSPORT INFORMATION

Weight (lb.)	Shipping Name	49 CFR	IATA	IMO
	Resin solution	Y	Y	Y

DOT Label.....: Flammable Liquid
Hazard Class...: 3 (IATA/49CFR) 3.3 (IMO)
UN/NA Id Num..: UN 1866
Packing Group.: II

All the information in this section is for non-bulk packaging (119 gallons or less; 882 lbs. or less for solids).

15. REGULATORY INFORMATION

FEDERAL:
This product is considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

SARA Title III - Section 311/312 - Hazard Categories:
Y - Fire Hazard
N - Sudden Release of Pressure Hazard
N - Reactivity Hazard
Y - Immediate (acute) Health Hazard
Y - Delayed (chronic) Health Hazard

Ozone-Depleting Chemicals - No regulated ingredients.

SARA Section 302 Extremely Hazardous Mat - No regulated ingredients.

SARA Section 313 Toxic Chemicals -
Toluene

TSCA Section 8(d) Data Reporting Rule
Toluene

TSCA Section 12(b) Export Notification None

CHEMICAL LISTING - Listed on the following Country's Chemical Inventories:

United States Toxic Substance Control Act
Chemical component(s) in this product are on the section 8(b) Chemical Substance Inventory List (40 CFR 710).

STATE RIGHT-TO-KNOW:

Pennsylvania - New Jersey R-T-K

Toluene	108-88-3	10 – 15
	Environmental Hazard.	
Titanium Dioxide	13463-67-7	5 – 10
Calcium carbonate	471-34-1	10 – 15
Non-hazardous trade secret ingredient(s)	Proprietary	Balance

California - California Proposition 65
WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

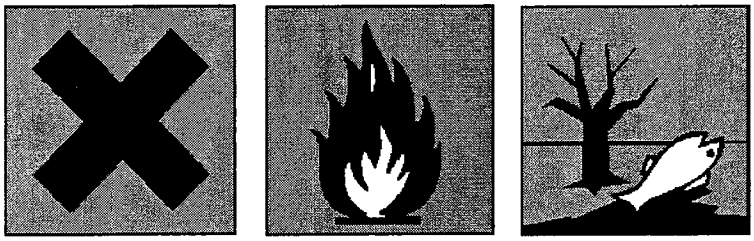
Formaldehyde	50-00-0	Trace *
Cancer Hazard.		

* Trace = present at less than 0.01 percent.

CONEG - No data available.

European Union:
Preparation classification:

Harmful **Highly Flammable** **Dangerous for Environment**



Contains:
601-021-00-3 TOLUENE
Particular hazards associated with the preparation and safety recommendations:

R 11	Highly flammable.
R20/22	Harmful by inhalation and if swallowed.
R 52/53	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R 63	Possible risk of harm to the unborn child.
S 9	Keep container in a well-ventilated place.
S 16	Keep away from sources of ignition - no smoking.
S25	Avoid contact with eyes.
S 36/37	Wear suitable protective clothing and gloves.
S 60	This material and its container must be disposed of as hazardous waste.
S 61	Avoid release to the environment. Refer to special instructions/Safety data sheets.

CANADA:
This is a "controlled product" under the Canadian Workplace Hazardous Materials Information System (WHMIS).
Class B Division 3 Class D Division 2 Sub-division B

CEPA - NPRI - No regulated ingredients.

16. OTHER INFORMATION

USER RESPONSIBILITY: A bulletin such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions - in addition to those described herein - are required. Any health hazard and safety information herein should be passed on to your customers or employees, as the case may be.

DISCLAIMER OF LIABILITY: The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of suitability of the chemical is the sole responsibility of the user. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or any other nature are made hereunder with respect to the information contained herein or the chemical to which the information refers. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.

End of Material Safety Data Sheet

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☐ REVISED 1 Page _____ of _____ 2

FACILITY ID# 3 0 0 3 5 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: MATERIAL STORAGE AREA 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # G2 → G7 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: Polysulfide Sealant | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☒ No 11 (* If EPCRA see instructions)

COMMON NAME: AC-350 Class C Base 9 | An EHS Chemical ☐ Yes ☒ No 12 (*If EHS is "Yes", all amounts must be LBS)

CAS # 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☑ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☑ d. ACUTE HEALTH ☑ e. CHRONIC HEALTH 18

AVERAGE DAILY AMOUNT: 100 19 | MAXIMUM DAILY AMOUNT: 7,500 20 | ANNUAL WASTE AMOUNT: 200 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET 23 ☒ c. POUNDS ☐ d. TONS (*If EHS, amount must be in pounds.) | DAYS ON SITE: 365 DAYS 24 | LARGEST CONTAINER: 50 Gallon Drum 25

STORAGE CONTAINER (Check all that apply) 26
☐ a. ABOVEGROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BLDG ☐ d STEEL DRUM ☐ e. PLASTIC DRUM ☐ f. NONMETALLIC DRUM ☒ g. METAL CONTAINER ☐ h. CARBOY ☐ i. VAT ☐ l. FIBER DRUM ☐ l. BAG(S) ☐ l. BOX(S) ☐ m CYLINDER ☐ n. GLASS CONTAINER ☐ o PLASTIC CONTAINER ☐ p. IN MACH OR EQUIP ☐ q. TANK WAGON ☐ r. RAIL CAR ☐ s. TOTE BIN ☐ t. OTHER_____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	15-20 29	Calcium carbonate 30	☐ Yes ☐ No 31	471-34-1 32
2	1-5 29	Toluene 30	☐ Yes ☐ No 31	108-88-3 32
3	29	30	☐ Yes ☐ No 31	32
4	29	30	☐ Yes ☐ No 31	32
5	29	30	☐ Yes ☐ No 31	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

UNDOT # UN 1866 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS 3 (IATA/CFR49) 3.3 (IMO) 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 37
FIRE (RED) 3
HEALTH (BLUE) 1
REACTIVE (YELLOW) 0
SPECIAL HAZARD WHITE OX/W

MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Material Safety Data Sheet
AC-® 350 Class C Base

MSDS No: 33503-07
Effective: 01/26/09
Supercedes: 07/27/05

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

SIN #834-100

Product ID: AC-350 Class C Base
Generic Description: Polysulfide sealant
Product Use: Aircraft Sealant

For information, contact:
Advanced Chemistry & Technology
7341 Anaconda Avenue
Garden Grove, CA 92841-2921
714 - 373 - 2837

ChemTrec Emergency
1 - 800 - 424 - 9300

HAZARD RATINGS		
	HMIS	NFPA
Health	1*	1
Fire	3	3
Reactivity	0	0
	* = Chronic	

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMMON NAME	CAS #	Approximate % (w/w)
Calcium carbonate	471-34-1	15 – 20
Toluene	108-88-3	1 – 5
Non-hazardous and other ingredients below reportable levels	Proprietary	Balance

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: INHALATION MAY CAUSE DIZZINESS, HEADACHE AND LOSS OF COORDINATION. INGESTION CAN CAUSE DIZZINESS, FAINTNESS, HEADACHE AND LOSS OF COORDINATION. MAY CAUSE MODERATE EYE IRRITATION. MAY CAUSE RESPIRATORY TRACT IRRITATION. MAY CAUSE DIGESTIVE TRACT IRRITATION. INGESTION MAY CAUSE NAUSEA, VOMITING, PAIN, UPSET STOMACH, DIARRHEA. INHALATION MAY CAUSE NAUSEA, VOMITING, UPSET STOMACH. MAY CAUSE SKIN IRRITATION. PROLONGED OR REPEATED CONTACT MAY DRY SKIN AND CAUSE IRRITATION. See sections 3, 5, & 6.

PRIMARY ROUTES OF EXPOSURE: Eye. Skin. Inhalation (breathing).

EYE CONTACT: May cause moderate irritation. May cause corneal opacity (clouding of the eye surface). Can cause burning sensation, tearing, and redness.

SKIN CONTACT: May cause slight to mild irritation. Prolonged or repeated contact may dry the skin and lead to irritation (i.e. dermatitis).

INHALATION (Breathing): Irritating to the eyes, nose, and respiratory tract. Can cause dizziness, headaches, and loss of coordination. Nausea, vomiting, and stomach upset can occur. Can cause anesthetic and/or narcotic effects.

INGESTION (Swallowing): Irritating to the mouth, throat, and stomach. May cause nausea, vomiting, pain, and stomach upset (e.g., diarrhea). Can cause dizziness, faintness, headache, and loss of coordination.

TARGET ORGANS/CHRONIC EFFECTS: Nervous system. Lungs and respiratory system. Eyes. Skin.

CONDITIONS AGGRAVATED BY EXPOSURE: Nervous system. Lungs and respiratory system. Skin.

CARCINOGENICITY:

	ACGIH	IARC	NTP	OSHA
Toluene	No	No	No	No
Calcium Carbonate	No	No	No	No

4. FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation persists.

SKIN CONTACT: Immediately flush with water. Remove contaminated clothing and shoes. Get medical attention if irritation persists. Professionally wash clothing and shoes before re-use.

INHALATION (Breathing): Remove to fresh air. If symptoms develop, seek immediate medical attention. If not breathing, give artificial respiration.

INGESTION (Swallowing): Seek medical attention. Immediately induce vomiting, as directed by medical personnel. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIANS: Treatment should be directed at preventing absorption, administering to symptoms (if they occur), and providing supportive therapy.

5. FIRE FIGHTING METHODS

Flash Point.....:	84°F (29°C)		Method.....:	Setaflash Closed Cup
Explosive Lmts.:	LEL(%)	Not Applicable	UEL(%)	Not Applicable
Autoignition.....:	Not Applicable			

HAZARDOUS COMBUSTION AND DECOMPOSITION PRODUCTS: Smoke, soot, and toxic/irritating fumes (i.e., carbon dioxide, carbon monoxide, etc.). Formaldehyde and/or other aldehydes. Oxides of nitrogen. Oxides of sulfur. Hydrogen sulfide.

FIRE AND EXPLOSION HAZARDS: High temperatures can cause sealed containers to rupture due to a build up of internal pressure. Cool with water. During a fire, irritating and highly toxic gases may be generated during combustion or decomposition.

EXTINGUISHING MEDIA: SMALL FIRES: Dry chemical, carbon dioxide, halon, water spray, or foam. LARGE FIRES: Water spray, fog, or alcohol foam.

FIRE FIGHTING PROCEDURES/EQUIPMENT: Fire fighters and others who may be exposed to the products of combustion should be equipped with NIOSH-approved positive pressure self-contained breathing apparatus (SCBA) and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

EVACUATION: Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Eliminate all sources of ignition.

CONTAINMENT: Safely stop discharge. Contain material, as necessary, with a dike or barrier. Stop material from contaminating soil, or from entering sewers or bodies of water.

CLEAN-UP/PERSONAL PROTECTION EQUIPMENT: Appropriate safety measures and protective equipment should be used. Use supplied air respirator or self-contained breathing apparatus in enclosed spaces or if airborne exposure limits can be exceeded. See Section 8.

COLLECTION AND DISPOSAL: Stop discharge, if safe to do so. Use proper protective equipment. Cover spills with absorbent clay or sawdust and place in closed chemical waste containers. Dispose of according to applicable local, state and federal regulations.

REPORTING: Spills of this material in excess of a component's RQ must be reported to the National Response Center (1-800-424-8802) and to the appropriate state and local emergency response organizations.

7. HANDLING AND STORAGE

Storage Temperature < 120F 48.8C

STORAGE CONDITIONS: Store in cool, dry, well-ventilated area away from heat, ignition sources, and direct sunlight. Keep containers tightly closed.

TRANSFER: No special precautions are needed. Follow good manufacturing and handling practices.

PERSONAL HYGIENE: Wash thoroughly after handling, especially before eating, drinking, smoking, and using restroom facilities. Wash contaminated goggles, face-shield, and gloves. Professionally launder contaminated clothing before re-use.

EMPTY CONTAINER PRECAUTIONS: Attention! This container can be hazardous when empty. Follow label warnings even after container is emptied since empty containers may retain product residues. Do not reuse empty container without professional cleaning for food, clothing, or products for human or animal consumption or where skin contact can occur.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE GUIDELINES:

ACGIH - TLV		
Toluene	50	ppm - Skin
Calcium carbonate	10	mg/M^3 Total dust
OSHA - PEL		
Toluene	100	ppm
Calcium carbonate	5	mg/M^3 Resp. dust
OSHA - STEL		
Toluene	150	ppm

ENGINEERING CONTROLS/VENTILATION: Local exhaust ventilation is recommended when vapors, mists, or dusts can be released in excess of established airborne exposure limits (TLVs or PELs).

EYE PROTECTION: Wear chemical splash goggles. An eye wash facility should be readily available.

SKIN PROTECTION: Wear protective clothing and appropriate, impervious gloves. Because a variety of protective gloves exist, consult glove manufacturer to determine the proper type for a specific operation.

RESPIRATORY PROTECTION: Avoid breathing vapor and/or mists. Wear NIOSH/MSHA-approved equipment. Determine the appropriate type by consulting the respirator manufacturer. High airborne concentrations may necessitate the use of self-contained breathing apparatus (SCBA) or a supplied air respirator. Respiratory protection programs must be in compliance with 29 CFR 1910.134.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	White	Odor:	Mercaptan
Physical State:	Paste	Solubility:	Insoluble
pH:	Not Applicable	Vapor Pressure:	Not Established
Vapor Density.:	Not Applicable	Evaporation Rate:	Not Applicable
VOC Material:	61 g/l (0.51 lbs./gal)	VOC Coating (Rule 1124):	61 g/l (0.51 lbs./gal)
Specific Gravity:	1.31	%Non-Volatile (w/w):	95

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under normal conditions of use.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: High temperatures.

INCOMPATIBILITY WITH OTHER MATERIALS: Oxidizers. Reducers. Acids. Strong bases. Hydrofluoric acid.

11. TOXICITY INFORMATION

COMPONENTS:
Calcium carbonate:
Repeated exposure to dusts can lead to particulate deposition in the lungs (i.e., pneumoconiosis).

Toluene:

Oral LD50	Rat		5,000	mg/kg
Dermal LD50	Rabbit		12,124	mg/kg
Inhalation LC50	Mouse	5,320	ppm/8-Hours	

12. ECOLOGICAL INFORMATION

No data are available on this product.

13. DISPOSAL CONSIDERATIONS

DISPOSAL: Dispose in accordance with all local, state, and federal regulations.

GENERAL STATEMENTS: Federal regulations may apply to empty container. State and/or local regulations may be different.

GENERAL RECOMMENDATIONS: Of the methods of disposal currently available, it is recommended that an alternative be selected according to the following order of preference, based upon environmental acceptability: (1) recycle or rework, if feasible; (2) incinerate at an authorized facility; or (3) treat at an acceptable waste treatment facility.

SPECIAL INSTRUCTIONS: Be sure to contact the appropriate government environmental agencies if further guidance is required.

14. TRANSPORT INFORMATION

Weight (lb.)	Shipping Name	49 CFR	IATA	IMO
	Resin solution	Y	Y	Y

DOT Label: Flammable Liquid
Hazard Class: 3 (IATA/49CFR) 3.3 (IMO)
Packaging Group: III
UN/NA Id Num....: UN 1866
USPS Mailability No
All the information in this section is for non-bulk packaging (119 gallons or less; 882 lbs. or less for solids).

15. REGULATORY INFORMATION

FEDERAL:
This product is considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

SARA Title III - Section 311/312 - Hazard Categories:

N - Fire Hazard
N - Sudden Release of Pressure Hazard
N - Reactivity Hazard
Y - Immediate (acute) Health Hazard
Y - Delayed (chronic) Health Hazard

Ozone-Depleting Chemicals - No regulated ingredients.

SARA Section 302 Extremely Hazardous Mat
Formaldehyde.

SARA Section 313 Toxic Chemicals
Toluene
Formaldehyde.

TSCA Section 8(d) Data Reporting Rule
Toluene

CHEMICAL LISTING - Listed on the following Country's Chemical Inventories:

United States Toxic Substance Control Act
Chemical component(s) in this product are on the section 8(b) Chemical Substance Inventory List (40 CFR 710).

STATE RIGHT-TO-KNOW:
Pennsylvania - New Jersey R-T-K

Toluene	108-88-3	1 – 5
Calcium carbonate	471-34-1	15 - 20
Environmental and Special Hazard.		
Non - hazardous trade secret ingredient(s)	Proprietary	Balance

California - California Proposition 65
WARNING: This product contains a chemical(s) known to the State of California to cause cancer and birth defects or other reproductive harm.

Toluene	108-88-3	1 – 5
Reproductive Hazard.		
Formaldehyde	50-00-0	* Trace
Cancer Hazard.		

* Trace = Present at less than 0.01 percent.

CONEG - No data available.

CANADA:
This is a "controlled product" under the Canadian Workplace Hazardous Materials Information System (WHMIS).
Class B Division 2 Class D Division 2 Sub-division B

CEPA - NPRI -Toluene.

16. OTHER INFORMATION

USER RESPONSIBILITY: A bulletin such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions - in addition to those described herein - are required. Any health hazard and safety information herein should be passed on to your customers or employees, as the case may be.

DISCLAIMER OF LIABILITY: The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of suitability of the chemical is the sole responsibility of the user. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or any other nature are made hereunder with respect to the information contained herein or the chemical to which the information refers. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.

End of Material Safety Data Sheet

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☐ REVISED 1 Page ____ of ____ 2

FACILITY ID# 30 0 35 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: MATERIAL STORAGE AREA 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # G2 → G7 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: Polysulfide Sealant | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☒ No 11 (* If EPCRA see instructions)

COMMON NAME: AC-350 Class A Base 9 | An EHS Chemical ☐ Yes ☒ No 12 (*If EHS is "Yes", all amounts must be LBS)

CAS # 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☑ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE 18 ☑ d. ACUTE HEALTH ☑ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT 80 19 | MAXIMUM DAILY AMOUNT 7,500 20 | ANNUAL WASTE AMOUNT 500 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET 23 ☒ c. POUNDS ☐ d. TONS (*If EHS, amount must be in pounds.) | DAYS ON SITE 365 DAYS 24 | LARGEST CONTAINER 50 Gallon Drum 25

STORAGE CONTAINER (Check all that apply) 26

☐ a. ABOVEGROUND TANK	☐ e. PLASTIC DRUM	☐ i. VAT	☐ m CYLINDER	☐ q. TANK WAGON
☐ b. UNDERGROUND TANK	☐ f. NONMETALLIC DRUM	☐ i. FIBER DRUM	☐ n. GLASS CONTAINER	☐ r. RAIL CAR
☐ c. TANK INSIDE BLDG	☒ g. METAL CONTAINER	☐ i. BAG(S)	☐ o PLASTIC CONTAINER	☐ s. TOTE BIN
☐ d STEEL DRUM	☐ h. CARBOY	☐ i. BOX(S)	☐ p. IN MACH OR EQUIP	☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	10-15 29	Calcium Carbonate 30	☐ Yes ☐ No 31	471-34-1 32
2	5-10 29	Toluene 30	☐ Yes ☐ No 31	108-88-3 32
3	1-5 29	Methyl Ethyl Ketone 30	☐ Yes ☐ No 31	78-93-3 32
4	1-5 29	Titanium dioxide 30	☐ Yes ☐ No 31	13463-67-7 32
5	29	30	☐ Yes ☐ No 31	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

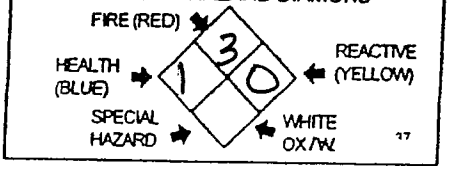
UNDOT # UN 1866 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS 3 (IATA/FR49) 3.3 (II)
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 37



MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Material Safety Data Sheet
AC-®350 Class A Base

MSDS No: 33501-05
Effective: 01/26/09
Supercedes: 01/29/08

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

SIN #834-100

Product ID: AC-350 Class A Base
Generic Description: Polysulfide sealant
Product Use: Aircraft sealant

For information, contact:
Advanced Chemistry & Technology
7341 Anaconda Avenue
Garden Grove, CA 92841-2921
714 - 373 - 2837

ChemTrec Emergency
1 - 800 - 424 - 9300

HAZARD RATINGS		
	HMIS	NFPA
Health	1	1
Fire	3	3
Reactivity	0	0
	* = Chronic	

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMMON NAME	CAS #	Approximate % (w/w)
Calcium carbonate	471-34-1	10 – 15
Toluene	108-88-3	5 – 10
Methyl Ethyl Ketone	78 - 93 - 3	1 – 5
Titanium dioxide	13463-67-7	1 – 5
Non-hazardous and other ingredients below reportable levels	Proprietary	Balance

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: FLAMABLE LIQUID AND VAPOR. INHALATION MAY CAUSE DIZZINESS, HEADACHE AND LOSS OF COORDINATION. INGESTION CAN CAUSE DIZZINESS, FAINTNESS, HEADACHE AND LOSS OF COORDINATION. MAY CAUSE RESPIRATORY TRACT IRRITATION. MAY CAUSE DIGESTIVE TRACT IRRITATION. INGESTION MAY CAUSE NAUSEA, VOMITING, PAIN, UPSET STOMACH, DIARRHEA. INHALATION MAY CAUSE NAUSEA, VOMITING, UPSET STOMACH. MAY CAUSE EYE IRRITATION. MAY CAUSE SKIN IRRITATION. PROLONGED OR REPEATED CONTACT MAY DRY SKIN AND CAUSE IRRITATION. See sections 3, 5, & 6.

PRIMARY ROUTES OF EXPOSURE: Eye. Skin. Inhalation (breathing).
EYE CONTACT: May cause slight to mild irritation. Can cause burning sensation, tearing, and redness.

SKIN CONTACT: May cause slight to mild irritation. Prolonged or repeated contact may dry the skin and lead to irritation (i.e. dermatitis).

INHALATION (Breathing): Irritating to the eyes, nose, and respiratory tract. Inhalation can cause dizziness, headaches, and loss of coordination. Nausea, vomiting, and stomach upset can occur. Can cause anesthetic and/or narcotic effects.

INGESTION (Swallowing): Irritating to the mouth, throat, and stomach. May cause nausea, vomiting, pain, and stomach upset (e.g., diarrhea). Can cause dizziness, faintness, headache, and loss of coordination.

TARGET ORGANS/CHRONIC EFFECTS: Liver. Kidneys. Lungs and respiratory system. Eyes. Skin.

CONDITIONS AGGRAVATED BY EXPOSURE: Lungs and respiratory system. Skin.

CARCINOGENICITY:

	ACGIH	IARC	NTP	OSHA
Titanium Dioxide	No	No	No	No
Toluene	No	No	No	No
Methyl Ethyl Ketone	No	No	No	No
Calcium carbonate	No	No	No	No

4. FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation persists.

SKIN CONTACT: Immediately flush with water. Remove contaminated clothing and shoes. Get medical attention if irritation persists. Professionally wash clothing and shoes before re-use.

INHALATION (Breathing): Remove to fresh air. If symptoms develop, seek immediate medical attention. If not breathing, give artificial respiration.

INGESTION (Swallowing): Seek medical attention. Immediately induce vomiting, as directed by medical personnel. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIANS: Treatment should be directed at preventing absorption, administering to symptoms (if they occur), and providing supportive therapy.

5. FIRE FIGHTING METHODS

Flash Point:	48°F (9°C)	Method:	Setaflash Closed Cup
Explosive Limits:	LEL(%) Not Determined	UEL(%) Not Determined	
Autoignition:	Not Determined		

HAZARDOUS COMBUSTION AND DECOMPOSITION PRODUCTS: Smoke, soot, and toxic/irritating fumes (i.e., carbon dioxide, carbon monoxide, etc.). Formaldehyde and/or other aldehydes. Oxides of sulfur. Hydrogen sulfide.

FIRE AND EXPLOSION HAZARDS: High temperatures can cause sealed containers to rupture due to a build up of internal pressure. Cool with water. During a fire, irritating and highly toxic gases may be generated during combustion or decomposition.

EXTINGUISHING MEDIA: SMALL FIRES: Dry chemical, carbon dioxide, halon, water spray, or foam. LARGE FIRES: Water spray, fog, or alcohol foam.

FIRE FIGHTING PROCEDURES/EQUIPMENT: Fire fighters and others who may be exposed to the products of combustion should be equipped with NIOSH-approved positive pressure self-contained breathing apparatus (SCBA) and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

EVACUATION: Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Eliminate all sources of ignition.

CONTAINMENT: Safely stop discharge. Contain material, as necessary, with a dike or barrier. Stop material from contaminating soil, or from entering sewers or bodies of water.

CLEAN-UP/PERSONAL PROTECTION EQUIPMENT: Appropriate safety measures and protective equipment should be used. Use supplied air respirator or self-contained breathing apparatus in enclosed spaces or if airborne exposure limits can be exceeded. See Section 8.

COLLECTION AND DISPOSAL: Stop discharge, if safe to do so. Use proper protective equipment. Use non-sparking tools and/or explosion-proof equipment. Stop ignition sources. Cover spills with absorbent clay or sawdust and place in closed chemical waste containers. Dispose of according to applicable local, state and federal regulations.

REPORTING: Spills of this material in excess of a component's RQ must be reported to the National Response Center (1-800-424-8802) and to the appropriate state and local emergency response organizations.

Methyl Ethyl Ketone	RQ = 5000 LB
Toluene	RQ = 1000 lb

7. HANDLING AND STORAGE

STORAGE CONDITIONS: Store in cool, dry, well ventilated area away from heat, ignition sources, and direct sunlight. Keep containers tightly closed. WARNING: Hot organic chemical vapors or mists can suddenly and without warning combust when mixed with air. Ignition can occur at typical elevated temperature process conditions. Any use in such processes should be evaluated thoroughly to assure safe operating conditions.

TRANSFER: Containers should be supported and grounded before opening, dispensing, mixing, pouring, and emptying. Open with non-sparking tools. If container is warm, open bung slowly to release internal pressure.

PERSONAL HYGIENE: Wash thoroughly after handling, especially before eating, drinking, smoking, and using restroom facilities. Wash contaminated goggles, face-shield, and gloves. Professionally launder contaminated clothing before re-use.

EMPTY CONTAINER PRECAUTIONS: Attention! This container hazardous when empty. Follow label warnings even after container is emptied since empty containers may retain product residues. Do not use heat, sparks, open flames, torches, cigarettes on or near empty container. Do not reuse empty container without professional cleaning for food, clothing, or products for human or animal consumption or where skin contact can occur.

SPECIAL INSTRUCTIONS: See container and/or technical data sheet for instructions on use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE GUIDELINES:

ACGIH - TLV		
Titanium Dioxide	10	mg/M^3
Toluene	50	ppm - Skin
Methyl ethyl ketone	200	ppm
Calcium carbonate	10	mg/M^3 Total dust
ACGIH - STEL		
Methyl ethyl ketone	300	ppm
OSHA - PEL		
Titanium Dioxide	10	mg/M^3
Toluene	100	ppm
Methyl ethyl ketone	200	ppm
Calcium carbonate	5	mg/M^3 Resp. dust
OSHA - STEL		
Methyl ethyl ketone	300	ppm
Toluene	150	ppm

ENGINEERING CONTROLS/VENTILATION: Local exhaust ventilation is recommended when vapors, mists, or dusts can be released in excess of established airborne exposure limits (TLVs or PELs).

EYE PROTECTION: Wear chemical splash goggles. An eye wash facility should be readily available.

SKIN PROTECTION: Wear protective clothing and appropriate impervious gloves. Because a variety of protective gloves exist, consult glove manufacturer to determine the proper type for a specific operation. Neoprene gloves. Butyl rubber gloves. An emergency shower should be readily available.

RESPIRATORY PROTECTION: Avoid breathing vapor and/or mists. Wear NIOSH/MSHA-approved equipment. Determine the appropriate type by consulting the respirator manufacturer. High airborne concentrations may necessitate the use of self-contained breathing apparatus (SCBA) or a supplied air respirator. Respiratory protection programs must be in compliance with 29 CFR 1910.134. Organic vapor/mist respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance.....:	White paste	Odor.....:	Ketone
Physical State.....:	Liquid	Solubility.....:	Insoluble
pH:	Not Applicable	Vapor Pressure:	Not Established
Vapor Density:	Heavier than air	Evaporation Rate:	Not Established
VOC Material:	149 g/l (1.25 lbs/gal)	Specific Gravity:	1.27
%Non-Vol(w/w):	88%		

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under normal conditions of use.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: High temperatures.

INCOMPATIBILITY WITH OTHER MATERIALS: Oxidizers. Reducers. Acids. Strong bases.

11. TOXICITY INFORMATION

COMPONENTS:

Limestone:
Repeated exposure to dusts can lead to particulate deposition in the lungs (i.e., pneumoconiosis). Can contain trace amounts of crystalline silica as an impurity.

Titanium Dioxide:
In a 2-year study in rats, an increase in benign and malignant lung tumors were observed at 250-mg/M^3 respirable dust level. This level is 50 times the current occupational exposure level and is not expected to correlate to human exposures.

Calcium carbonate:
Repeated exposure to dusts can lead to particulate deposition in the lungs (i.e., pneumoconiosis).

Toluene:

Oral LD50	Rat		5,000	mg/kg
Dermal LD50	Rabbit		12,124	mg/kg
Inhalation LC50	Mouse	5,320	ppm/8-Hours	

Methyl ethyl ketone:

Oral LD50	Rat	2,737	mg/kg
	Mouse	4,050	mg/kg
Dermal LD50	Rabbit	6,480	mg/kg
Inhalation LC50	Mouse	40,000	ppm/2 - Hours
	Rat	23,500	mg/M3 - 8 - hours

12. ECOLOGICAL INFORMATION

No ecological data on the product itself is available.

The product must not be allowed to run into drains or waterways.

Ecotoxicity:

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

13. DISPOSAL CONSIDERATIONS

DISPOSAL: When a decision is made to discard this material as supplied, it meets RCRA's characteristic definition of ignitability.

GENERAL STATEMENTS: Federal regulations may apply to empty container. State and/or local regulations may be different.

GENERAL RECOMMENDATIONS: Of the methods of disposal currently available, it is recommended that an alternative be selected according to the following order of preference, based upon environmental acceptability: (1) recycle or rework, if feasible; (2) incinerate at an authorized facility; or (3) treat at an acceptable waste treatment facility.

SPECIAL INSTRUCTIONS: Be sure to contact the appropriate government environmental agencies if further guidance is required.

14. TRANSPORT INFORMATION

Weight (lb.)	Shipping Name	49 CFR	IATA	IMO
	Resin solution	Y	Y	Y

DOT Label.....: Flammable Liquid
Hazard Class...: 3 (IATA/49CFR) 3.3 (IMO)
UN/NA Id Num..: UN 1866
Packing Group.: III

All the information in this section is for non-bulk packaging (119 gallons or less; 882 lbs. or less for solids).

15. REGULATORY INFORMATION

FEDERAL:
This product is considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

SARA Title III - Section 311/312 - Hazard Categories:
Y - Fire Hazard
N - Sudden Release of Pressure Hazard
N - Reactivity Hazard
Y - Immediate (acute) Health Hazard
Y - Delayed (chronic) Health Hazard

Ozone-Depleting Chemicals - No regulated ingredients.

SARA Section 302 Extremely Hazardous Mat - No regulated ingredients.

SARA Section 313 Toxic Chemicals - Methyl Ethyl Ketone

TSCA Section 8(d) Data Reporting Rule - Methyl ethyl ketone

TSCA Section 12(b) Export Notification None

CHEMICAL LISTING - Listed on the following Country's Chemical Inventories:

United States Toxic Substance Control Act
Chemical component(s) in this product are on the section 8(b) Chemical Substance Inventory List (40 CFR 710).

STATE RIGHT-TO-KNOW:

Pennsylvania - New Jersey R-T-K

Methyl ethyl ketone	78 - 93 - 3	1 – 5
Toluene	108-88-3	5 – 10
	Environmental Hazard.	
Titanium Dioxide	13463-67-7	1 - 5
Calcium carbonate	471-34-1	1 - 5
Non-hazardous trade secret ingredient(s)	Proprietary	Balance

California - California Proposition 65

WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

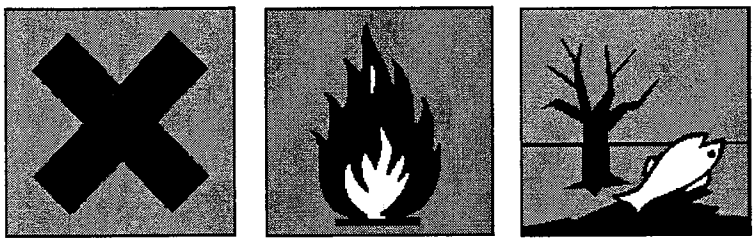
Quartz (crystalline silica) Cancer Hazard.	14808-60-7	< 0.01
Formaldehyde Cancer Hazard.	50-00-0	Trace *

* Trace = present at less than 0.01 percent.

CONEG - No data available.

European Union:
Preparation classification:

Xn **F** **N**



Harmful **Highly Flammable** **Dangerous for Environment**

Contains:
601-021-00-3 TOLUENE

Particular hazards associated with the preparation and safety recommendations:

R 11	Highly flammable.
R20/22	Harmful by inhalation and if swallowed.
R 52/53	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R 63	Possible risk of harm to the unborn child.
S 9	Keep container in a well-ventilated place.
S 16	Keep away from sources of ignition - no smoking.
S 25	Avoid contact with eyes.
S 36/37	Wear suitable protective clothing and gloves.
S 60	This material and its container must be disposed of as hazardous waste.
S 61	Avoid release to the environment. Refer to special instructions/Safety data sheets.

CANADA:
This is a "controlled product" under the Canadian Workplace Hazardous Materials Information System (WHMIS).
Class B Division 3 Class D Division 2 Sub-division B

CEPA - NPRI - No regulated ingredients.

16. OTHER INFORMATION

USER RESPONSIBILITY: A bulletin such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions - in addition to those described herein - are required. Any health hazard and safety information herein should be passed on to your customers or employees, as the case may be.

DISCLAIMER OF LIABILITY: The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of suitability of the chemical is the sole responsibility of the user. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or any other nature are made hereunder with respect to the information contained herein or the chemical to which the information refers. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.

End of Material Safety Data Sheet

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☐ REVISED 1 Page ____ of ____ 2

FACILITY ID# 30035 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: MATERIAL STORAGE AREA 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # G2 → G7 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: Polysulfide Sealant | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☒ No 11 (* If EPCRA see instructions)

COMMON NAME: AC-250 Class B Base 9 | An EHS Chemical ☐ Yes ☒ No 12 (*If EHS is "Yes", all amounts must be LBS)

CAS # 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☑ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☒ d. ACUTE HEALTH ☑ e. CHRONIC HEALTH 18

AVERAGE DAILY AMOUNT 7 19 | MAXIMUM DAILY AMOUNT 2500 20 | ANNUAL WASTE AMOUNT 150 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET 23 ☒ c. POUNDS ☐ d. TONS (*If EHS, amount must be in pounds.) | DAYS ON SITE 365 DAYS 24 | LARGEST CONTAINER 50 Gallon Drum 25

STORAGE CONTAINER (Check all that apply) 26

☐ a. ABOVEGROUND TANK	☐ e. PLASTIC DRUM	☐ i. VAT	☐ m CYLINDER	☐ q. TANK WAGON
☐ b. UNDERGROUND TANK	☐ f. NONMETALLIC DRUM	☐ i. FIBER DRUM	☐ n. GLASS CONTAINER	☐ r. RAIL CAR
☐ c. TANK INSIDE BLDG	☒ g. METAL CONTAINER	☐ i. BAG(S)	☐ o PLASTIC CONTAINER	☐ s. TOTE BIN
☐ d STEEL DRUM	☐ h. CARBOY	☐ i. BOX(S)	☐ p. IN MACH OR EQUIP	☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	20-25 29	Calcium Carbonate 30	☐ Yes ☐ No 31	471-34-1 32
2	1-5 29	Ethyl acetate 30	☐ Yes ☐ No 31	141-78-6 32
3	1-5 29	Titanium Dioxide 30	☐ Yes ☐ No 31	13463-67-7 32
4	29	30	☐ Yes ☐ No 31	32
5	29	30	☐ Yes ☐ No 31	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

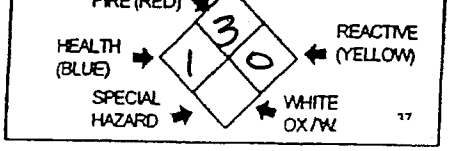
UNDOT # UN1866 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS 3 (IATA / CFR 49) 3.3 (IMDG)
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 37



MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Material Safety Data Sheet
AC–® 250 Class B -1/6 Base

MSDS No: 32502-09
Effective: 01/26/09
Supercedes: 08/29/08

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

SIN #834-100
AMS-S-83318

Product ID: AC-250 Class B Base
Generic Description: Polysulfide Sealant
Product Use: Accelerator

For information, contact:
Advanced Chemistry & Technology
7341 Anaconda Avenue
Garden Grove, CA 92841-2921
714 - 373 - 2837

ChemTrec Emergency
1 - 800 - 424 - 9300

HAZARD RATINGS		
	HMIS	NFPA
Health	1*	1
Fire	3	3
Reactivity	0	0
	* = Chronic	

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMMON NAME	CAS #	Approximate % (w/w)
Calcium carbonate	471-34-1	20 - 25
Ethyl acetate	141-78-6	1 - 5
Titanium Dioxide	13463-67-7	1 - 5
Non-hazardous and other ingredients below reportable levels	Proprietary	Balance

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: INHALATION MAY CAUSE DIZZINESS, HEADACHE AND LOSS OF COORDINATION. INGESTION CAN CAUSE DIZZINESS, FAINTNESS, HEADACHE AND LOSS OF COORDINATION. MAY CAUSE RESPIRATORY TRACT IRRITATION. MAY CAUSE DIGESTIVE TRACT IRRITATION. INGESTION MAY CAUSE NAUSEA, VOMITING, PAIN, UPSET STOMACH, DIARRHEA. INHALATION MAY CAUSE NAUSEA, VOMITING, UPSET STOMACH. MAY CAUSE EYE IRRITATION. MAY CAUSE SKIN IRRITATION. PROLONGED OR REPEATED CONTACT MAY DRY SKIN AND CAUSE IRRITATION. See sections 3, 5, & 6.

PRIMARY ROUTES OF EXPOSURE: Eye. Skin. Inhalation (breathing).

EYE CONTACT: May cause slight to mild irritation. May cause corneal opacity (clouding of the eye surface).

SKIN CONTACT: May cause slight to mild irritation. Prolonged or repeated contact may dry the skin and lead to irritation (i.e. dermatitis).

INHALATION (Breathing): Irritating to the eyes, nose, and respiratory tract. Can cause dizziness, headaches, and loss of coordination. Nausea, vomiting, and stomach upset can occur.

INGESTION (Swallowing): Irritating to the mouth, throat, and stomach. May cause nausea, vomiting, pain, and stomach upset (e.g., diarrhea). Can cause dizziness, faintness, headache, and loss of coordination.

TARGET ORGANS/CHRONIC EFFECTS: Liver. Kidneys. Blood and/or blood-forming organs. Lungs and respiratory system. Eyes. Skin.

CONDITIONS AGGRAVATED BY EXPOSURE: Liver. Kidneys. Blood and/or blood-forming organs. Lungs and respiratory system. Skin.

CARCINOGENICITY:

	ACGIH	IARC	NTP	OSHA
Calcium carbonate	No	No	No	No
Ethyl acetate	No	No	No	No
Titanium Dioxide	No	No	No	No

4. FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation persists.

SKIN CONTACT: Immediately flush with water. Remove contaminated clothing and shoes. Get medical attention if irritation persists. Professionally wash clothing and shoes before re-use.

INHALATION (Breathing): Remove to fresh air. If symptoms develop, seek immediate medical attention. If not breathing, give artificial respiration.

INGESTION (Swallowing): Seek medical attention. Immediately induce vomiting, as directed by medical personnel. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIANS: Treatment should be directed at preventing absorption, administering to symptoms (if they occur), and providing supportive therapy.

5. FIRE FIGHTING METHODS

Flash Point:	45°F (7.2°C)	Method:	Seta
Explosive Limits:	LEL(%) Not Established	UEL(%)	Not Established
Autoignition:	Not Established		

HAZARDOUS COMBUSTION AND DECOMPOSITION PRODUCTS: Smoke, soot, and toxic/irritating fumes (i.e., carbon dioxide, carbon monoxide, etc.). Formaldehyde and/or other aldehydes. Oxides of sulfur. Hydrogen sulfide. Low molecular weight hydrocarbons.

FIRE AND EXPLOSION HAZARDS: High temperatures can cause sealed containers to rupture due to a build up of internal pressure. Cool with water. During a fire, irritating and highly toxic gases may be generated during combustion or decomposition.

EXTINGUISHING MEDIA: SMALL FIRES: Dry chemical, carbon dioxide, halon, water spray, or foam. LARGE FIRES: Water spray, fog, or alcohol foam.

FIRE FIGHTING PROCEDURES/EQUIPMENT: Fire fighters and others who may be exposed to the products of combustion should be equipped with NIOSH-approved positive pressure self-contained breathing apparatus (SCBA) and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

EVACUATION: Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Eliminate all sources of ignition.

CONTAINMENT: Safely stop discharge. Contain material, as necessary, with a dike or barrier. Stop material from contaminating soil, or from entering sewers or bodies of water.

CLEAN-UP/PERSONAL PROTECTION EQUIPMENT: Appropriate safety measures and protective equipment should be used. Use supplied air respirator or self-contained breathing apparatus in enclosed spaces or if airborne exposure limits can be exceeded. See Section 8.

COLLECTION AND DISPOSAL: Stop discharge, if safe to do so. Use proper protective equipment. Cover spills with absorbent clay or sawdust and place in closed chemical waste containers. Dispose of according to applicable local, state and federal regulations.

REPORTING: Spills of this material in excess of a component's RQ must be reported to the National Response Center (1-800-424-8802) and to the appropriate state and local emergency response organizations.

Ethyl acetate RQ = 5000 LB

7. HANDLING AND STORAGE

Storage Temperature < 100F 38.8C

STORAGE CONDITIONS: Store in cool, dry, well ventilated area away from heat, ignition sources, and direct sunlight. Keep containers tightly closed.

TRANSFER: No special precautions are needed. Follow good manufacturing and handling practices.

PERSONAL HYGIENE: Wash thoroughly after handling, especially before eating, drinking, smoking, and using restroom facilities. Wash contaminated goggles, face-shield, and gloves. Professionally launder contaminated clothing before re-use.

EMPTY CONTAINER PRECAUTIONS: Attention! This container can be hazardous when empty. Follow label warnings even after container is emptied since empty containers may retain product residues. Do not reuse empty container without professional cleaning for food, clothing, or products for human or animal consumption or where skin contact can occur.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE GUIDELINES:

ACGIH - TLV		
Calcium carbonate	10	mg/M^3 Total dust
Ethyl acetate	400	ppm
Titanium Dioxide	10	mg/M^3
OSHA - PEL		
Calcium carbonate	5	mg/M^3 Resp. dust
Ethyl acetate	400	ppm
Titanium Dioxide	10	mg/M^3

ENGINEERING CONTROLS/VENTILATION: Local exhaust ventilation is recommended when vapors, mists, or dusts can be released in excess of established airborne exposure limits (TLVs or PELs).

EYE PROTECTION: Wear chemical splash goggles. An eye wash facility should be readily available.

SKIN PROTECTION: Wear rubber boots and apron, protective clothing, and impervious gloves. Because a variety of protective gloves exist, consult glove manufacturer to determine the proper type for a specific operation.

RESPIRATORY PROTECTION: Avoid breathing vapor and/or mists. Wear NIOSH/MSHA-approved equipment. Determine the appropriate type by consulting the respirator manufacturer. High airborne concentrations may necessitate the use of self-contained breathing apparatus (SCBA) or a supplied air respirator. Respiratory protection programs must be in compliance with 29 CFR 1910.134.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	White	Odor:	Ester
Physical State:	Paste	Solubility:	Insoluble
pH.....:	Not Applicable	Vapor Pressure:	Not Established
Vapor Density:	Not Established	Evaporation Rate:	Not Established
VOC Material:	68 g/L 0.58 lbs/gal	%Non-Vol(w/w).:	96
Specific Grvty:	1.60		

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under normal conditions of use.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: High temperatures.

INCOMPATIBILITY WITH OTHER MATERIALS: Oxidizers. Reducers. Acids. Strong bases.

11. TOXICITY INFORMATION

COMPONENTS:
Calcium carbonate:
Repeated exposure to dusts can lead to particulate deposition in the lungs (i.e., pneumoconiosis).

Ethyl acetate:
Ingestion or inhalation can cause CNS depression, kidney, liver and spleen damage, and anemia. Positive results were obtained in the yeast cell assay and in hamster fibroblasts.

Oral LD50	Rat	5,620	mg/kg
	Mouse	4,100	mg/kg
	Rabbit	4,935	mg/kg
Inhalation LC50	Rat	1,600	ppm/8-Hours
	Mouse	45	g/M^3/2-Hours

Titanium Dioxide:
In a 2-year study in rats, an increase in benign and malignant lung tumors was observed at 250-mg/M^3 respirable dust level. This level is 50 times the current occupational exposure level and is not expected to correlate to human exposures.

12. ECOLOGICAL INFORMATION

No ecological data on the product itself is available.

The product must not be allowed to run into drains or waterways.

Ecotoxicity:

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

13. DISPOSAL CONSIDERATIONS

DISPOSAL: Dispose in accordance with all local, state, and federal regulations.

GENERAL STATEMENTS: Federal regulations may apply to empty container. State and/or local regulations may be different.

GENERAL RECOMMENDATIONS: Of the methods of disposal currently available, it is recommended that an alternative be selected according to the following order of preference, based upon environmental acceptability: (1) recycle or rework, if feasible; (2) incinerate at an authorized facility; or (3) treat at an acceptable waste treatment facility.

SPECIAL INSTRUCTIONS: Be sure to contact the appropriate government environmental agencies if further guidance is required.

14. TRANSPORT INFORMATION

Weight (lb)	Shipping Name	49 CFR	IATA	IMO
	Resin Solution, Flammable	Y	Y	Y

DOT Label: Flammable liquid
Hazard Class: 3 (IATA/49CFR) 3.3 (IMO)
Packing Group*: III
UN/NA Id Num: UN 1866
USPS Mailability: No
*IATA section 3.3.3 viscous substances

15. REGULATORY INFORMATION

FEDERAL:
This product is considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

SARA Title III - Section 311/312 - Hazard Categories:
Y - Fire Hazard
N - Sudden Release of Pressure Hazard
N - Reactivity Hazard
Y - Immediate (acute) Health Hazard
Y - Delayed (chronic) Health Hazard

Ozone-Depleting Chemicals - No regulated ingredients.

SARA Section 302 Extremely Hazardous Mat - No regulated ingredients.

SARA Section 313 Toxic Chemicals - No regulated ingredients.

TSCA Section 12(b) Export Notification
Ethyl acetate

CHEMICAL LISTING - Listed on the following Country's Chemical Inventories:

United States Toxic Substance Control Act
Chemical component(s) in this product are on the section 8(b) Chemical Substance Inventory List (40 CFR 710).

STATE RIGHT-TO-KNOW:
Pennsylvania - New Jersey R-T-K

Calcium carbonate	471-34-1	20 – 25
Ethyl acetate	141-78-6	1 – 5
Environmental Hazard.		
Titanium Dioxide	13463-67-7	1 - 5
Non-hazardous and other ingredients below reportable levels	Proprietary	Balance

California - California Proposition 65
WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

Quartz (crystalline silica)	14808-60-7	< 0.01
Cancer Hazard.		

* Trace = present at less than 0.01 percent.

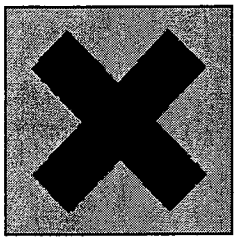
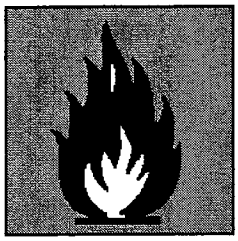
CONEG - No data available.

CANADA:
This is a "controlled product" under the Canadian Workplace Hazardous Materials Information System (WHMIS).
Class B Division 3 Class D Division 2 Sub-division B

CEPA - NPRI - No regulated ingredients.

European Union:
Preparation classification:

Harmful **Highly Flammable**

Contains:
607-022-00-5 Ethyl Acetate

Particular hazards associated with the preparation and safety recommendations:

R 52/53	Harmful to aquatic organisms may cause long-term adverse effects in the aquatic environment.
R 11	Highly flammable
R 63	Possible risk of harm to the unborn child
R66	Repeated exposure may cause skin dryness or cracking
R67	Vapors may cause drowsiness and dizziness
S 36/37	Wear suitable protective clothing and gloves.
S 16	Keep away from sources of ignition - no smoking.
S 60	This material and its container must be disposed of as hazardous waste.
S 61	Avoid release to the environment. Refer to special instructions/Safety data sheets.
S 9	Keep container in a well-ventilated place.

16. OTHER INFORMATION

USER RESPONSIBILITY: A bulletin such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions - in addition to those described herein - are required. Any health hazard and safety information herein should be passed on to your customers or employees, as the case may be.

DISCLAIMER OF LIABILITY: The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of suitability of the chemical is the sole responsibility of the user. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or any other nature are made hereunder with respect to the information contained herein or the chemical to which the information refers. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.

End of Material Safety Data Sheet

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☐ REVISED 1 Page _____ of _____ 2

FACILITY ID# 30035 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION 4: MATERIAL STORAGE AREA

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # G2 → G7 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: Polysulfide Sealant | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☒ No 11 (* If EPCRA see instructions)

COMMON NAME 9: AC-250 Class A 1/6 Base | An EHS Chemical ☐ Yes ☒ No 12 (*If EHS is "Yes", all amounts must be LBS)

CAS # 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only): ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only): ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES: ☑ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE 18 ☑ d. ACUTE HEALTH ☑ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT 10 19 | MAXIMUM DAILY AMOUNT 2500 20 | ANNUAL WASTE AMOUNT 150 21 | STATE WASTE CODE 22

UNITS: ☐ a. GALLONS ☐ b. CUBIC FEET 23 ☒ c. POUNDS ☐ d. TONS (*If EHS, amount must be in pounds.) | DAYS ON SITE 24: 365 DAYS | LARGEST CONTAINER 25: 50 Gallon Drum

STORAGE CONTAINER (Check all that apply) 26:
☐ a. ABOVEGROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BLDG ☐ d STEEL DRUM ☐ e. PLASTIC DRUM ☒ f. NONMETALLIC DRUM ☐ g. METAL CONTAINER ☐ h. CARBOY ☐ i. VAT ☐ j. FIBER DRUM ☐ k. BAG(S) ☐ l. BOX(S) ☐ m CYLINDER ☐ n. GLASS CONTAINER ☐ o PLASTIC CONTAINER ☐ p. IN MACH OR EQUIP ☐ q. TANK WAGON ☐ r. RAIL CAR ☐ s. TOTE BIN ☐ t. OTHER_____

STORAGE PRESSURE: ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE: ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	10-20 29	Limestone 30	☐ Yes ☐ No 31	1317-65-3 32
2	1-5 29	Calcium carbonate 30	☐ Yes ☐ No 31	471-34-1 32
3	5-10 29	Ethyl acetate 30	☐ Yes ☐ No 31	141-78-6 32
4	1-5 29	Titanium Dioxide 30	☐ Yes ☐ No 31	13463-67-1 32
5	29	30	☐ Yes ☐ No 31	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

UNDOT # UN 1866 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS 3 (IATA/CFR49) 3.3 (IMO)
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 37
FIRE (RED) 3 | HEALTH (BLUE) 2 | REACTIVE (YELLOW) 0 | SPECIAL HAZARD WHITE OX/W

MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Material Safety Data Sheet
AC-® 250 Class A-1/6 Base

MSDS No: 32501-08
Effective: 01/26/09
Supercedes: 03/10/08

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

SIN #834-100

Product ID: AC-250 Class A-1/6 Base
Generic Description: Polysulfide sealant
Product Use: Aircraft sealant

For information, contact:
Advanced Chemistry & Technology
7341 Anaconda Avenue
Garden Grove, CA 92841-2921
714 - 373 - 2837

ChemTrec Emergency
1 - 800 - 424 - 9300

HAZARD RATINGS		
	HMIS	NFPA
Health	2*	2
Fire	3	3
Reactivity	0	0
	* = Chronic	

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMMON NAME	CAS #	Approximate % (w/w)
Limestone	1317-65-3	10 – 20
Calcium carbonate	471-34-1	1 – 5
Ethyl acetate	141-78-6	5 – 10
Titanium Dioxide	13463-67-7	1 – 5
Non-hazardous and other ingredients below reportable levels	Proprietary	Balance

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: COMBUSTIBLE LIQUID AND VAPOR (FLAMMABLE IF SHIPPED BY AIR/VESSEL). INHALATION MAY CAUSE DIZZINESS, HEADACHE AND INCOORDINATION. INGESTION CAN CAUSE DIZZINESS, FAINTNESS, HEADACHE AND INCOORDINATION. MAY CAUSE RESPIRATORY TRACT IRRITATION. MAY CAUSE DIGESTIVE TRACT IRRITATION. INGESTION MAY CAUSE NAUSEA, VOMITING, PAIN, UPSET STOMACH, DIARRHEA. INHALATION MAY CAUSE NAUSEA, VOMITING, UPSET STOMACH. MAY CAUSE EYE IRRITATION. MAY CAUSE SKIN IRRITATION. PROLONGED OR REPEATED CONTACT MAY DRY SKIN AND CAUSE IRRITATION. See sections 3, 5, & 6.

PRIMARY ROUTES OF EXPOSURE: Eye. Skin. Inhalation (breathing).

EYE CONTACT: May cause slight to mild irritation. Can cause burning sensation, tearing, and redness.

SKIN CONTACT: May cause slight to mild irritation. Prolonged or repeated contact may dry the skin and lead to irritation (i.e. dermatitis).

INHALATION (Breathing): Irritating to the eyes, nose, and respiratory tract. Can cause dizziness, headaches, and loss of coordination. Nausea, vomiting, and stomach upset can occur. Can cause anesthetic and/or narcotic effects.

INGESTION (Swallowing): Irritating to the mouth, throat, and stomach. May cause nausea, vomiting, pain, and stomach upset (e.g., diarrhea). Can cause dizziness, faintness, headache, and loss of coordination.

TARGET ORGANS/CHRONIC EFFECTS: Liver. Kidneys. Lungs and respiratory system. Eyes. Skin.

CONDITIONS AGGRAVATED BY EXPOSURE: Lungs and respiratory system. Skin.

CARCINOGENICITY:

	ACGIH	IARC	NTP	OSHA
Limestone	No	No	No	No
Calcium carbonate	No	No	No	No
Ethyl acetate	No	No	No	No
Titanium Dioxide	No	No	No	No

4. FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation persists.

SKIN CONTACT: Immediately flush with water. Remove contaminated clothing and shoes. Get medical attention if irritation persists. Professionally wash clothing and shoes before re-use.

INHALATION (Breathing): Remove to fresh air. If symptoms develop, seek immediate medical attention. If not breathing, give artificial respiration.

INGESTION (Swallowing): Seek medical attention. Immediately induce vomiting, as directed by medical personnel. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIANS: Treatment should be directed at preventing absorption, administering to symptoms (if they occur), and providing supportive therapy.

5. FIRE FIGHTING METHODS

Flash Point:	45°F (7.2°C)	Method:	Setaflash Closed Cup
Explosive Limits:	LEL(%) Not Determined	UEL(%)	Not Determined
Autoignition:	Not Determined		

HAZARDOUS COMBUSTION AND DECOMPOSITION PRODUCTS: Smoke, soot, and toxic/irritating fumes (i.e., carbon dioxide, carbon monoxide, etc.). Formaldehyde and/or other aldehydes. Oxides of sulfur. Hydrogen sulfide.

FIRE AND EXPLOSION HAZARDS: High temperatures can cause sealed containers to rupture due to a build up of internal pressure. Cool with water. During a fire, irritating and highly toxic gases may be generated during combustion or decomposition.

EXTINGUISHING MEDIA: SMALL FIRES: Dry chemical, carbon dioxide, halon, water spray, or foam. LARGE FIRES: Water spray, fog, or alcohol foam.

FIRE FIGHTING PROCEDURES/EQUIPMENT: Fire fighters and others who may be exposed to the products of combustion should be equipped with NIOSH-approved positive pressure self-contained breathing apparatus (SCBA) and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

EVACUATION: Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Eliminate all sources of ignition.

CONTAINMENT: Safely stop discharge. Contain material, as necessary, with a dike or barrier. Stop material from contaminating soil, or from entering sewers or bodies of water.

CLEAN-UP/PERSONAL PROTECTION EQUIPMENT: Appropriate safety measures and protective equipment should be used. Use supplied air respirator or self-contained breathing apparatus in enclosed spaces or if airborne exposure limits can be exceeded. See Section 8.

COLLECTION AND DISPOSAL: Stop discharge, if safe to do so. Use proper protective equipment. Use non-sparking tools and/or explosion-proof equipment. Stop ignition sources. Cover spills with absorbent clay or sawdust and place in closed chemical waste containers. Dispose of according to applicable local, state and federal regulations.

REPORTING: Spills of this material in excess of a component's RQ must be reported to the National Response Center (1-800-424-8802) and to the appropriate state and local emergency response organizations.

Ethyl acetate	RQ = 5000 LB

7. HANDLING AND STORAGE

Storage Temperature < 100°F 38°C

STORAGE CONDITIONS: Store in cool, dry, well ventilated area away from heat, ignition sources, and direct sunlight. Keep containers tightly closed. WARNING: Hot organic chemical vapors or mists can suddenly and without warning combust when mixed with air. Ignition can occur at typical elevated temperature process conditions. Any use in such processes should be evaluated thoroughly to assure safe operating conditions.

TRANSFER: Containers should be supported and grounded before opening, dispensing, mixing, pouring, and emptying. Open with non-sparking tools. If container is warm, then open bung slowly to release internal pressure.

PERSONAL HYGIENE: Wash thoroughly after handling, especially before eating, drinking, smoking, and using restroom facilities. Wash contaminated goggles, face-shield, and gloves. Professionally launder contaminated clothing before re-use.

EMPTY CONTAINER PRECAUTIONS: Attention! This container is hazardous when empty. Follow label warnings even after container is emptied since empty containers may retain product residues. Do not use heat, sparks, open flames, torches, cigarettes on or near empty container. Do not reuse empty container without professional cleaning for food, clothing, or products for human or animal consumption or where skin contact can occur.

SPECIAL INSTRUCTIONS: See container and/or technical data sheet for instructions on use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE GUIDELINES:

ACGIH - TLV		
Limestone	10	mg/M^3 Total dust
Calcium carbonate	10	mg/M^3 Total dust
Ethyl acetate	400	ppm
Titanium Dioxide	10	mg/M^3
OSHA - PEL		
Limestone	5	mg/M^3 Resp. dust
Calcium carbonate	5	mg/M^3 Resp. dust
Ethyl acetate	400	ppm
Titanium Dioxide	10	mg/M^3

ENGINEERING CONTROLS/VENTILATION: Local exhaust ventilation is recommended when vapors, mists, or dusts can be released in excess of established airborne exposure limits (TLVs or PELs).

EYE PROTECTION: Wear chemical splash goggles. An eye wash facility should be readily available.

SKIN PROTECTION: Wear protective clothing and appropriate, impervious gloves. Because a variety of protective gloves exist, consult glove manufacturer to determine the proper type for a specific operation. Neoprene gloves. Butyl rubber gloves. An emergency shower should be readily available.

RESPIRATORY PROTECTION: Avoid breathing vapor and/or mists. Wear NIOSH/MSHA-approved equipment. Determine the appropriate type by consulting the respirator manufacturer. High airborne concentrations may necessitate the use of self-contained breathing apparatus (SCBA) or a supplied air respirator. Respiratory protection programs must be in compliance with 29 CFR 1910.134. Organic vapor/mist respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	White	Odor:	Acetate
Physical State:	Liquid	Solubility:	Insoluble
pH:	Not Applicable	Vapor Pressure:	Not Established
Vapor Density:	Not Established	Evaporation Rate:	Not Established
VOC Material:	42 g/l (0.35 lb/gal)	Specific Gravity:	1.51
%Non-Vol. (w/w):	Approximately 95		

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under normal conditions of use.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: High temperatures.

INCOMPATIBILITY WITH OTHER MATERIALS: Oxidizers. Reducers. Acids. Strong bases.

11. TOXICITY INFORMATION

COMPONENTS:

Limestone:
Repeated exposure to dusts can lead to particulate deposition in the lungs (i.e., pneumoconiosis). Can contain trace amounts of crystalline silica as an impurity.

Calcium carbonate:
Repeated exposure to dusts can lead to particulate deposition in the lungs (i.e., pneumoconiosis).

Ethyl acetate:
Ingestion or inhalation can cause CNS depression, kidney, liver and spleen damage, and anemia. Positive results were obtained in the yeast cell assay and in hamster fibroblasts.

Oral LD50	Rat	5,620	mg/kg
	Mouse	4,100	mg/kg
	Rabbit	4,935	mg/kg
Inhalation LC50	Rat	1,600	ppm/8-Hours
	Mouse	45	g/M3/2-Hours

Titanium Dioxide:
In a 2-year study in rats, an increase in benign and malignant lung tumors was observed at 250 mg/M^3 respirable dust level. This level is 50 times the current occupational exposure level and is not expected to correlate to human exposures.

12. ECOLOGICAL INFORMATION

No ecological data on the product itself is available.

The product must not be allowed to run into drains or waterways.

Ecotoxicity:

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

13. DISPOSAL CONSIDERATIONS

DISPOSAL: When a decision is made to discard this material as supplied, it meets RCRA's characteristic definition of ignitability.

GENERAL STATEMENTS: Federal regulations may apply to empty container. State and/or local regulations may be different.

GENERAL RECOMMENDATIONS: Of the methods of disposal currently available, it is recommended that an alternative be selected according to the following order of preference, based upon environmental acceptability: (1) recycle or rework, if feasible; (2) incinerate at an authorized facility; or (3) treat at an acceptable waste treatment facility.

SPECIAL INSTRUCTIONS: Be sure to contact the appropriate government environmental agencies if further guidance is required.

14. TRANSPORT INFORMATION

Weight (lb.)	Shipping Name	49 CFR	IATA	IMO
	Resin solution, Flammable	Y	Y	Y

DOT Label.....: Flammable Liquid
Hazard Class....: 3 (IATA/49CFR) 3.3 (IMO)
Packing Group..: II

UN/NA Id Num..: UN 1866
USPS Mailability: No

All the information in this section is for non-bulk packaging (119 gallons or less; 882 lbs. or less for solids). For domestic shipments only under 49CFR above (transportation by vessel or aircraft is not permitted): Only regulated as a combustible liquid when packaged in containers of 119 gallons or more and does not meet the definition of any other hazard class. When less than 119 gallons are shipped domestically by ground transport (49CFR above), the following transportation information applies: DOT shipping name: Non-regulated; DOT label: Not-regulated: DOT ID No.: Not-regulated; Precautionary Label: ND.

15. REGULATORY INFORMATION

FEDERAL:
This product is considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

SARA Title III - Section 311/312 - Hazard Categories:
Y - Fire Hazard
N - Sudden Release of Pressure Hazard
N - Reactivity Hazard
Y - Immediate (acute) Health Hazard
Y - Delayed (chronic) Health Hazard

Ozone-Depleting Chemicals - No regulated ingredients.

SARA Section 302 Extremely Hazardous Mat - No regulated ingredients.

SARA Section 313 Toxic Chemicals - No regulated ingredients.

TSCA Section 12(b) Export Notification
Ethyl acetate
CHEMICAL LISTING - Listed on the following Country's Chemical Inventories:

United States Toxic Substance Control Act
Chemical component(s) in this product are on the section 8(b) Chemical Substance Inventory List (40 CFR 710).

STATE RIGHT-TO-KNOW:

Pennsylvania - New Jersey R-T-K

Limestone	1317 - 65 - 3	10 - 20
Calcium carbonate	471 - 34 - 1	10 - 20
Ethyl acetate	141 - 78 - 6	5 - 10
Environmental Hazard.		
Titanium Dioxide	13463 - 67 - 7	1 - 5
Non-hazardous trade secret ingredient(s)	Proprietary	Balance

California - California Proposition 65
WARNING: This product contains a chemical(s) known to the State of California to cause cancer.
Quartz (crystalline silica) 14808-60- < 0.01
Cancer Hazard.
* Trace = present at less than 0.01 percent.

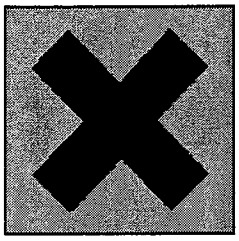
CONEG - No data available.

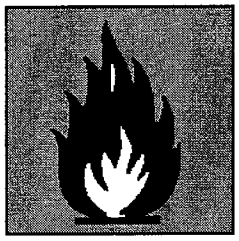
CANADA:
This is a "controlled product" under the Canadian Workplace Hazardous Materials Information System (WHMIS).
Class B Division 2 Class D Division 2 Sub-division B

CEPA - NPRI - No regulated ingredients.

European Union:
Preparation classification:

Xn **F+**





Harmful **Highly Flammable**

Contains:
607-022-00-5 Ethyl Acetate

Particular hazards associated with the preparation and safety recommendations:

R 52/53	Harmful to aquatic organisms may cause long-term adverse effects in the aquatic environment.
R 11	Highly flammable
R 63	Possible risk of harm to the unborn child
R66	Repeated exposure may cause skin dryness or cracking
R67	Vapors may cause drowsiness and dizziness
S 36/37	Wear suitable protective clothing and gloves.
S 16	Keep away from sources of ignition - no smoking.
S 60	This material and its container must be disposed of as hazardous waste.
S 61	Avoid release to the environment. Refer to special instructions/Safety data sheets.
S 9	Keep container in a well-ventilated place.

16. OTHER INFORMATION

USER RESPONSIBILITY: A bulletin such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions - in addition to those described herein - are required. Any health hazard and safety information herein should be passed on to your customers or employees, as the case may be.

DISCLAIMER OF LIABILITY: The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of suitability of the chemical is the sole responsibility of the user. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or any other nature are made hereunder with respect to the information contained herein or the chemical to which the information refers. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.

End of Material Safety Data Sheet

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☐ REVISED 1 Page _____ of _____ 2

FACILITY ID# 30 035 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION 4
MATERIAL STORAGE AREA

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # G2 → G7 7

II. CHEMICAL INFORMATION

CHEMICAL NAME Polysulfide Sealant | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☒ No 11 * If EPCRA see instructions

COMMON NAME AC-240 Class A Base 9 | An EHS Chemical ☐ Yes ☒ No 12 *If EHS is "Yes", all amounts must be LBS

CAS # 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☑ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE 18 ☑ d. ACUTE HEALTH ☑ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT 20 19 | MAXIMUM DAILY AMOUNT 500 20 | ANNUAL WASTE AMOUNT 20 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET 23 ☒ c. POUNDS ☐ d. TONS *If EHS, amount must be in pounds. | DAYS ON SITE 365 DAYS 24 | LARGEST CONTAINER 50 Gallon Drum 25

STORAGE CONTAINER (Check all that apply) 26
☐ a. ABOVEGROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BLDG ☐ d STEEL DRUM ☐ e. PLASTIC DRUM ☐ f. NONMETALLIC DRUM ☒ g. METAL CONTAINER ☐ h. CARBOY ☐ i. VAT ☐ l. FIBER DRUM ☐ l. BAG(S) ☐ l. BOX(S) ☐ m CYLINDER ☐ n. GLASS CONTAINER ☐ o PLASTIC CONTAINER ☐ p. IN MACH OR EQUIP ☐ q. TANK WAGON ☐ r. RAIL CAR ☐ s. TOTE BIN ☐ t. OTHER_____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)		EHS		CAS #	
1	20-25 29	Limestone	30	☐ Yes	☐ No 31	1317-65-3	32
2	10-15 29	Toluene	30	☐ Yes	☐ No 31	108-88-3	32
3	5-10 29	Calcium Carbonate	30	☐ Yes	☐ No 31	471-34-1	32
4	1-5 29	Titanium Dioxide	30	☐ Yes	☐ No 31	13463-67-1	32
5	1-5 29	Glycidoxypropyltrimethylsilane	30	☐ Yes	☐ No 31	2530-83-8	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

UNDOT # UN 1866 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS 3 (IATA/CFR49) 3.3 (IMO)
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND
FIRE (RED) 3
HEALTH (BLUE) 2
REACTIVE (YELLOW) 0
SPECIAL HAZARD WHITE OX/W 37

MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Material Safety Data Sheet
AC-® 240 Class A Base

MSDS No: 32401-10
Effective: 01/26/09
Supercedes: 03/13/08

SIN #834-100
AMS-S-8802

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Product ID: AC-240 Class A Base
Generic Description: Polysulfide sealant
Product Use: Aircraft sealant

For information, contact:
Advanced Chemistry & Technology
7341 Anaconda Avenue
Garden Grove, CA 92841-2921
714 - 373 - 2837

ChemTrec Emergency
1 - 800 - 424 - 9300

HAZARD RATINGS		
	HMIS	NFPA
Health	2*	2
Fire	3	3
Reactivity	0	0
	* = Chronic	

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMMON NAME	CAS #	Approximate % (w/w)
Limestone	1317-65-3	20 – 25
Toluene	108-88-3	10 – 15
Calcium carbonate	471-34-1	5 – 10
Titanium Dioxide	13463-67-7	1 – 5
Glycidoxypropyltrimethoxysilane	2530-83-8	1 – 5
Non-hazardous and other ingredients below reportable levels	Proprietary	Balance

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: FLAMMABLE LIQUID AND VAPOR. INHALATION MAY CAUSE DIZZINESS, HEADACHE AND LOSS OF COORDINATION. INGESTION CAN CAUSE DIZZINESS, FAINTNESS, HEADACHE AND INCOORDINATION. MAY CAUSE RESPIRATORY TRACT IRRITATION. MAY CAUSE DIGESTIVE TRACT IRRITATION. INGESTION MAY CAUSE NAUSEA, VOMITING, PAIN, UPSET STOMACH, DIARRHEA. INHALATION MAY CAUSE NAUSEA, VOMITING, UPSET STOMACH. MAY CAUSE EYE IRRITATION. MAY CAUSE SKIN IRRITATION. PROLONGED OR REPEATED CONTACT MAY DRY SKIN AND CAUSE IRRITATION. See sections 3, 5, & 6.

PRIMARY ROUTES OF EXPOSURE: Eye. Skin. Inhalation (breathing).

EYE CONTACT: May cause slight to mild irritation. Can cause burning sensation, tearing, and redness.

SKIN CONTACT: May cause slight to mild irritation. Prolonged or repeated contact may dry the skin and lead to irritation (i.e. dermatitis).

INHALATION (Breathing): Irritating to the eyes, nose, and respiratory tract. Can cause dizziness, headaches, and loss of coordination. Nausea, vomiting, and stomach upset can occur. Can cause anesthetic and/or narcotic effects.

INGESTION (Swallowing): Irritating to the mouth, throat, and stomach. May cause nausea, vomiting, pain, and stomach upset (e.g., diarrhea). Can cause dizziness, faintness, headache, and loss of coordination.

TARGET ORGANS/CHRONIC EFFECTS: Liver. Kidneys. Lungs and respiratory system. Eyes. Skin.

CONDITIONS AGGRAVATED BY EXPOSURE: Lungs and respiratory system. Skin.

CARCINOGENICITY:

	ACGIH	IARC	NTP	OSHA
Limestone	No	No	No	No
Toluene	No	No	No	No
Calcium Carbonate	No	No	No	No
Titanium Dioxide	No	No	No	No
Glycidoxypropyltrimethoxysilane	No	No	No	No

4. FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation persists.

SKIN CONTACT: Immediately flush with water. Remove contaminated clothing and shoes. Get medical attention if irritation persists. Professionally wash clothing and shoes before re-use.

INHALATION (Breathing): Remove to fresh air. If symptoms develop, seek immediate medical attention. If not breathing, give artificial respiration.

INGESTION (Swallowing): Seek medical attention. Immediately induce vomiting, as directed by medical personnel. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIANS: Treatment should be directed at preventing absorption, administering to symptoms (if they occur), and providing supportive therapy.

5. FIRE FIGHTING METHODS

Flash Point:	41°F (4°C)	Method:	Setaflash Closed Cup
Explosive Limits:	LEL (%) Not Determined	UEL (%) Not Determined	
Autoignition:	Not Determined		

HAZARDOUS COMBUSTION AND DECOMPOSITION PRODUCTS: Smoke, soot, and toxic/irritating fumes (i.e., carbon dioxide, carbon monoxide, etc.). Formaldehyde and/or other aldehydes. Oxides of sulfur. Hydrogen sulfide.

FIRE AND EXPLOSION HAZARDS: High temperatures can cause sealed containers to rupture due to a build up of internal pressure. Cool with water. During a fire, irritating and highly toxic gases may be generated during combustion or decomposition.

EXTINGUISHING MEDIA: SMALL FIRES: Dry chemical, carbon dioxide, halon, water spray, or foam. LARGE FIRES: Water spray, fog, or alcohol foam.

FIRE FIGHTING PROCEDURES/EQUIPMENT: Fire fighters and others who may be exposed to the products of combustion should be equipped with NIOSH-approved positive pressure self-contained breathing apparatus (SCBA) and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

EVACUATION: Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Eliminate all sources of ignition.

CONTAINMENT: Safely stop discharge. Contain material, as necessary, with a dike or barrier. Stop material from contaminating soil, or from entering sewers or bodies of water.

CLEAN-UP/PERSONAL PROTECTION EQUIPMENT: Appropriate safety measures and protective equipment should be used. Use supplied air respirator or self-contained breathing apparatus in enclosed spaces or if airborne exposure limits can be exceeded. See Section 8.

COLLECTION AND DISPOSAL: Stop discharge, if safe to do so. Use proper protective equipment. Use non-sparking tools and/or explosion-proof equipment. Stop ignition sources. Cover spills with absorbent clay or sawdust and place in closed chemical waste containers. Dispose of according to applicable local, state and federal regulations.

REPORTING: Spills of this material in excess of a components' RQ must be reported to the National Response Center (1-800-424-8802) and to the appropriate state and local emergency response organizations.

Toluene	RQ = 1000 LB

7. HANDLING AND STORAGE

Storage Temperature < 100°F 37°C

STORAGE CONDITIONS: Store in cool, dry, well-ventilated area away from heat, ignition sources, and direct sunlight. Keep containers tightly closed. WARNING: Hot organic chemical vapors or mists can suddenly and without warning combust when mixed with air. Ignition can occur at typical elevated temperature process conditions. Any use in such processes should be evaluated thoroughly to assure safe operating conditions.

TRANSFER: Containers should be supported and grounded before opening, dispensing, mixing, pouring, and emptying. Open with non-sparking tools. If container is warm, open bung slowly to release internal pressure.

PERSONAL HYGIENE: Wash thoroughly after handling, especially before eating, drinking, smoking, and using restroom facilities. Wash contaminated goggles, face-shield, and gloves. Professionally launder contaminated clothing before re-use.

EMPTY CONTAINER PRECAUTIONS: Attention! This container hazardous when empty. Follow label warnings even after container is emptied since empty containers may retain product residues. Do not use heat, sparks, open flames, torches, cigarettes on or near empty container. Do not reuse empty container without professional cleaning for food, clothing, or products for human or animal consumption or where skin contact can occur.

SPECIAL INSTRUCTIONS: See container and/or technical data sheet for instructions on use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE GUIDELINES:

ACGIH - TLV		
Limestone	10	mg/M^3 Total dust
Toluene	50	ppm
Calcium Carbonate	10	mg/M^3
Titanium Dioxide	10	mg/M^3
	Manufacturer's PEL/TLV	
Glycidoxypropyltrimethoxysilane	5	ppm
	Manufacturer's STEL	
Glycidoxypropyltrimethoxysilane	10	ppm
OSHA - PEL		
Limestone	5	mg/M^3 Resp. dust
Toluene	100	ppm
Calcium Carbonate	5	mg/M^3 Resp. dust
Titanium Dioxide	10	mg/M^3

ENGINEERING CONTROLS/VENTILATION: Local exhaust ventilation is recommended when vapors, mists, or dusts can be released in excess of established airborne exposure limits (TLVs or PELs).

EYE PROTECTION: Wear chemical splash goggles. An eye wash facility should be readily available.

SKIN PROTECTION: Wear protective clothing and appropriate, impervious gloves. Because a variety of protective gloves exist, consult glove manufacturer to determine the proper type for a specific operation. Neoprene gloves. Butyl rubber gloves. An emergency shower should be readily available.

RESPIRATORY PROTECTION: Avoid breathing vapor and/or mists. Wear NIOSH/MSHA-approved equipment. Determine the appropriate type by consulting the respirator manufacturer. High airborne concentrations may necessitate the use of self-contained breathing apparatus (SCBA) or a supplied air respirator. Respiratory protection programs must be in compliance with 29 CFR 1910.134. Organic vapor/mist respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	White	Odor:	Mercaptan
Physical State:	Liquid	Solubility:	Insoluble
pH:	Not Applicable	Vapor Pressure:	Not Established
Vapor Density:	Not Established	Evaporation Rate:	Not Established
VOC Material:	Approximately 168 g/L (1.13 lbs/gal)	Specific Gravity:	1.43
%Non-Vol(w/w):	Approximately 87		

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under normal conditions of use.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: High temperatures.

INCOMPATIBILITY WITH OTHER MATERIALS: Oxidizers. Reducers. Acids. Strong bases.

11. TOXICITY INFORMATION

COMPONENTS:

Limestone:
Repeated exposure to dusts can lead to particulate deposition in the lungs (i.e., pneumoconiosis). Can contain trace amounts of crystalline silica as an impurity.

Toluene:

Oral LD50	Rat	5,000 mg/kg
Dermal LD50	Rabbit	12,124 mg/kg
Inhalation LC50	Mouse	5,320 ppm/8-hours

Titanium Dioxide:
In a 2-year study in rats, an increase in benign and malignant lung tumors was observed at 250 mg/M^3 respirable dust level. This level is 50 times the current occupational exposure level and is not expected to correlate to human exposures.

Glycidoxypropyltrimethoxysilane:
Eye, skin, and respiratory tract irritant. Positive results were obtained in the Ames test. Positive results were obtained in the mouse lymphoma assay.

12. ECOLOGICAL INFORMATION

No ecological data on the product itself is available.

The product must not be allowed to run into drains or waterways.

Ecotoxicity:

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

13. DISPOSAL CONSIDERATIONS

DISPOSAL: When a decision is made to discard this material as supplied, it meets RCRA's characteristic definition of ignitability.

GENERAL STATEMENTS: Federal regulations may apply to empty container. State and/or local regulations may be different.

GENERAL RECOMMENDATIONS: Of the methods of disposal currently available, it is recommended that an alternative be selected according to the following order of preference, based upon environmental acceptability: (1) recycle or rework, if feasible; (2) incinerate at an authorized facility; or (3) treat at an acceptable waste treatment facility.

SPECIAL INSTRUCTIONS: Be sure to contact the appropriate government environmental agencies if further guidance is required.

14. TRANSPORT INFORMATION

Weight (lb.)	Shipping Name	49 CFR	IATA	IMO
	Resin solution	Y	Y	Y

DOT Label.....: Flammable Liquid
Hazard Class...: 3 (IATA/49CFR) 3.3 (IMO)
Packing Group.: II
UN/NA Id Num.: UN 1866

All the information in this section is for non-bulk packaging (119 gallons or less; 882 lbs. or less for solids). For domestic shipments only under 49CFR above (transportation by vessel or aircraft is not permitted): Only regulated as a combustible liquid when packaged in containers of 119 gallons or more and does not meet the definition of any other hazard class. When less than 119 gallons are shipped domestically by ground transport (49CFR above), the following transportation information applies: DOT shipping name: Non-regulated; DOT label: Not-regulated: DOT ID No.: Not-regulated; Precautionary Label: ND.

15. REGULATORY INFORMATION

FEDERAL:
This product is considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

SARA Title III - Section 311/312 - Hazard Categories:
Y - Fire Hazard
N - Sudden Release of Pressure Hazard
N - Reactivity Hazard
Y - Immediate (acute) Health Hazard
Y - Delayed (chronic) Health Hazard

Ozone-Depleting Chemicals - No regulated ingredients.

SARA Section 302 Extremely Hazardous Mat - No regulated ingredients.

SARA Section 313 Toxic Chemicals –Toluene

TSCA Section 12(b) Export Notification
Toluene

CHEMICAL LISTING - Listed on the following Country's Chemical Inventories:

United States Toxic Substance Control Act
Chemical component(s) in this product are on the section 8(b) Chemical Substance Inventory List (40 CFR 710).

STATE RIGHT-TO-KNOW:

Pennsylvania - New Jersey R-T-K

Limestone	1317-65-3	20 – 25
Toluene	108-88-3	10 – 15
	Environmental Hazard.	
Titanium Dioxide	13463-67-7	1 – 5
Glycidoxypropyltrimethoxysilane	2530-83-8	1 – 5
Non-hazardous trade secret ingredient(s)	Proprietary	Balance

California - California Proposition 65
WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

Toluene	108-88-3	10 – 15
Reproductive Hazard		
Quartz (crystalline silica)	14808-60-7	< 0.01*
Cancer Hazard.		
Formaldehyde	50-00-0	Trace *
Cancer Hazard.		

* Trace = present at less than 0.01 percent.

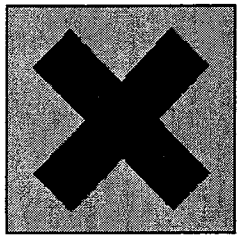
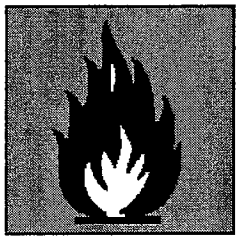
CONEG - No data available.

CANADA:
This is a "controlled product" under the Canadian Workplace Hazardous Materials Information System (WHMIS).
Class B Division 2 Class D Division 2 Sub-division A

CEPA - NPRI – Toluene

European Union:
Preparation classification:

Harmful **Highly Flammable**

Contains:
601-021-00-3 TOLUENE
Particular hazards associated with the preparation and safety recommendations:

R 52/53	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R 11	Highly flammable.
R 63	Possible risk of harm to the unborn child.
S 36/37	Wear suitable protective clothing and gloves.
S 16	Keep away from sources of ignition - no smoking.
S 60	This material and its container must be disposed of as hazardous waste.
S 61	Avoid release to the environment. Refer to special instructions/Safety data sheets.
S 9	Keep container in a well-ventilated place.

16. OTHER INFORMATION

USER RESPONSIBILITY: A bulletin such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions - in addition to those described herein - are required. Any health hazard and safety information herein should be passed on to your customers or employees, as the case may be.

DISCLAIMER OF LIABILITY: The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist. Final determination of suitability of the chemical is the sole responsibility of the user. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or any other nature are made hereunder with respect to the information contained herein or the chemical to which the information refers. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.

End of Material Safety Data Sheet

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☒ REVISED 1 Page ____ of ____ 2

FACILITY ID# 30035 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: Class I Room 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # I2 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: AC-137 Clear Adhesion Prom. | WASTE ☐ Yes 8 | TRADE SECRET ☒ Yes ☐ No 11 (* If EPCRA see instructions)

COMMON NAME: SAME 9 | An EHS Chemical ☐ Yes ☒ No 12 (*If EHS is "Yes", all amounts must be LBS)

CAS # 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☑ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE 18 ☑ d. ACUTE HEALTH ☑ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT: 0.1 19 | MAXIMUM DAILY AMOUNT: 10 20 | ANNUAL WASTE AMOUNT: 1 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET 23 ☒ c. POUNDS ☐ d. TONS (*If EHS, amount must be in pounds.) | DAYS ON SITE: 365 DAYS 24 | LARGEST CONTAINER: Gallons 25

STORAGE CONTAINER (Check all that apply) 26
☐ a. ABOVEGROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BLDG ☐ d STEEL DRUM ☐ e. PLASTIC DRUM ☐ f. NONMETALLIC DRUM ☐ g. METAL CONTAINER ☐ h. CARBOY ☐ i. VAT ☐ l. FIBER DRUM ☐ l. BAG(S) ☐ l. BOX(S) ☐ m CYLINDER ☒ n. GLASS CONTAINER ☐ o PLASTIC CONTAINER ☐ p. IN MACH OR EQUIP ☐ q. TANK WAGON ☐ r. RAIL CAR ☐ s. TOTE BIN ☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	70-90 29	ETHANOL 30	☐ Yes ☐ No 31	64-17-5 32
2	5-15 29	TITANATE ESTER 30	☐ Yes ☐ No 31	TRADE SECRET 32
3	1-5 29	METHYL ALCOHOL 30	☐ Yes ☐ No 31	67-56-1 32
4	1-5 29	ISOPROPYL ALCOHOL 30	☐ Yes ☐ No 31	67-63-0 32
5	balance 29	TRADE SECRET 30	☐ Yes ☐ No 31	N.A. 32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

UNDOT # UN1170 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS 3 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 37
FIRE (RED) 3
HEALTH (BLUE) 2
REACTIVE (YELLOW) 0
SPECIAL HAZARD WHITE OX/W

MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Material Safety Data Sheet AC-® 137 Clear, Adhesion Promoter

MSDS No: 11372-03
Effective: 01/26/09
Supercedes: 02/27/08

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

SIN #834-100

Product ID: AC-137 Clear Adhesion promoter
Generic Description: Titanate mixture
Product Use: Adhesion promoter

For information, contact:
Advanced Chemistry & Technology
7341 Anaconda Avenue
Garden Grove, CA 92841-2921
714 - 373 - 2837

ChemTrec Emergency
1 - 800 - 424 - 9300

HAZARD RATINGS		
	HMIS	NFPA
Health	2*	2
Fire	3	3
Reactivity	0	0
	* = Chronic	

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMMON NAME	CAS #	Approximate % (w/w)
Ethanol	64 – 17 - 5	70 - 90
Titanate ester	Proprietary	5 - 15
Methyl Alcohol	67 – 56 - 1	1 - 5
Isopropyl Alcohol	67 – 63 - 0	1 - 5
Non - hazardous and other ingredients below reportable levels	Proprietary	Balance

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: FLAMMABLE LIQUID AND VAPOR. CAUSES SEVERE EYE IRRITATION. CAUSES SEVERE SKIN IRRITATION. INHALATION MAY CAUSE DIZZINESS, HEADACHE AND INCOORDINATION. MAY CAUSE RESPIRATORY TRACT IRRITATION. MAY CAUSE DIGESTIVE TRACT IRRITATION. PROLONGED OR REPEATED CONTACT MAY DRY SKIN AND CAUSE IRRITATION. See sections 3, 5, & 6.

PRIMARY ROUTES OF EXPOSURE: Eye. Skin. Inhalation (breathing).

EYE CONTACT: Causes severe irritation.

SKIN CONTACT: Causes severe irritation. Prolonged or repeated contact may dry the skin and lead to irritation (i.e. dermatitis).

INHALATION (Breathing): Irritating to the eyes, nose, and respiratory tract. Can cause dizziness headaches, and loss of coordination.

INGESTION (Swallowing): Irritating to the mouth, throat, and stomach.

TARGET ORGANS/CHRONIC EFFECTS: Eyes. Skin. Heart, Central Nervous System, Liver.

CONDITIONS AGGRAVATED BY EXPOSURE: Liver. Kidneys. Skin.

CARCINOGENICITY:

	ACGIH	IARC	NTP	OSHA
Ethanol	No	No	No	No
Titanate ester	No	No	No	No
Methyl alcohol	No	No	No	No
Isopropyl Alcohol	No	Group 3	No	No

4. FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Get prompt medical attention.

SKIN CONTACT: Immediately flush with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get prompt medical attention. Professionally wash clothing before re - use.

INHALATION (Breathing): Remove to fresh air. If symptoms develop, seek immediate medical attention. If not breathing, give artificial respiration.

INGESTION (Swallowing): Seek medical attention. Immediately induce vomiting, as directed by medical personnel. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIANS: Treatment should be directed at preventing absorption, administering to symptoms (if they occur), and providing supportive therapy.

5. FIRE FIGHTING METHODS

Flash Point:	55°F (13°C)	Method: Tag Closed Cup
Explosive Limits:	LEL(%) 3.3 UEL(%) 19	
Autoignition:	685°F	

HAZARDOUS COMBUSTION AND DECOMPOSITION PRODUCTS: Smoke, soot, and toxic/irritating fumes (i.e., carbon dioxide, carbon monoxide, etc.).

FIRE AND EXPLOSION HAZARDS: High temperatures can cause sealed containers to rupture due to a build up of internal pressure. Cool with water. Vapors can travel to a source of ignition (flame, electric motor, hot surface, cigarette, etc.) and flash back. During a fire, irritating and highly toxic gases may be generated during combustion or decomposition.

EXTINGUISHING MEDIA: SMALL FIRES: Dry chemical, carbon dioxide, halon, water spray, or foam. LARGE FIRES: Water spray, fog, or alcohol foam.

FIRE FIGHTING PROCEDURES/EQUIPMENT: Fire fighters and others who may be exposed to the products of combustion should be equipped with NIOSH - approved positive pressure self - contained breathing apparatus (SCBA) and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

EVACUATION: Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Eliminate all sources of ignition.

CONTAINMENT: Safely stop discharge. Contain material, as necessary, with a dike or barrier. Stop material from contaminating soil, or from entering sewers or bodies of water.

CLEAN - UP/PERSONAL PROTECTION EQUIPMENT: Appropriate safety measures and protective equipment should be used. Use supplied air respirator or self - contained breathing apparatus in enclosed spaces or if airborne exposure limits can be exceeded. See Section 8.

COLLECTION AND DISPOSAL: Stop discharge, if safe to do so. Use proper protective equipment. Use non - sparking tools and/or explosion - proof equipment. Stop ignition sources. Cover spills with absorbent clay or sawdust and place in closed chemical waste containers. Dispose of according to applicable local, state and federal regulations.

REPORTING: Spills of this material in excess of a component's RQ must be reported to the National Response Center (1 - 800 - 424 - 8802) and to the appropriate state and local emergency response organizations. No regulated ingredients.

7. HANDLING AND STORAGE

Storage Temperature < 100°F (38.8°C)

STORAGE CONDITIONS: Store in cool, dry, well ventilated area away from heat, ignition sources, and direct sunlight. Keep containers tightly closed. WARNING: Hot organic chemical vapors or mists can suddenly and without warning combust when mixed with air. Ignition can occur at typical elevated temperature process conditions. Any use in such processes should be evaluated thoroughly to assure safe operating conditions.

TRANSFER: Containers should be supported and grounded before opening, dispensing, mixing, pouring, and emptying. Open with non - sparking tools. If container is warm, open bung slowly to release internal pressure.

PERSONAL HYGIENE: Wash thoroughly after handling, especially before eating, drinking, smoking, and using rest room facilities. Wash contaminated goggles, face shield, and gloves. Professionally launder contaminated clothing before re - use.

EMPTY CONTAINER PRECAUTIONS: Attention! This container hazardous when empty. Follow label warnings even after container is emptied since empty containers may retain product residues. Do not use heat, sparks, open flames, torches, cigarettes on or near empty container. Do not reuse empty container without professional cleaning for food, clothing, or products for human or animal consumption or where skin contact can occur.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE GUIDELINES:

ACGIH - TLV		
Ethanol	1000	ppm
Methyl Alcohol	200	ppm
Isopropyl Alcohol	400	ppm
ACGIH - STEL		
Ethanol	1000	ppm
Methyl Alcohol	200	ppm
Isopropyl Alcohol	400	ppm
OSHA - PEL		
Ethanol	1000	ppm
Methyl Alcohol	200	ppm
Isopropyl Alcohol	400	ppm
OSHA - STEL		
Ethanol	1000	ppm
Methyl Alcohol	200	ppm
Isopropyl Alcohol	400	ppm

ENGINEERING CONTROLS/VENTILATION: Local exhaust ventilation is recommended when vapors, mists, or dusts can be released in excess of established airborne exposure limits (TLVs or PELs).

EYE PROTECTION: Wear chemical splash goggles. An eye wash facility should be readily available.

SKIN PROTECTION: Wear protective clothing and appropriate impervious gloves. Because a variety of protective gloves exist, consult glove manufacturer to determine the proper type for a specific operation.

RESPIRATORY PROTECTION: Avoid breathing vapor and/or mists. Wear NIOSH/MSHA - approved equipment. Determine the appropriate type by consulting the respirator manufacturer. High airborne concentrations may necessitate the use of self - contained breathing apparatus (SCBA) or a supplied air respirator. Respiratory protection programs must be in compliance with 29 CFR 1910.134.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance.....:	Clear	Odor.....:	Strong
Physical State...:	Liquid	Solubility.....:	Insoluble
pH.....:	Not Applicable	Boiling Point.....:	Not Established
Vapor Pressure.:	Not Established	Vapor Density.....:	Approximately 5
Evaporation Rt..:	Not Established	VOC Material.....:	719 g/l
Specific Gravity.:	0.81	% Non - Vol(w/w)..:	89%

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under normal conditions of use.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: High temperatures.

INCOMPATIBILITY WITH OTHER MATERIALS: Oxidizers.

11. TOXICITY INFORMATION

COMPONENTS:

Titanate ester:			
Oral LD50	Rat	11,000	mg/kg
Dermal LD50	Rabbit	> 16	ml/Kg
Inhalation LC50	Rat	7.78	mg/L/4 - hours
Methyl Alcohol			
Oral LD50	Rat	5,628	mg/kg
Inhalation LC50	Rat	64,000	ppm

12. ECOLOGICAL INFORMATION

No data are available on this product.

13. DISPOSAL CONSIDERATIONS

DISPOSAL: When a decision is made to discard this material as supplied, it meets RCRA's characteristic definition of ignitability.

GENERAL STATEMENTS: Federal regulations may apply to empty container. State and/or local regulations may be different.

GENERAL RECOMMENDATIONS: Of the methods of disposal currently available, it is recommended that an alternative be selected according to the following order of preference, based upon environmental acceptability: (1) recycle or rework, if feasible; (2) incinerate at an authorized facility; or (3) treat at an acceptable waste treatment facility.

SPECIAL INSTRUCTIONS: Be sure to contact the appropriate government environmental agencies if further guidance is required.

14. TRANSPORT INFORMATION

Weight (lb.)	Shipping Name	49 CFR	IAYA	IMO
	ETHANOL SOLUTIONS	Y	Y	Y

DOT Label.....:	Flammable Liquid	UN/NA Id Num....:	UN 1170
Hazard Class.....:	3 (IATA/49CFR) 3.2 (IMO)	USPS Mailability..:	No
Packing Group.....:	II		

15. REGULATORY INFORMATION

FEDERAL:

This product is considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

SARA Title III - Section 311/312 - Hazard Categories:

Y - Fire Hazard
N - Sudden Release of Pressure Hazard
N - Reactivity Hazard
Y - Immediate (acute) Health Hazard
Y - Delayed (chronic) Health Hazard

Ozone - Depleting Chemicals - No regulated ingredients.

SARA Section 302
(TPQ) - No regulated ingredients.

SARA Section 313 Toxic Chemicals - No regulated ingredients.

CHEMICAL LISTING - Listed on the following Country's Chemical Inventories:

United States Toxic Substance Control Act
Chemical component(s) in this product are on the section 8(b) Chemical Substance Inventory List (40 CFR 710).

STATE RIGHT - TO - KNOW:

Pennsylvania - New Jersey R - T - K

Reagent Alcohol	64 – 17 - 5	70 - 90
Titanate ester	Proprietary	5 - 10
Methyl Alcohol	67 – 56 - 1	1 - 5
Isopropyl Alcohol	67 – 63 - 0	1 - 5
Non - hazardous trade secret ingredient(s)	Proprietary	Balance

California - California Proposition 65 – This product contains Reagent alcohol, a chemical known to the state of California to cause birth defects or other reproductive harm.

New Jersey Trade Secret Registry Number: 346515 - 5227P

Florida -

Reagent Alcohol	64 – 17 - 5	70 - 90
Methyl Alcohol	67 – 56 - 1	1 - 5
Isopropyl Alcohol	67 – 63 - 0	1 - 5

CONEG - No data available.

CANADA: WHMIS – B2, D2B

CEPA - NPRI - No regulated ingredients.

Canadian Chemical Inventory

Domestic Substance List

Listed - NDSL.

16. OTHER INFORMATION

USER RESPONSIBILITY: A bulletin such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions - in addition to those described herein - are required. Any health hazard and safety information herein should be passed on to your customers or employees, as the case may be.

DISCLAIMER OF LIABILITY: The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of suitability of the chemical is the sole responsibility of the user. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or any other nature are made thereunder with respect to the information contained herein or the chemical to which the information refers. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.

End of Material Safety Data Sheet

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☒ REVISED 1 Page ____ of ____ 2

FACILITY ID# 30 0 0 3 5 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: Class I Room 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 6 | GRID # I2 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: AC-135 Adhesion Promoter | WASTE ☐ Yes 8 | TRADE SECRET ☒ Yes ☐ No 11 * If EPCRA see instructions

COMMON NAME: SAME 9 | An EHS Chemical ☐ Yes ☒ No 12 *If EHS is "Yes", all amounts must be LBS

CAS # 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE 18 ☒ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT: 9 19 | MAXIMUM DAILY AMOUNT: 45 20 | ANNUAL WASTE AMOUNT 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET 23 ☒ c. POUNDS ☐ d. TONS If EHS, amount must be in pounds. | DAYS ON SITE: 365 DAYS 24 | LARGEST CONTAINER: 30 Gal 25

STORAGE CONTAINER (Check all that apply) 26
☐ a. ABOVEGROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BLDG ☐ d STEEL DRUM
☐ e. PLASTIC DRUM ☒ f. NONMETALLIC DRUM ☐ g. METAL CONTAINER ☐ h. CARBOY
☐ i. VAT ☐ l. FIBER DRUM ☐ l. BAG(S) ☐ l. BOX(S)
☐ m CYLINDER ☒ n. GLASS CONTAINER ☐ o PLASTIC CONTAINER ☐ p. IN MACH OR EQUIP
☐ q. TANK WAGON ☐ r. RAIL CAR ☐ s. TOTE BIN ☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	80-90 29	PARA-CHLOROBENZOTRIFLUORIDE 30	☐ Yes ☐ No 31	98-56-6 32
2	5-15 29	TITANATE ESTER 30	☐ Yes ☐ No 31	TRADE SECRET 32
3	1-5 29	ORTHO-CHLOROBENZOTRIFLUORIDE 30	☐ Yes ☐ No 31	88-16-4 32
4	balance 29	TRADE SECRET 30	☐ Yes ☐ No 31	N.A. 32
5	29	30	☐ Yes ☐ No 31	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

UNDOT # UN 2234 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS 3 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND
FIRE (RED) 3
HEALTH (BLUE) 2
REACTIVE (YELLOW) 0
SPECIAL HAZARD WHITE OX/W 37

MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Material Safety Data Sheet
AC-®135 Adhesion Promoter

MSDS No: 11351-08
Effective: 01/26/09
Supercedes: 08/02/04

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

SIN #834-100

Product ID: AC-135 Adhesion promoter
Generic Description: Titanate mixture
Product Use: Adhesion promoter

For information, contact:
Advanced Chemistry & Technology
7341 Anaconda Avenue
Garden Grove, CA 92841-2921
714 - 373 - 2837

HAZARD RATINGS		
	HMIS	NFPA
Health	2*	2
Fire	3	3
Reactivity	0	0
	* = Chronic	

ChemTrec Emergency
1 - 800 - 424 - 9300

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMMON NAME	CAS #	Approximate % (w/w)
Para - chlorobenzotrifluoride	98 - 56 - 6	80 - 90
Titanate ester	Proprietary	5 - 15
Ortho - chlorobenzotrifluoride	88 - 16 - 4	1 - 5
Non - hazardous and other ingredients below reportable levels	Proprietary	Balance

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: FLAMMABLE LIQUID AND VAPOR. CAUSES SEVERE EYE IRRITATION. CAUSES SEVERE SKIN IRRITATION. INHALATION MAY CAUSE DIZZINESS, HEADACHE AND LOSS OF COORDINATION. MAY CAUSE RESPIRATORY TRACT IRRITATION. MAY CAUSE DIGESTIVE TRACT IRRITATION. PROLONGED OR REPEATED CONTACT MAY DRY SKIN AND CAUSE IRRITATION. See sections 3, 5, & 6.

PRIMARY ROUTES OF EXPOSURE: Eye. Skin. Inhalation (breathing).

EYE CONTACT: Causes severe irritation.

SKIN CONTACT: Causes severe irritation. Prolonged or repeated contact may dry the skin and lead to irritation (i.e. dermatitis).

INHALATION (Breathing): Irritating to the eyes, nose, and respiratory tract. Can cause dizziness headaches, and loss of coordination.

INGESTION (Swallowing): Irritating to the mouth, throat, and stomach.

TARGET ORGANS/CHRONIC EFFECTS: Eyes. Skin. Heart, Central Nervous System, Liver.

CONDITIONS AGGRAVATED BY EXPOSURE: Liver. Kidneys. Skin.

CARCINOGENICITY:

	ACGIH	IARC	NTP	OSHA
Para - chlorobenzotrifluoride	No	No	No	No
Titanate ester	No	No	No	No
Ortho - chlorobenzotrifluoride	No	No	No	No

4. FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Get prompt medical attention.

SKIN CONTACT: Immediately flush with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get prompt medical attention. Professionally wash clothing before re - use.

INHALATION (Breathing): Remove to fresh air. If symptoms develop, seek immediate medical attention. If not breathing, give artificial respiration.

INGESTION (Swallowing): Seek medical attention. Immediately induce vomiting, as directed by medical personnel. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIANS: Treatment should be directed at preventing absorption, administering to symptoms (if they occur), and providing supportive therapy.

5. FIRE FIGHTING METHODS

Flash Point.....:	77°F (25°C)	Method:.....:	Setaflash Closed Cup
Explosive Lmts.....:	LEL(%) Not Established UEL(%) Not Established		
Autoignition.....:	Not Established		

HAZARDOUS COMBUSTION AND DECOMPOSITION PRODUCTS: Smoke, soot, and toxic/irritating fumes (i.e., carbon dioxide, carbon monoxide, etc.).

FIRE AND EXPLOSION HAZARDS: High temperatures can cause sealed containers to rupture due to a build up of internal pressure. Cool with water. Vapors can travel to a source of ignition (flame, electric motor, hot surface, cigarette, etc.) and flash back. During a fire, irritating and highly toxic gases may be generated during combustion or decomposition.

EXTINGUISHING MEDIA: SMALL FIRES: Dry chemical, carbon dioxide, halon, water spray, or foam. LARGE FIRES: Water spray, fog, or alcohol foam.

FIRE FIGHTING PROCEDURES/EQUIPMENT: Fire fighters and others who may be exposed to the products of combustion should be equipped with NIOSH - approved positive pressure self - contained breathing apparatus (SCBA) and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

EVACUATION: Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Eliminate all sources of ignition.

CONTAINMENT: Safely stop discharge. Contain material, as necessary, with a dike or barrier. Stop material from contaminating soil, or from entering sewers or bodies of water.

CLEAN - UP/PERSONAL PROTECTION EQUIPMENT: Appropriate safety measures and protective equipment should be used. Use supplied air respirator or self - contained breathing apparatus in enclosed spaces or if airborne exposure limits can be exceeded. See Section 8.

COLLECTION AND DISPOSAL: Stop discharge, if safe to do so. Use proper protective equipment. Use non - sparking tools and/or explosion - proof equipment. Stop ignition sources. Cover spills with absorbent clay or sawdust and place in closed chemical waste containers. Dispose of according to applicable local, state and federal regulations.

REPORTING: Spills of this material in excess of a component's RQ must be reported to the National Response Center (1 - 800 - 424 - 8802) and to the appropriate state and local emergency response organizations. No regulated ingredients.

7. HANDLING AND STORAGE

Storage Temperature < 120F 48.8C

STORAGE CONDITIONS: Store in cool, dry, well ventilated area away from heat, ignition sources, and direct sunlight. Keep containers tightly closed.

WARNING: Hot organic chemical vapors or mists can suddenly and without warning combust when mixed with air. Ignition can occur at typical elevated temperature process conditions. Any use in such processes should be evaluated thoroughly to assure safe operating conditions.

TRANSFER: Containers should be supported and grounded before opening, dispensing, mixing, pouring, and emptying. Open with non - sparking tools. If container is warm, open bung slowly to release internal pressure.

PERSONAL HYGIENE: Wash thoroughly after handling, especially before eating, drinking, smoking, and using rest room facilities. Wash contaminated goggles, face shield, and gloves. Professionally launder contaminated clothing before re - use.

EMPTY CONTAINER PRECAUTIONS: Attention! This container hazardous when empty. Follow label warnings even after container is emptied since empty containers may retain product residues. Do not use heat, sparks, open flames, torches, cigarettes on or near empty container. Do not reuse empty container without professional cleaning for food, clothing, or products for human or animal consumption or where skin contact can occur.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE GUIDELINES:
ACGIH - TLV - No regulated ingredients.
Manufacturer's PEL/TLV

Para - chlorobenzotrifluoride	20 ppm
Titanate ester	10 mg / M^3 Total dust

ENGINEERING CONTROLS/VENTILATION: Local exhaust ventilation is recommended when vapors, mists, or dusts can be released in excess of established airborne exposure limits (TLVs or PELs).

EYE PROTECTION: Wear chemical splash goggles. An eye wash facility should be readily available.

SKIN PROTECTION: Wear protective clothing and appropriate impervious gloves. Because a variety of protective gloves exist, consult glove manufacturer to determine the proper type for a specific operation.

RESPIRATORY PROTECTION: Avoid breathing vapor and/or mists. Wear NIOSH/MSHA - approved equipment. Determine the appropriate type by consulting the respirator manufacturer. High airborne concentrations may necessitate the use of self - contained breathing apparatus (SCBA) or a supplied air respirator. Respiratory protection programs must be in compliance with 29 CFR 1910.134.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance.....:	Red	Odor.....:	Strong
Physical State...:	Liquid	Solubility.....:	Insoluble
pH.....:	Not Applicable	Boiling Point....:	Not Established
Vapor Pressure:	Not Established	Vapor Density.:	Approximately 5
Evaporation Rt..:	Not Established	VOC Material..:	23.5 g/l (0.20 lb/gal)
Specific Gravity..	1.29	VOC Coating..:	146 g/l (1.23 lb/gal)
% Non - Vol(w/w)..:	Not Established		

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under normal conditions of use.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: High temperatures.

INCOMPATIBILITY WITH OTHER MATERIALS: Oxidizers.

11. TOXICITY INFORMATION

COMPONENTS:

Para - chlorobenzotrifluoride:			
Oral LD50	Rat	> 6,800	mg/kg
Dermal LD50	Rabbit	> 2,700	mg/kg
Inhalation LC50	Rat	4,479	ppm/4 - Hours
Titanate ester:			
Oral LD50	Rat	11,000	mg/kg
Dermal LD50	Rabbit	> 16	ml/kg
Inhalation LC50	Rat	7.78	mg/L/4 - hours

Ortho - chlorobenzotrifluoride: Eye, skin, and respiratory tract irritant.

12. ECOLOGICAL INFORMATION

No data are available on this product.

13. DISPOSAL CONSIDERATIONS

DISPOSAL: When a decision is made to discard this material as supplied, it meets RCRA's characteristic definition of ignitability.

GENERAL STATEMENTS: Federal regulations may apply to empty container. State and/or local regulations may be different.

GENERAL RECOMMENDATIONS: Of the methods of disposal currently available, it is recommended that an alternative be selected according to the following order of preference, based upon environmental acceptability: (1) recycle or rework, if feasible; (2) incinerate at an authorized facility; or (3) treat at an acceptable waste treatment facility.

SPECIAL INSTRUCTIONS: Be sure to contact the appropriate government environmental agencies if further guidance is required.

14. TRANSPORT INFORMATION

Weight (lb.)	Shipping Name	49 CFR	IAYA	IMO
	Chlorobenzotrifluorides solution	Y	Y	Y

DOT Label.....: Flammable Liquid
Hazard Class.....: 3 (IATA/49CFR) 3.3 (IMO)
Packing Group.....: III

UN/NA Id Num....: UN 2234
USPS Mailability..: No

15. REGULATORY INFORMATION

FEDERAL:

This product is considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

SARA Title III - Section 311/312 - Hazard Categories:
Y - Fire Hazard
N - Sudden Release of Pressure Hazard
N - Reactivity Hazard
Y - Immediate (acute) Health Hazard

Y - Delayed (chronic) Health Hazard

Ozone - Depleting Chemicals - No regulated ingredients.

SARA Section 302
(TPQ) - No regulated ingrediants.

SARA Section 313 Toxic Chemicals - No regulated ingredients.

CHEMICAL LISTING - Listed on the following Country's Chemical Inventories:

United States Toxic Substance Control Act
Chemical component(s) in this product are on the section 8(b) Chemical Substance Inventory List (40 CFR 710).

STATE RIGHT - TO - KNOW:

Pennsylvania - New Jersey R - T - K

Para - chlorobenzotrifluoride	98 - 56 - 6	80 - 90
Titanate ester	Proprietary	5 - 10
Ortho - chlorobenzotrifluoride	88 - 16 - 4	1 - 5
Non - hazardous trade secret ingredient(s)	Proprietary	Balance

California - California Proposition 65 - No regulated ingredients.

New Jersey Trade Secret Registry Number: 346515 - 5227P

CONEG - No data available.

CANADA:
This is a "controlled product" under the Canadian Workplace Hazardous Materials Information System (WHMIS).

Class B Division 2 Class D Division 2 Sub - division B
CAS #628-63-7 is listed on Canada's DSL/NDSL list.

CEPA - NPRI - No regulated ingredients.

Canadian Chemical Inventory

Domestic Substance List
Listed - NDSL.

16. OTHER INFORMATION

USER RESPONSIBILITY: A bulletin such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions - in addition to those described herein - are required. Any health hazard and safety information herein should be passed on to your customers or employees, as the case may be.

DISCLAIMER OF LIABILITY: The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of suitability of the chemical is the sole responsibility of the user. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or any other nature are made thereunder with respect to the information contained herein or the chemical to which the information refers. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.

End of Material Safety Data Sheet

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☒ REVISED 1 Page ____ of ____ 2

FACILITY ID# 3 0 0 3 5 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: CLASS I ROOM 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # I 2 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: METHYL ETHYL KETONE | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☒ No 11 (* If EPCRA see instructions)

COMMON NAME: MEK 9 | An EHS Chemical ☐ Yes ☐ No 12 (*If EHS is "Yes", all amounts must be LBS)

CAS # 78-93-3 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☒ a. PURE ☐ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☑ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE 18 ☑ d. ACUTE HEALTH ☑ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT 200 19 | MAXIMUM DAILY AMOUNT 500 20 | ANNUAL WASTE AMOUNT NONE 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET 23 ☒ c. POUNDS ☐ d. TONS (*If EHS, amount must be in pounds.) | DAYS ON SITE 365 DAYS 24 | LARGEST CONTAINER 50 GAL DRUM 25

STORAGE CONTAINER (Check all that apply) 26

☐ a. ABOVEGROUND TANK	☐ e. PLASTIC DRUM	☐ i. VAT	☐ m CYLINDER	☐ q. TANK WAGON
☐ b. UNDERGROUND TANK	☐ f. NONMETALLIC DRUM	☐ I. FIBER DRUM	☐ n. GLASS CONTAINER	☐ r. RAIL CAR
☐ c. TANK INSIDE BLDG	☒ g. METAL CONTAINER	☐ I. BAG(S)	☐ o PLASTIC CONTAINER	☐ s. TOTE BIN
☐ d STEEL DRUM	☐ h. CARBOY	☐ I. BOX(S)	☐ p. IN MACH OR EQUIP	☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	29	30	☐ Yes ☐ No 31	32
2	29	30	☐ Yes ☐ No 31	32
3	29	30	☐ Yes ☐ No 31	32
4	29	30	☐ Yes ☐ No 31	32
5	29	30	☐ Yes ☐ No 31	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

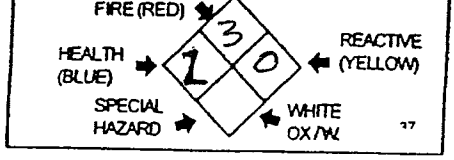
UNDOT # UN 1193 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS 3 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 37



MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Shell Chemicals

Material Safety Data Sheet

Methyl Ethyl Ketone
MSDS# 5390
Version 14.3
Effective Date 11/26/2005
According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

1. MATERIAL AND COMPANY IDENTIFICATION

Material Name	:	**Methyl Ethyl Ketone**
Uses	:	Use as a solvent only in industrial manufacturing processes.
Product Code	:	S2113
Company	:	**Shell Chemical LP** PO Box 2463 HOUSTON TX 77252-2463 USA
MSDS Request	:	1-800-240-6737
Customer Service	:	1-866-897-4355

Emergency Telephone Number

Chemtrec Domestic (24 hr)	:	1-800-424-9300
Chemtrec International (24 hr)	:	1-703-527-3887

2. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	Concentration
Methyl ethyl ketone	78-93-3	100.00 %

3. HAZARDS IDENTIFICATION

Emergency Overview

Appearance and Odour	:	Clear. Liquid. Characteristic.
Health Hazards	:	Irritating to eyes. Vapours may cause drowsiness and dizziness. Harmful: may cause lung damage if swallowed.
Safety Hazards	:	Flammable liquid and vapour. Vapours are heavier than air. Vapours may travel across the ground and reach remote ignition sources causing a flashback fire danger. Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire.

Health Hazards

Inhalation	:	Slightly irritating to respiratory system. Vapours may cause drowsiness and dizziness.
Skin Contact	:	May cause moderate irritation to skin. Repeated exposure may cause skin dryness or cracking.
Eye Contact	:	Irritating to eyes.
Ingestion	:	Harmful: may cause lung damage if swallowed.
Signs and Symptoms	:	Eye irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blurred vision. Defatting dermatitis signs and symptoms may include a burning sensation and/or a dried/cracked appearance. Respiratory irritation signs and symptoms may include a temporary burning

sensation of the nose and throat, coughing, and/or difficulty breathing. If material enters lungs, signs and symptoms may include coughing, choking, wheezing, difficulty in breathing, chest congestion, shortness of breath, and/or fever. Breathing of high vapour concentrations may cause central nervous system (CNS) depression resulting in dizziness, light-headedness, headache, nausea and loss of coordination. Continued inhalation may result in unconsciousness and death.

Aggravated Medical Condition	:	Pre-existing medical conditions of the following organ(s) or organ system(s) may be aggravated by exposure to this material: Eyes. Respiratory system. Skin.

4. FIRST AID MEASURES

General Information	:	In general no treatment is necessary, however, obtain medical advice.
Inhalation	:	Remove to fresh air. If rapid recovery does not occur, transport to nearest medical facility for additional treatment.
Skin Contact	:	Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available.
Eye Contact	:	Immediately flush eyes with large amounts of water for at least 15 minutes while holding eyelids open. Transport to the nearest medical facility for additional treatment.
Ingestion	:	If swallowed, do not induce vomiting: transport to nearest medical facility for additional treatment. If vomiting occurs spontaneously, keep head below hips to prevent aspiration.
Advice to Physician	:	Causes central nervous system depression. Consult a Poison Control Centre for guidance.

5. FIRE FIGHTING MEASURES

Clear fire area of all non-emergency personnel.

Flash point	:	-4 °C / 25 °F (Abel)
Explosion / Flammability limits in air	:	1.8 - 11.5 %(V)
Auto ignition temperature	:	515 °C / 959 °F (ASTM E-659)
Specific Hazards	:	Carbon monoxide may be evolved if incomplete combustion occurs. The vapour is heavier than air, spreads along the ground and distant ignition is possible.
Extinguishing Media	:	Alcohol-resistant foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only. Do not discharge extinguishing waters into the aquatic environment.
Unsuitable Extinguishing Media	:	Do not use water in a jet.
Protective Equipment for Firefighters	:	Wear full protective clothing and self-contained breathing apparatus.
Additional Advice	:	Keep adjacent containers cool by spraying with water.

6. ACCIDENTAL RELEASE MEASURES

Observe all relevant local and international regulations.

Protective measures : Avoid contact with spilled or released material. Immediately remove all contaminated clothing. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. For guidance on disposal of spilled material see Chapter 13 of this Material Safety Data Sheet. Shut off leaks, if possible without personal risks. Remove all possible sources of ignition in the surrounding area. Use appropriate containment (of product and fire fighting water) to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers. Attempt to disperse the vapour or to direct its flow to a safe location for example by using fog sprays. Take precautionary measures against static discharge. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Monitor area with combustible gas indicator.

Clean Up Methods : For large liquid spills (> 1 drum), transfer by mechanical means such as vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.
For small liquid spills (< 1 drum), transfer by mechanical means to a labelled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.

Additional Advice : See Chapter 13 for information on disposal. Notify authorities if any exposure to the general public or the environment occurs or is likely to occur. Vapour may form an explosive mixture with air. U.S. regulations may require reporting releases of this material to the environment which exceed the reportable quantity (refer to Chapter 15) to the National Response Centre at (800) 424-8802.

7. HANDLING AND STORAGE

General Precautions : Avoid breathing of or contact with material. Only use in well ventilated areas. Wash thoroughly after handling. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.

Handling : Avoid contact with the skin. Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Restrict line velocity during pumping

in order to avoid generation of electrostatic discharge (<= 10 m/sec). Avoid splash filling. Do NOT use compressed air for filling, discharging, or handling operations. Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks. Handling Temperature: Ambient.

Storage : Keep away from aerosols, flammables, oxidizing agents, corrosives and from products harmful or toxic to man or to the environment. Must be stored in a well-ventilated area, away from sunlight, ignition sources and other sources of heat. Storage Temperature: Ambient.

Product Transfer : Keep containers closed when not in use. Do not use compressed air for filling, discharging or handling.

Recommended Materials : For container paints, use epoxy paint, zinc silicate paint. For containers, or container linings use mild steel, stainless steel.

Unsuitable Materials : Aluminium. Plastics. Natural, neoprene or nitrile rubbers.

Container Advice : Containers, even those that have been emptied, can contain explosive vapours. Do not cut, drill, grind, weld or perform similar operations on or near containers.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

Material	Source	Type	ppm	mg/m3	Notation
Methyl ethyl ketone	ACGIH	TWA	200 ppm		
	ACGIH	STEL	300 ppm		
	OSHA Z1	PEL	200 ppm	590 mg/m3	
	OSHA Z1A	TWA	200 ppm	590 mg/m3	
	OSHA Z1A	STEL	300 ppm	885 mg/m3	

Additional Information : Shell has adopted as Interim Standards, the OSHA PELs that were established in 1989 and later rescinded.
Wash hands before eating, drinking, smoking and using the toilet.

Exposure Controls : The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include: Adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits. Eye washes and showers for emergency use.

Personal Protective Equipment : Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.

Respiratory Protection : If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering

		respirators are suitable, select an appropriate combination of mask and filter. Select a filter suitable for organic gases and vapours [boiling point >65 °C (149 °F)] meeting EN141. Where air-filtering respirators are unsuitable (e.g., airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus.
Hand Protection	:	Longer term protection: Butyl rubber. Polyvinyl alcohol. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced.
Eye Protection	:	Chemical splash goggles (chemical monogoggles).
Protective Clothing	:	Use protective clothing which is chemical resistant to this material. Safety shoes and boots should also be chemical resistant.
Monitoring Methods	:	Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate. Examples of sources of recommended air monitoring methods are given below or contact supplier. Further national methods may be available. National Institute of Occupational Safety and Health (NIOSH), USA: Manual of analytical Methods http://www.cdc.gov/niosh/nmam/nmammenu.html Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods http://www.osha-slc.gov/dts/sltc/methods/toc.html Health and Safety Executive (HSE), UK: Methods for the Determination of Hazardous Substances http://www.hsl.gov.uk/search.htm
Environmental Exposure Controls	:	Local guidelines on emission limits for volatile substances must be observed for the discharge of exhaust air containing vapour.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Clear. Liquid.
Odour	:	Characteristic.
Boiling point	:	79 - 80.5 °C / 174 - 176.9 °F
Flash point	:	-4 °C / 25 °F (Abel)
Explosion / Flammability limits in air	:	1.8 - 11.5 %(V)
Auto-ignition temperature	:	515 °C / 959 °F (ASTM E-659)
Vapour pressure	:	9,500 Pa at 20 °C / 68 °F
Specific gravity	:	0.804 - 0.806 at 20 °C / 68 °F
Water solubility	:	250 g/l at 20 °C / 68 °F Miscible.
Solubility in other solvents	:	Alcohol(s) Completely miscible.
Vapour density (air=1)	:	2.4 at 20 °C / 68 °F
Volatile organic carbon content	:	100 %
Evaporation rate (nBuAc=1)	:	3.7 (ASTM D 3539, nBuAc=1)

10. STABILITY AND REACTIVITY

Stability	:	Stable under normal conditions of use. Reacts with strong oxidising agents.
Conditions to Avoid	:	Avoid heat, sparks, open flames and other ignition sources.
Materials to Avoid	:	Strong oxidising agents.
Hazardous Decomposition Products	:	Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases, including carbon monoxide, carbon dioxide and other organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation.

11. TOXICOLOGICAL INFORMATION

Basis for Assessment	:	Information given is based on product testing.
Acute Oral Toxicity	:	Low toxicity: LD50 >2000 mg/kg , Rat Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which can be fatal.
Acute Dermal Toxicity	:	Low toxicity: LD50 >2000 mg/kg , Rabbit
Acute Inhalation Toxicity	:	High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea; continued inhalation may result in unconsciousness and/or death. Low toxicity: LC50>5000 ppm / 1 hours, Rat
Skin Irritation	:	Prolonged/repeated contact may cause defatting of the skin which can lead to dermatitis. May cause moderate skin irritation.
Eye Irritation	:	Irritating to eyes.
Respiratory Irritation	:	Inhalation of vapours or mists may cause irritation to the respiratory system.
Sensitisation	:	Not a skin sensitiser.
Mutagenicity	:	Not mutagenic.
Reproductive and Developmental Toxicity	:	Causes slight foetotoxicity. Effects were seen at high doses only.
Additional Information	:	Exposure may enhance the toxicity of other materials.

12. ECOLOGICAL INFORMATION

Acute Toxicity

Fish	:	Low toxicity: LC/EC/IC50 > 1000 mg/l
Aquatic Invertebrates	:	Low toxicity: LC/EC/IC50 > 100 mg/l
Algae	:	Low toxicity: LC/EC/IC50 > 1000 mg/l
Microorganisms	:	Low toxicity: LC/EC/IC50 > 1000 mg/l
Mobility	:	Dissolves in water.
Persistence/degradability	:	Readily biodegradable meeting the 10 day window criterion. Oxidises rapidly by photo-chemical reactions in air.
Bioaccumulation	:	Not expected to bioaccumulate significantly.

13. DISPOSAL CONSIDERATIONS

Material Disposal	:	Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations.
Container Disposal	:	Drain container thoroughly. After draining, vent in a safe place away from sparks and fire. Residues may cause an explosion hazard. Do not puncture, cut or weld uncleaned drums. Send to drum recoverer or metal reclaimer.
Local Legislation	:	Disposal should be in accordance with applicable regional, national, and local laws and regulations. Local regulations may be more stringent than regional or national requirements and must be complied with.

14. TRANSPORT INFORMATION

US Department of Transportation Classification (49CFR)

Identification number	UN 1193
Proper shipping name	Methyl ethyl ketone
Class / Division	3
Packing group	II
Hazardous subst./material RQ:	METHYL ETHYL KETONE/5,000.00 LB
Emergency Response Guide No .	127

IMDG

Identification number	UN 1193
Proper shipping name	METHYL ETHYL KETONE
Class / Division	3
Packing group	II
Marine pollutant:	No

IATA (Country variations may apply)

Identification number	UN 1193
Proper shipping name	Methyl ethyl ketone
Class / Division	3
Packing group	II

15. REGULATORY INFORMATION

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

Federal Regulatory Status

Notification Status

AICS	Listed.

DSL	Listed.	
INV (CN)	Listed.	
ENCS (JP)	Listed.	(2)-542
TSCA	Listed.	
EINECS	Listed.	201-159-0
KECI (KR)	Listed.	KE-24094
PICCS (PH)	Listed.	

Comprehensive Environmental Release, Compensation & Liability Act (CERCLA)

Methyl ethyl ketone (78-93-3)	Reportable quantity: 5,000 lbs
Methyl ethyl ketone (78-93-3)	Reportable quantity: 5,000 lbs

SARA Hazard Categories (311/312)

Immediate (Acute) Health Hazard. Fire Hazard.

State Regulatory Status

California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)

This material does not contain any chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

New Jersey Right-To-Know Chemical List

Methyl ethyl ketone (78-93-3) 100.00%

Pennsylvannia Right-To-Know Chemical List

Methyl ethyl ketone (78-93-3) 100.00%		Environmental hazard. Listed.

16. OTHER INFORMATION

HMIS Rating (Health, Fire, Reactivity)	:	2, 3, 0
NFPA Rating (Health, Fire, Reactivity)	:	1, 3, 0
MSDS Version Number	:	14.3
MSDS Effective Date	:	11/26/2005
MSDS Revisions	:	A vertical bar (|) in the left margin indicates an amendment from the previous version.
MSDS Regulation	:	The content and format of this MSDS is in accordance with the

Shell Chemicals

Material Safety Data Sheet

		OSHA Hazard Communication Standard, 29 CFR 1910.1200.
Uses and Restrictions	:	Use as a solvent only in industrial manufacturing processes.
MSDS Distribution	:	The information in this document should be made available to all who may handle the product
Disclaimer	:	The information contained herein is based on our current knowledge of the underlying data and is intended to describe the product for the purpose of health, safety and environmental requirements only. No warranty or guarantee is expressed or implied regarding the accuracy of these data or the results to be obtained from the use of the product.

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☒ REVISED 1 Page ____ of ____ 2

FACILITY ID# 30 0 0 3 5 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: Raw Material Storage 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # J5 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: Ethyl Acetate | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☒ No 11 * If EPCRA see instructions

COMMON NAME: SAME 9 | An EHS Chemical ☐ Yes ☐ No 12 *If EHS is "Yes", all amounts must be LBS

CAS # 141-78-6 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☒ a. PURE ☐ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☑ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE 18 ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT 200 19 | MAXIMUM DAILY AMOUNT 500 20 | ANNUAL WASTE AMOUNT NONE 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET 23 ☒ c. POUNDS ☐ d. TONS *If EHS, amount must be in pounds. | DAYS ON SITE 365 DAYS 24 | LARGEST CONTAINER 50 Gal DRUM 25

STORAGE CONTAINER (Check all that apply) 26

☐ a. ABOVEGROUND TANK	☐ e. PLASTIC DRUM	☐ i. VAT	☐ m CYLINDER	☐ q. TANK WAGON
☐ b. UNDERGROUND TANK	☐ f. NONMETALLIC DRUM	☐ l. FIBER DRUM	☐ n. GLASS CONTAINER	☐ r. RAIL CAR
☐ c. TANK INSIDE BLDG	☑ g. METAL CONTAINER	☐ l. BAG(S)	☐ o PLASTIC CONTAINER	☐ s. TOTE BIN
☐ d STEEL DRUM	☐ h. CARBOY	☐ l. BOX(S)	☐ p. IN MACH OR EQUIP	☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	29	30	☐ Yes ☐ No 31	32
2	29	30	☐ Yes ☐ No 31	32
3	29	30	☐ Yes ☐ No 31	32
4	29	30	☐ Yes ☐ No 31	32
5	29	30	☐ Yes ☐ No 31	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

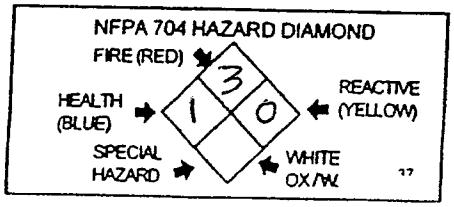
UNDOT # UN 1173 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS #3 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 37



MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Celanese
CHEMICALS

Product name:	Ethyl acetate
MSDS number:	34
Material number:	MSDS-034
Published date:	03/21/2001(V2)

MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Product: Ethyl acetate
MSDS number: 34
Material number: MSDS-034

Celanese Ltd.
1601 W. LBJ Freeway
P.O. Box 819005
Dallas, TX 75381-9005
United States
972 443 4000

Transportation emergency phone numbers:
In USA, call 800 424 9300
Outside USA, call 703 527 3887, collect calls accepted

2. Composition / Information on Ingredients

Component & CAS Number	Weight %	OSHA hazard category:
ETHYL ACETATE 141-78-6	99.5	Hazardous

3. Hazards Identification

Emergency Overview:

DANGER!

- Flammable liquid and vapor.
- May cause respiratory tract irritation.
- May cause eye irritation.
- Vapor is heavier than air and can travel considerable distance to a source of ignition and flashback.

Celanese
CHEMICALS

Product name:	Ethyl acetate
MSDS number:	34
Material number:	MSDS-034
Published date:	03/21/2001(V2)

Eyes
Central nervous system

For further information, see:

Section 4 - First Aid Measures
Section 5 - Fire Fighting Measures
Section 6 - Accidental Release Measures
Section 8 - Exposure Controls/Personal Protection
Section 9 - Physical and Chemical Properties
Section 10 - Stability and Reactivity

4. First Aid Measures

Skin:
Immediately flush skin with plenty of water. Remove contaminated shoes and clothing. Get medical attention if irritation develops and persists. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eyes:
Immediately flush eyes with plenty of water for at least 15 minutes. If easy to do, remove contact lenses, if worn. Get medical attention.

Inhalation:
Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion:
If large quantities of this material are swallowed, call a physician immediately. Do NOT induce vomiting unless directed to do so by a physician. Never give anything by mouth to an unconscious person. Get medical attention.

5. Fire Fighting Measures

NFPA: Health: 1 Flammability: 3 Reactivity: 0

Flammable properties
Flash point (test method): -4.5 C (24 F) (Closed Cup)

Flammable limits in air, % by volume:

Upper: 9 %

Celanese
CHEMICALS

Product name:	Ethyl acetate
MSDS number:	34
Material number:	MSDS-034
Published date:	03/21/2001(V2)

Lower: 2.2 %

Autoignition temperature: 427 C (800 F)

Products of combustion: Carbon Monoxide.

Extinguishing Media: Use alcohol type aqueous film forming foam for large fires. Use CO_2 or dry chemical for small fires.

Fire Fighting Environmental Concerns Vapors and combustion gases can be controlled using a water fog stream. Thoroughly decontaminate bunker gear and other fire-fighting equipment before re-use.

Fire Fighting Instructions Water may be ineffective but should be used to cool fire-exposed structures and vessels. Use water spray for large fires. Water spray can be used to reduce the intensity of flames and to dilute spills to a non-flammable mixture. Keep personnel removed from and upwind of fire. If potential for exposure to vapors or products of combustion exists, wear full fire fighting turnout gear and NIOSH approved self-contained breathing apparatus. Oxidizing chemicals may accelerate the burning rate in a fire situation. Vapor is heavier than air and can travel considerable distance to a source of ignition and flashback.

6. Accidental Release Measures

Spill or Leak Instructions
Eliminate ignition sources. See Section 8 for appropriate personal protective equipment. Contain spill with dikes of soil or nonflammable absorbent to minimize contaminated area. Water fog stream may reduce vapors. If fire potential exists, blanket spill with alcohol type aqueous film-forming foam or use water fog stream to disperse vapors. Avoid run-off into storm sewers and ditches leading to waterways. If required, notify state and local authorities. Place leaking containers in well-ventilated area. Clean up small spills by using a nonflammable absorbent or flushing sparingly with water. Contain larger spills with nonflammable diking or absorbent. Clean up by vacuuming or sweeping.

Within the United States, call the National Response Center (800-424-8802) and appropriate state and local authorities if the quantity released over 24 hours is equal to or greater than the reportable quantity listed below:
5,000 lbs. of the material as is, based on a Reportable Quantity of 5,000 lbs. for ethyl acetate.

Keep unnecessary people away; isolate hazard area and deny entry. Stay upwind; keep out of low areas. Isolate for 800 meters or 0.5 miles in all directions if tank, rail car, or tank truck in involved in fire. Evacuate downwind areas as conditions warrant to prevent exposure and to allow vapors or fumes to dissipate. Spills may expose downwind areas to toxic or flammable concentrations over considerable distances in some cases.

Celanese
CHEMICALS

Product name:	Ethyl acetate
MSDS number:	34
Material number:	MSDS-034
Published date:	03/21/2001(V2)

7. Handling and Storage

Handling:

Use with adequate ventilation. Keep containers closed when not in use. Always open containers slowly to allow any excess pressure to vent. Avoid breathing vapor. Avoid contact with eyes, skin or clothing. Wash thoroughly with soap and water after handling. Decontaminate soiled clothing thoroughly before re-use. Destroy contaminated leather clothing.

This product may generate a static charge. Ground/bond equipment when transferring material to prevent static accumulation. Electrical equipment and circuits in all storage and handling must conform to requirements of National Electric Code (Article 500 and 501) for hazardous location.

Storage:

Keep all containers tightly closed when not in use. Store out of direct sunlight and on an impermeable floor.
Do not store with incompatible materials. See Section 10. Stability and Reactivity.

8. Exposure Controls / Personal Protection

Engineering Controls:

General or dilution ventilation is frequently insufficient as the sole means of controlling employee exposure. Local ventilation is usually preferred.

Protective Equipment

A safety shower and eyebath should be readily available.

Skin Protection:

Wear impervious clothing and gloves to prevent contact. Butyl rubber is recommended. Other protective material may be used, depending on the situation, if adequate degradation and permeation data is available. If other chemicals are used in conjunction with this chemical, material selection should be based on protection for all chemicals present.

Eye/face protection:

Wear chemical goggles when there is a reasonable chance of eye contact.

Respiratory Protection:

Based on workplace contaminant level and working limits of the respirator, use a respirator approved by NIOSH. The following is the minimum recommended equipment for an occupational exposure level. To estimate an occupational exposure level see Section 3, Section 8 and Section 11.

Celanese
CHEMICALS

Product name:	Ethyl acetate
MSDS number:	34
Material number:	MSDS-034
Published date:	03/21/2001(V2)

ETHYL ACETATE 141-78-6	99.5	**Acute Exposure:** **Oral LD50:** 5620 to 10170 mg/kg (rats); ethyl acetate is practically nontoxic to animals by ingestion. **Inhalation:** LC50: 200 mg/l (rats, 1 hr.); Inhalation LC50: >29.3 mg/l (rats, 4 hrs.); ethyl acetate is practically nontoxic to animals by inhalation. Sedative effects (CNS depression typical of many solvents) have been observed in animals. Mild nose and throat irritation have been reported in humans at 400 ppm. **Skin:** Ethyl acetate was not irritating to rabbit skin. There was no evidence of cumulative skin irritation in human tests. It was not a skin sensitizer in the guinea pig maximization test. Human patch testing and epicutaneous testing was in general negative. Practically nontoxic dermally to animals (Dermal LD50, rabbits: >5000 mg/kg). **Eye:** Liquid mildly to moderately irritating to rabbit eyes in several tests. Vapors at 400 ppm have been reported to cause mild eye irritation in humans. **Repeated Exposure:** Rats received 0, 300, 900, or 3600 mg/kg ethyl acetate daily by gavage for 90 days. The high dose male rats showed significantly depressed body and organ weights and depressed food consumption. The No-Observed-Adverse-Effect Level (NOAEL) was considered to be 900 mg/kg. Rats were exposed to 0, 350, 750, or 1500 ppm ethyl acetate vapor for 6 hours per day, 5 days per week, for 13 weeks. No mortality was observed. Observations noted in the 750 and 1500 ppm groups included diminished alerting response (due to the sedative properties of ethyl acetate) during the daily 6-hour exposure periods which reversed after exposure ended. Decreased body weight and food consumption were also noted. No persistent neurotoxic effects were observed in a battery of tests conducted to assess this endpoint during subchronic inhalation exposure. Microscopic examination of the tissues and organs did not reveal evidence of systemic toxicity at any dose level. The only microscopic finding was irritation of the nasal tissue (nasal olfactory mucosa) at all doses. At 350 ppm, the nasal irritation was graded as "minimal" in severity. **Mutagenicity:** **In Vitro:** Results were equivocal. Ethyl acetate was negative in two Ames tests with Salmonella typhimurium and in a recombination assay with Bacillus subtilis. In the Sister Chromatid Exchange (SCE) assay with Chinese hamster ovary (CHO) cells, it was positive with activation and negative without activation. In five separate tests for aneuploidy with Saccharomyces cerevisiae, it was positive four times. It was negative for chromosomal aberrations in CHO cells, but positive in Chinese hamster lung fibroblasts. **In Vivo:** Not Mutagenic: Ethyl acetate was negative in three separate micronucleus assays - mouse (i.p.), Chinese hamster (i.p.), and Chinese

Celanese
CHEMICALS

Product name:	Ethyl acetate
MSDS number:	34
Material number:	MSDS-034
Published date:	03/21/2001(V2)

		hamster (gavage). **Carcinogenicity:** No studies conducted according to established scientific principles. **Reproductive/Developmental Effects:** In the subchronic inhalation study previously discussed, there were no effects at any dose level on the number of spermatids in the testes, the number of sperm in the epididymides, sperm motility or sperm morphology. No other studies conducted according to established scientific principles were available.

12. Ecological information

Component & CAS Number	Weight %	Component Ecological Information:

Celanese
CHEMICALS

Product name:	Ethyl acetate
MSDS number:	34
Material number:	MSDS-034
Published date:	03/21/2001(V2)

ETHYL ACETATE 141-78-6	99.5	**Ecotoxicity:** Ethyl acetate exhibits low acute toxicity to aquatic organisms. **Acute Exposure:** Fish (Pimephales promelas) 48-hr. LC50 = 270 ppm Fish (Pimephales promelas) 96-hr. LC50 = 230 ppm Fish (Salmo gairdneri) 48-hr. LC50 = 260 ppm Fish (Salmo gairdneri) 96-hr. LC50 = 454.7 ppm Fish (Salmo gairdneri) 96-hr. LC50 = 230 ppm Fish (Leuciscus idus) 48-hr. LC50 = 350 ppm Fish (Leuciscus idus melanotus) 48-hr. LC50 = 270 to 333 ppm Fish (Oryzias latipes) 48-hr. LC50 = 125 to 900 ppm Fish (Poecilia reticulata) 48-hr. LC50 = 210 ppm Fish (Heteropneustes fossilis) 96-hr. LC50 = 212.5 ppm Crustacean (Artemia salina) 24-hr. EC50 = 644.8 to 1590 ppm. Crustacean (Daphnia cucullata) 48-hr. EC50 = 164 ppm. Crustacean (Daphnia magna) 24-hr. EC50 >1000 to 3090 ppm. Crustacean (Daphnia magna) 48-hr. EC50 = 717 ppm. Crustacean (Daphnia pulex) 48-hr. EC50 = 262 ppm. Crustacean (Gammarus pulex) 48-hr. EC50 = 750 ppm. Crustacean (Asellus aquaticus) 48-hr. EC50 = 1600 ppm Mollusc (Lymnea stagnalis) 48-hr. EC50 = 1100 ppm. Platyhelminthe (Dugesia lugubris) 24-hr. EC50 = 3020 ppm. Hirudinean (Erpobdella octoculata) 48-hr. EC50 = 1200 ppm. Algae (Microcystis aeruginosa) 8-day Toxicity Threshold = 550 ppm. Algae (Scenedesmus quadricauda) 8-day TT = 15 ppm. Algae (Scenedesmus pannonicus) 48-hr. NOEC > 1000 ppm. Algae (Scenedesmus subspicatus) 72-hr. NOEC >100 ppm. Algae (Scenedesmus subspicatus) 48-hr. EC50 = 3300 to 5600 ppm. Algae (Selenastrum capricornatum) 96-hr. NOEC = 2000 ppm. Algae (Chlorella pyrenoidosa) 48-hr. NOEC >1000 ppm Protozoa (Chilomonas paramecium) 48-hr. TT = 3248 ppm. Protozoa (Entosiphon sulcatum) 72-hr. TT = 202 ppm. Protozoa (Uronema parduzci) 20-hr. TT = 1620 ppm. Bacteria (Photobacterium phosphoreum) 15-min. EC50 = 5870 ppm. Bacteria (Photobacterium phosphoreum) 5-min. EC50 = 1180 ppm. Bacteria (Pseudomonas fluorescens) 2-hr. EC50 = 7400 ppm. Bacteria (Pseudomonas fluorescens) 15-min. EC50 = 1500 ppm. Bacteria (Pseudomonas putida) 16-hr. TT = 650 ppm. Bacteria (Pseudomonas putida) 18-hr. EC10 = 2900 ppm. **Chronic Exposure:** Fish (Pimephales promelas) 32-day Chronic LOEC = 9.65 ppm

Celanese
CHEMICALS

Product name:	Ethyl acetate
MSDS number:	34
Material number:	MSDS-034
Published date:	03/21/2001(V2)

Environmental Fate:

Degradation: Ethyl acetate was "readily biodegradable" when tested according to OECD Guideline 301D, Ready Biodegradability: Closed Bottle Test and had "100% degradation" when tested according to OECD Guideline 303A, "Simulation Test - Aerobic Sewage Treatment: Coupled Unit Test. Similar results were noted in numerous (at least 10) other tests for aerobic biodegradation. The BOD5/COD ratio was 0.81 when tested under aerobic conditions. A single test under anaerobic conditions indicated 100% degradation after 4 days. These data indicate that substantial biodegradation of ethyl acetate takes place rapidly under a variety of conditions Photodegradation tests indicate that both direct and indirect photolysis of ethyl acetate can occur, with results variable depending upon the test conditions.

Bioaccumulation: The log n-octanol/water partition coefficient was determined experimentally to be 0.6 (OECD Guideline 107) to 0.73 (vapor phase chromatography). These data suggest that ethyl acetate has low potential to bioaccumulate.

13. Disposal Considerations

Dispose of spilled material in accordance with state and local regulations for hazardous waste. Recommended methods are incineration or biological treatment at a federally or state-permitted disposal facility. Note that this information applies to the material as manufactured; processing, use, or contamination may make this information inappropriate, inaccurate, or incomplete.

Note that this handling and disposal information may also apply to empty containers, liners and rinsate. State or local regulations or restrictions are complex and may differ from federal regulations. This information is intended as an aid to proper handling and disposal; the final responsibility for handling and disposal is with the owner of the waste. See Section 9 - Physical and Chemical Properties.

EPA Hazardous Waste Code(s): U112

14. Transport Information

Celanese
CHEMICALS

Product name:	Ethyl acetate
MSDS number:	34
Material number:	MSDS-034
Published date:	03/21/2001(V2)

US Department of Transportation

Shipping name: ETHYL ACETATE

Hazard class: 3 (Flammable Liquid)
UN/NA Number: UN 1173
Packing Group: II
DOT Reportable Quantity (RQ): 5000 lbs/2270 kg (Ethyl acetate)
Emergency Response Guide: 129

ICAO/IATA:

Proper Shipping Name: ETHYL ACETATE

Hazard Classification: 3 (Flammable Liquid)
IATA UN Number: UN 1173
Packing group: II
Label: (Flammable Liquid)

IMDG:

Proper Shipping Name: ETHYL ACETATE

Hazard Class: 3 (Flammable Liquid)
International Marine UN Number: UN 1173
Packing Group: II
Flash point (test method): -4.5 C (24 F) (Closed Cup)

Trade Information

Schedule B Code (export): 2915.31.0000

15. Regulatory Information

U.S. Federal Regulations

Chemicals associated with the product which are subject to the state right-to-know regulations are listed along with the applicable state(s):

ETHYL ACETATE 99.5 **141-78-6**

Transportation emergency: 800 424 9300 CHEMTREC, 24 hrs/day
703 527 3887 Outside USA, collect calls accepted, 24 hrs/day
Product emergency: 800 835 5235 Celanese, 24 hrs/day

Celanese
CHEMICALS

Product name:	Ethyl acetate
MSDS number:	34
Material number:	MSDS-034
Published date:	03/21/2001(V2)

Pennsylvania	Listed
New York	Listed
New Jersey	Listed
Illinois	Listed
Massachusetts	Listed
Rhode Island	Listed

U.S. REGULATORY RULES

TSCA Inventory:
We certify that all components are either on the TSCA inventory or qualify for an exemption.

Environmental Regulations

ETHYL ACETATE 99.5 **141-78-6**
CERCLA Hazardous Substances Data- Listed

SARA 311:

Acute health:	Yes
Chronic health:	No
Fire:	Yes
Sudden release of pressure:	No
Reactive:	No

INTERNATIONAL REGULATIONS

International chemical inventories:

Listed on the chemical inventories of the following countries or qualifies for an exemption:
AUSTRALIA,CHINA,CANADA,EUROPE,KOREA,PHILIPPINES, JAPAN

16. Other information

Prepared by: Product Stewardship Department
Celanese Ltd.

Transportation emergency: 800 424 9300 CHEMTREC, 24 hrs/day
703 527 3887 Outside USA, collect calls accepted, 24 hrs/day
Product emergency: 800 835 5235 Celanese, 24 hrs/day

Celanese
CHEMICALS

Product name:	Ethyl acetate
MSDS number:	34
Material number:	MSDS-034
Published date:	03/21/2001(V2)

Hazard ratings This information is intended solely for the use of individuals trained in the NFPA and/or HMIS systems.

NFPA: Health: 1 Flammability: 3 Reactivity: 0

HMIS: Health: 1 Flammability: 3 Reactivity: 0

Revisions: The following sections have been revised since the last issue of this MSDS.

14. Transport Information

Note: **For Industrial use only.** The information contained herein is accurate to the best of our knowledge. We do not suggest or guarantee that any hazards listed herein are the only ones which exist. Celanese Ltd. makes no warranty of any kind, express or implied, concerning the safe use of this material in your process or in combination with other substances. Effects can be aggravated by other materials and/or this material may aggravate or add to the effects of other materials. This material may be released from gas, liquid, or solid materials made directly or indirectly from it. User has the sole responsibility to determine the suitability of the materials for any use and the manner of use contemplated. User must meet all applicable safety and health standards. Material safety data sheets are provided on the Internet by Celanese, Ltd. as a service to its customers. Possession of an Internet MSDS does not indicate that the possessor of the MSDS was a purchaser or user of the subject product.

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☒ REVISED 1 Page ____ of ____ 2

FACILITY ID# 30 0035 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: RAW MATERIAL STORAGE 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # J5 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: TOLUENE | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☒ No 11 (* If EPCRA see instructions)

COMMON NAME: SAME 9 | An EHS Chemical ☐ Yes ☐ No 12 (*If EHS is "Yes", all amounts must be LBS)

CAS # 108-88-3 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☒ a. PURE ☐ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☑ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☑ d. ACUTE HEALTH ☑ e. CHRONIC HEALTH 18

AVERAGE DAILY AMOUNT 1000 19 | MAXIMUM DAILY AMOUNT 3000 20 | ANNUAL WASTE AMOUNT NONE 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS 23 (*If EHS, amount must be in pounds.) | DAYS ON SITE 365 DAYS 24 | LARGEST CONTAINER 50 GAL DRUM 25

STORAGE CONTAINER (Check all that apply) 26:
☐ a. ABOVEGROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BLDG ☐ d STEEL DRUM
☐ e. PLASTIC DRUM ☐ f. NONMETALLIC DRUM ☒ g. METAL CONTAINER ☐ h. CARBOY
☐ i. VAT ☐ l. FIBER DRUM ☐ l. BAG(S) ☐ l. BOX(S)
☐ m CYLINDER ☐ n. GLASS CONTAINER ☐ o PLASTIC CONTAINER ☐ p. IN MACH OR EQUIP
☐ q. TANK WAGON ☐ r. RAIL CAR ☐ s. TOTE BIN ☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	100 29	Toluene 30	☐ Yes ☐ No 31	108-88-3 32
2	29	30	☐ Yes ☐ No 31	32
3	29	30	☐ Yes ☐ No 31	32
4	29	30	☐ Yes ☐ No 31	32
5	29	30	☐ Yes ☐ No 31	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

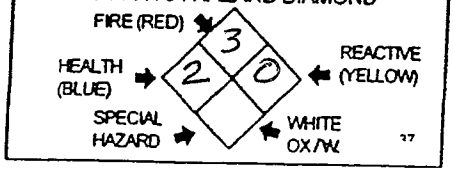
UNDOT # UN 1294 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS 3 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 37



MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Shell Chemicals

Material Safety Data Sheet

Toluene
MSDS# 7750
Version 17.
Effective Date 06/24/2003
According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

1. MATERIAL AND COMPANY IDENTIFICATION

Material Name	:	**Toluene**
Uses	:	Raw material for use in the chemical industry.Solvent.
Product Code	:	T1402, Q9138, Q9131
Company	:	**Shell Chemical LP** PO Box 2463 HOUSTON TX 77252-2463 USA
MSDS Request	:	1-800-240-6737
Customer Service	:	1-800-872-7435

Emergency Telephone Number

Chemtrec Domestic (24 hr)	:	1-800-424-9300
Chemtrec International (24 hr)	:	1-703-527-3887

2. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	Concentration
Toluene	108-88-3	100.00%W

3. HAZARDS IDENTIFICATION

Emergency Overview

Appearance and Odour	:	Colourless. Liquid. Aromatic.
Health Hazards	:	Vapours may cause drowsiness and dizziness. Irritating to eyes. Harmful: may cause lung damage if swallowed.
Safety Hazards	:	Flammable. Vapours are heavier than air. Vapours may travel across the ground and reach remote ignition sources causing a flashback fire danger. Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire.
Environmental Hazards	:	Toxic to aquatic organisms.

Health Hazards

Inhalation	:	Slightly irritating to respiratory system. Vapours may cause drowsiness and dizziness.
Skin Contact	:	May cause moderate irritation to skin. Repeated exposure may cause skin dryness or cracking.
Eye Contact	:	Irritating to eyes.
Ingestion	:	Harmful: may cause lung damage if swallowed.
Other Information	:	Possibility of organ or organ system damage from prolonged exposure; see Chapter 11 for details. Target organ(s): Cardiovascular system. Central nervous system (CNS). Auditory system.

Kidney.
Liver.
Respiratory system.

Signs and Symptoms : Eye irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blurred vision. Defatting dermatitis signs and symptoms may include a burning sensation and/or a dried/cracked appearance. If material enters lungs, signs and symptoms may include coughing, choking, wheezing, difficulty in breathing, chest congestion, shortness of breath, and/or fever. The onset of respiratory symptoms may be delayed for several hours after exposure. Breathing of high vapour concentrations may cause central nervous system (CNS) depression resulting in dizziness, light-headedness, headache, nausea and loss of coordination. Continued inhalation may result in unconsciousness and death.

Environmental Hazards : Toxic to aquatic organisms.

4. FIRST AID MEASURES

General Information : Keep victim calm. Obtain medical treatment immediately.

Inhalation : DO NOT DELAY. Remove to fresh air. If rapid recovery does not occur, transport to nearest medical facility for additional treatment.

Skin Contact : Remove contaminated clothing. Immediately flush skin with large amounts of water for at least 15 minutes, and follow by washing with soap and water if available. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment.

Eye Contact : Immediately flush eyes with large amounts of water for at least 15 minutes while holding eyelids open. Transport to the nearest medical facility for additional treatment.

Ingestion : If swallowed, do not induce vomiting: transport to nearest medical facility for additional treatment. If vomiting occurs spontaneously, keep head below hips to prevent aspiration.

Advice to Physician : Potential for chemical pneumonitis. Consider: gastric lavage with protected airway, administration of activated charcoal. Potential for cardiac sensitisation, particularly in abuse situations. Hypoxia or negative inotropes may enhance these effects. Consider: oxygen therapy.

5. FIRE FIGHTING MEASURES

Clear fire area of all non-emergency personnel.

Flash point : 4 °C / 39 °F (Abel)

Explosion / Flammability limits in air : 1.2 - 8 %(V)

Auto ignition temperature : 535 °C / 995 °F (ASTM E-659)

Specific Hazards : The vapour is heavier than air, spreads along the ground and distant ignition is possible. Will float and can be reignited on surface water. Carbon monoxide may be evolved if incomplete combustion occurs.

Extinguishing Media	:	Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.
Unsuitable Extinguishing Media	:	Do not use water in a jet.
Protective Equipment for Firefighters	:	Wear full protective clothing and self-contained breathing apparatus.
Additional Advice	:	Keep adjacent containers cool by spraying with water.

6. ACCIDENTAL RELEASE MEASURES

Avoid contact with spilled or released material. Immediately remove all contaminated clothing. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. For guidance on disposal of spilled material see Chapter 13 of this Material Safety Data Sheet. Observe all relevant local and international regulations.

Protective measures	:	Isolate hazard area and deny entry to unnecessary or unprotected personnel. Stay upwind and keep out of low areas. Shut off leaks, if possible without personal risks. Remove all possible sources of ignition in the surrounding area. Use appropriate containment to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers. Attempt to disperse the vapour or to direct its flow to a safe location for example by using fog sprays. Take precautionary measures against static discharge. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Ventilate contaminated area thoroughly.
Clean Up Methods	:	For large liquid spills (> 1 drum), transfer by mechanical means such as vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely. For small liquid spills (< 1 drum), transfer by mechanical means to a labelled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.
Additional Advice	:	Notify authorities if any exposure to the general public or the environment occurs or is likely to occur. Local authorities should be advised if significant spillages cannot be contained. The vapour is heavier than air, spreads along the ground and distant ignition is possible. Vapour may form an explosive mixture with air. See Chapter 13 for information on disposal. U.S. regulations may require reporting releases of this material to the environment which exceed the reportable quantity (refer to Chapter 15) to the National Response Centre at (800) 424-8802.

7. HANDLING AND STORAGE

General Precautions	:	Avoid breathing of or contact with material. Only use in well ventilated areas. Wash thoroughly after handling. For

guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.

Handling : Avoid contact with skin, eyes, and clothing. Extinguish any naked flames. Do Not smoke. Remove ignition sources. Avoid sparks. Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Restrict line velocity during pumping in order to avoid generation of electrostatic discharge (<= 1 m/sec until fill pipe submerged to twice its diameter, then <= 7 m/sec). Avoid splash filling. Do NOT use compressed air for filling, discharging, or handling operations. Handle and open container with care in a well-ventilated area.

Storage : Vapours from tanks should not be released to atmosphere. Breathing losses during storage should be controlled by a suitable vapour treatment system. Bulk storage tanks should be diked (bunded). Must be stored in a diked (bunded) well-ventilated area, away from sunlight, ignition sources and other sources of heat. Keep away from aerosols, flammables, oxidizing agents, corrosives and from other flammable products which are not harmful or toxic to man or to the environment. The vapour is heavier than air. Beware of accumulation in pits and confined spaces.

Product Transfer : Keep containers closed when not in use. Do not use compressed air for filling, discharging or handling.

Recommended Materials : For containers, or container linings use mild steel, stainless steel.

Unsuitable Materials : Natural, butyl, neoprene or nitrile rubbers.

Container Advice : Containers, even those that have been emptied, can contain explosive vapours. Do not cut, drill, grind, weld or perform similar operations on or near containers.

Additional Information : Ensure that all local regulations regarding handling and storage facilities are followed.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

Material	Source	Type	ppm	mg/m3	Notation
Toluene	ACGIH	TWA	50 ppm		
	ACGIH	SKIN			Can be absorbed through the skin
	OSHA Z1A	TWA	100 ppm	375 mg/m3	
	OSHA Z1A	STEL	150 ppm	560 mg/m3	
	SHELL IS	TWA	50 ppm		

Additional Information : Skin notation means that significant exposure can also occur by absorption of liquid through the skin and of vapour through

the eyes or mucous membranes. SHELL IS is the Shell Internal Standard

Exposure Controls	:	The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include: Use sealed systems as far as possible. Adequate ventilation to control airborne concentrations below the exposure guidelines/limits. Firewater monitors and deluge systems are recommended. Eye washes and showers for emergency use.
Personal Protective Equipment	:	Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.
Respiratory Protection	:	If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Select a filter suitable for organic gases and vapours [boiling point >65 °C (149 °F)]. Where respiratory protective equipment is required, use a full-face mask. Where air-filtering respirators are unsuitable (e.g., airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus. Respirator selection, use and maintenance should be in accordance with the requirements of the OSHA Respiratory Protection Standard, 29 CFR 1920.134.
Hand Protection	:	Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following materials may provide suitable chemical protection: Longer term protection: Viton. Incidental contact/Splash protection: Nitrile rubber. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced.
Eye Protection	:	Chemical splash goggles (chemical monogoggles).
Protective Clothing	:	Chemical resistant gloves/gauntlets. Where risk of splashing or in spillage clean up, use chemical resistant one-piece overall with integral hood.
Environmental Exposure Controls	:	Local guidelines on emission limits for volatile substances must be observed for the discharge of exhaust air containing vapour.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Colourless Liquid
Odour	:	Aromatic
Odour threshold	:	1.74 ppm
Boiling point	:	Typical 110.4 - 110.8 °C / 230.7 - 231.4 °F
Melting / freezing point	:	Typical -95 °C / -139 °F
Flash point	:	4 °C / 39 °F (Abel)

Explosion / Flammability limits in air	:	1.2 - 8 %(V)
Auto-ignition temperature	:	535 °C / 995 °F (ASTM E-659)
Vapour pressure	:	Typical 1 kPa at 0 °C / 32 °F Typical 3 kPa at 20 °C / 68 °F Typical 12 kPa at 50 °C / 122 °F
Density	:	Typical 871 kg/m3 at 15 °C / 59 °F
Water solubility	:	0.515 kg/m3
n-octanol/water partition coefficient (log Pow)	:	2.65
Kinematic viscosity	:	0.63 mm2/s at 25 °C / 77 °F
Vapour density (air=1)	:	3.1
Electrical conductivity	:	Typical 8 pS/m at 20 °C / 68 °F (ASTM D-4308)
Dielectric constant	:	Typical 2.4
Volatile organic carbon content		100 %
Evaporation rate (nBuAc=1)	:	6.1 (DIN 53170, di-ethyl ether=1) 2 (ASTM D 3539, nBuAc=1)
Surface tension	:	Typical 28.5 mN/m at 20 °C / 68 °F (ASTM D-971)
Molecular weight	:	92 g/mol

10. STABILITY AND REACTIVITY

Stability	:	Stable under normal conditions of use. Reacts violently with strong oxidising agents.
Conditions to Avoid	:	Avoid heat, sparks, open flames and other ignition sources. Prevent vapour accumulation.
Materials to Avoid	:	Strong oxidising agents.
Hazardous Decomposition Products	:	Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases, including carbon monoxide, carbon dioxide and other organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation.

11. TOXICOLOGICAL INFORMATION

Basis for Assessment	:	Information given is based on product data.
Acute Oral Toxicity	:	Low toxicity: LD50 >2000 mg/kg , Rat Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which can be fatal.
Acute Dermal Toxicity	:	Low toxicity: LD50 >2000 mg/kg , Rabbit
Acute Inhalation Toxicity	:	Low toxicity: LC50>5000 ppm / 1 hours, Rat High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea; continued inhalation may result in unconsciousness and/or death.
Skin Irritation	:	May cause moderate irritation to skin. Prolonged/repeated contact may cause defatting of the skin which can lead to dermatitis.
Eye Irritation	:	Irritating to eyes.
Respiratory Irritation	:	Inhalation of vapours or mists may cause irritation to the respiratory system.

Sensitisation : Not a skin sensitiser.

Repeated Dose Toxicity : Central nervous system: repeated exposure affects the nervous system. Effects were seen at high doses only.
Respiratory system: repeated exposure affects the respiratory system. Effects were seen at high doses only.
Kidney: can cause kidney damage.
Liver: can cause liver damage.
Cardiovascular system: chronic abuse of similar materials has been associated with irregular heart rhythms and cardiac arrest.
Auditory system: prolonged and repeated exposures to high concentrations have resulted in hearing loss in rats. Solvent abuse and noise interaction in the work environment may cause hearing loss.
Repeated inhalation exposure of toluene to animals caused histological changes in the brain, degeneration of the heart tissue, and possible immune suppression.
Intentional abuse of toluene vapours has been linked to damage of brain, liver, kidney and to death.

Mutagenicity : Not mutagenic.

Carcinogenicity : Not carcinogenic in animal studies.

Material	:	Carcinogenicity Classification
Toluene	:	ACGIH Group A4: Not classifiable as a human carcinogen.
Toluene	:	IARC 3: Classification not possible from current data.

Reproductive and Developmental Toxicity : Causes foetotoxicity in animals at doses which are maternally toxic.
Many case studies involving abuse during pregnancy indicate that toluene can cause birth defects, growth retardation and learning difficulties.
There are occupational studies which report an association between inhalation exposure to toluene and adverse effects on reproduction (including spontaneous abortions and birth defects). The methodology of these studies and the reliability of their results have been questioned. In a study in rats, inhalation of toluene did not have adverse effects on reproduction.

12. ECOLOGICAL INFORMATION

Acute Toxicity :

- **Fish** : Toxic: 1 < LC/EC/IC50 <= 10 mg/l
- **Aquatic Invertebrates** : Harmful: 10 < LC/EC/IC50 <= 100 mg/l
- **Algae** : Low toxicity: LC/EC/IC50 > 100 mg/l

Mobility : Floats on water.
If product enters soil, it will be highly mobile and may contaminate groundwater.

Persistence/degradability : Readily biodegradable meeting the 10 day window criterion.
Oxidises rapidly by photo-chemical reactions in air.

Bioaccumulation : Does not bioaccumulate significantly.

Other Adverse Effects : In view of the high rate of loss from solution, the product is unlikely to pose a significant hazard to aquatic life.

13. DISPOSAL CONSIDERATIONS

Material Disposal : Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations.

Container Disposal : Drain container thoroughly. After draining, vent in a safe place away from sparks and fire. Residues may cause an explosion hazard. Do not, puncture, cut, or weld uncleaned drums. Send to drum recoverer or metal reclaimer.

Local Legislation : Disposal should be in accordance with applicable regional, national, and local laws and regulations.

14. TRANSPORT INFORMATION

US Department of Transportation Classification (49CFR)

Identification number	UN 1294
Proper shipping name	Toluene
Class / Division	3
Packing group	II
Hazardous subst./material RQ:	TOLUENE/1,000 LB
Emergency Response Guide .	130

IMDG

Identification number	UN 1294
Proper shipping name	TOLUENE
Class / Division	3
Packing group	II
Marine pollutant:	No

IATA (Country variations may apply)

Identification number	UN 1294
Proper shipping name	Toluene
Class / Division	3
Packing group	II

15. REGULATORY INFORMATION

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material

Federal Regulatory Status

Notification Status

AICS	Listed.
DSL	Listed.

INV (CN)	Listed.	
ENCS (JP)	Listed.	(3)-2
TSCA	Listed.	
EINECS	Listed.	203-625-9
KECI (KR)	Listed.	97-1-298
KECI (KR)	Listed.	KE-33936
PICCS (PH)	Listed.	

Comprehensive Environmental Release, Compensation & Liability Act (CERCLA)

Toluene (108-88-3)	Reportable quantity: 1,000 lbs
Toluene (108-88-3)	Reportable quantity: 1,000 lbs

Clean Water Act (CWA) Section 311

Toluene (108-88-3)	Reportable quantity: 1,000 lbs
Toluene (108-88-3)	Reportable quantity: 1,000 lbs

SARA Hazard Categories (311/312)

Immediate (Acute) Health Hazard. Fire Hazard.
Delayed (Chronic) Health Hazard.

SARA Toxic Release Inventory (TRI) (313)

Toluene (108-88-3)	100.00%

State Regulatory Status

California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)

Known to the State of California to cause birth defects or other reproductive harm.

Toluene (108-88-3)	100.00%	Developmental toxin.

New Jersey Right-To-Know Chemical List

Toluene (108-88-3)	100.00%

Pennsylvannia Right-To-Know Chemical List

Toluene (108-88-3)	100.00%	Environmental hazards Listed.

16. OTHER INFORMATION

HMIS Rating (Health, Fire, : 2, 3, 0

Shell Chemicals

Material Safety Data Sheet

Reactivity)		
NFPA Rating (Health, Fire, Reactivity)	:	2, 3, 0
MSDS Version Number	:	17
MSDS Effective Date	:	06/24/2003
MSDS Revisions	:	A vertical bar (|) in the left margin indicates an amendment from the previous version.
MSDS Regulation	:	The content and format of this MSDS is in accordance with the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
Uses and Restrictions	:	Raw material for use in the chemical industry. Use as a solvent only in industrial manufacturing processes.
MSDS Distribution	:	The information in this document should be made available to all who may handle the product
Disclaimer	:	The information contained herein is based on our current knowledge of the underlying data and is intended to describe the product for the purpose of health, safety and environmental requirements only. No warranty or guarantee is expressed or implied regarding the accuracy of these data or the results to be obtained from the use of the product.

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☐ REVISED 1 Page ____ of ____ 2

FACILITY ID# 30035 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: CLASS 1 ROOM 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # I 2 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: TYZOR GBA TITANATE | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☒ No 11 * If EPCRA see instructions

COMMON NAME: SAME 9 | An EHS Chemical ☐ Yes ☐ No 12 *If EHS is "Yes", all amounts must be LBS

CAS # 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☑ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE 18 ☑ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT 15 19 | MAXIMUM DAILY AMOUNT 40 20 | ANNUAL WASTE AMOUNT NONE 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET 23 ☒ c. POUNDS ☐ d. TONS *If EHS, amount must be in pounds. | DAYS ON SITE 365 DAYS 24 | LARGEST CONTAINER 5 GAL PAIL 25

STORAGE CONTAINER (Check all that apply) 26
☐ a. ABOVEGROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BLDG ☐ d STEEL DRUM ☐ e. PLASTIC DRUM ☐ f. NONMETALLIC DRUM ☒ g. METAL CONTAINER ☐ h. CARBOY ☐ i. VAT ☐ l. FIBER DRUM ☐ l. BAG(S) ☐ l. BOX(S) ☐ m CYLINDER ☐ n. GLASS CONTAINER ☐ o PLASTIC CONTAINER ☐ p. IN MACH OR EQUIP ☐ q. TANK WAGON ☐ r. RAIL CAR ☐ s. TOTE BIN ☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	75 29	NJ TRADE SECRET #00850201001-5522P 30	☐ Yes ☐ No 31	— 32
2	5-10 29	METHANOL 30	☐ Yes ☐ No 31	67-56-1 32
3	15-20 29	ISOPROPYL ALCOHOL 30	☐ Yes ☐ No 31	67-63-0 32
4	5-10 29	1-BUTANOL 30	☐ Yes ☐ No 31	71-36-3 32
5	29	30	☐ Yes ☐ No 31	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

UNDOT # UN 1993 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS Flammable Liquid 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 37
FIRE (RED) 3
HEALTH (BLUE) 3
REACTIVE (YELLOW) 0
SPECIAL HAZARD WHITE OX/W

MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Revised 2/02 -- haz-inven2.doc

The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

"TYZOR" GBA TITANATE
5883PP Revised 29-MAR-2002

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

Corporate MSDS Number : DU002615

Company Identification

MANUFACTURER/DISTRIBUTOR
DuPont
1007 Market Street
Wilmington, DE 19898

PHONE NUMBERS
Product Information : 1-800-441-7515 (outside the U.S. 302-774-1000)
Transport Emergency : CHEMTREC 1-800-424-9300(outside U.S. 703-527-3887)
Medical Emergency : 1-800-441-3637 (outside the U.S. 302-774-1000)

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
NJ Trade Secret Registry # 00850201001-5522P		75
*Methanol	67-56-1	5-10
Isopropyl Alcohol	67-63-0	15-20
*1-Butanol	71-36-3	5-10

* Disclosure as a toxic chemical is required under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

HAZARDS IDENTIFICATION

Potential Health Effects

The alcohols are harmful if inhaled or absorbed through the skin and may damage the liver, kidney and nervous system. Methanol may be fatal or cause blindness if ingested.

Skin contact may cause skin irritation with discomfort or rash. Skin permeation can occur in amounts capable of producing the effects of systemic toxicity. There are rare inconclusive reports of human sensitization from skin contact with Isopropyl Alcohol.

(HAZARDS IDENTIFICATION - Continued)

Eye contact may cause eye irritation with discomfort, tearing or blurring of vision.

Overexposure to the alcohols by inhalation, skin absorption or ingestion may include nonspecific discomfort such as nausea, headache, abdominal pain, flushing of the face, hypotension, or weakness; visual disturbances including blindness; hearing loss; temporary nervous system depression with anaesthetic effects such as dizziness, headache, confusion, incoordination, and loss of consciousness; acidosis; irritation of the upper respiratory passages with coughing and discomfort; abnormal liver or kidney function; abnormal blood forming system function with anemia; cardiovascular effects; or fatality from gross overexposure.

Individuals with prexisting diseases of the retina, kidneys, liver or cardiovascular system may have increased susceptibility ot the toxicity of excessive exposures to the alcohols.

Carcinogenicity Information

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

FIRST AID MEASURES

First Aid

INHALATION

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

SKIN CONTACT

Flush skin with water after contact. Wash contaminated clothing before reuse.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

If swallowed, immediately give 2 glasses of water and induce vomiting Never give anything by mouth to an unconscious person. Call a physician.

(FIRST AID MEASURES - Continued)

Notes to Physicians

Ethanol (ETOH) is antidotal and should be administered early in the treatment. Ethanol is a potent inhibitor of Methanol metabolism because it is preferentially acted on by liver alcohol dehydrogenase, thus delaying or preventing toxic metabolites from Methanol.

Treatment is started after residual ingested substance is removed from the stomach. Ethanol is administered orally or IV with a goal of maintaining a blood alcohol level of approximately 22 mmol/L or 1.0 mg/L.

To prepare antidote, make a solution using 100 mL of 100 proof ethyl alcohol and 1900 mL of water. Give 1.5 mL/kg or 100 mL for an average adult. This may be mixed with orange juice for oral use if necessary. More Ethanol is to be given at 2 hour intervals to achieve and maintain the desired blood alcohol levels. Treatment may be necessary for several days.

The patient should be monitored for metabolic acidosis. Use of appropriate buffering solutions, such as bicarbonate, may be indicated.

Hemodialysis may be required.

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point	: 12 C (54 F)
Method	: PMCC

Flammable liquid.

Use explosion-proof exhaust systems to vent fumes resulting from hydrolysis or pyrolysis during use.

Extinguishing Media

Foam, Dry Chemical, CO2.

Avoid using water on large spills. Water may be used to flush away residues.

Fire Fighting Instructions

Wear self-contained breathing apparatus. Wear full protective equipment. Do not use water.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Initial Containment

Remove source of heat, sparks, flame, impact, friction or electricity. Prevent material from entering sewers, waterways, or low areas.

Spill Clean Up

Soak up with sawdust, sand, oil dry or other absorbent material.

Accidental Release Measures

Place in container for disposal. Sweep up or use non-sparking shovel for cleanup. Flush residue with water and remove flush to an approved permitted treatment system.

This material is an ICR (ignitable, corrosive, reactive) substance under CERCLA. Unless released material is immediately cleaned up for reprocessing, recycling, or reuse, a release of 100 lbs. may trigger the reporting requirements of CERCLA Section 103.

HANDLING AND STORAGE

Handling (Personnel)

Do not get in eyes. Avoid breathing vapors or mist. Avoid contact with skin. Avoid contact with clothing. Wash thoroughly after handling.

Handling (Physical Aspects)

Keep away from heat, sparks and flames.

Storage

Store in a well ventilated place. Keep container tightly closed.

Keep in dry container. Use only dry, clean utensils when handling. Freezing will affect physical appearance but will not damage. Thaw and mix before using.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

Use only with adequate ventilation. Keep container tightly closed.

Vent dryer or exhaust fumes outside work area.

Personal Protective Equipment

EYE/FACE PROTECTION

Wear safety glasses or coverall chemical splash goggles.

RESPIRATORS

Where there is potential for airborne exposures in excess of applicable limits, wear NIOSH approved respiratory protection.

PROTECTIVE CLOTHING

Where there is potential for skin contact have available and wear as appropriate, impervious gloves, apron, pants, and jacket.

Exposure Guidelines

Applicable Exposure Limits

Methanol		
PEL	(OSHA)	: 200 ppm, 260 mg/m3, 8 Hr. TWA
TLV	(ACGIH)	: 200 ppm, 8 Hr. TWA, Skin STEL 250 ppm
AEL *	(DuPont)	: 200 ppm, 8 & 12 Hr. TWA, Skin
Isopropyl Alcohol		
PEL	(OSHA)	: 400 ppm, 980 mg/m3, 8 Hr. TWA
TLV	(ACGIH)	: 400 ppm, 8 Hr. TWA STEL 500 ppm Notice of Intended Changes (2002) 200 ppm, 8 Hr. TWA, A4 STEL 400 ppm
AEL *	(DuPont)	: 400 ppm, 8 & 12 Hr. TWA
1-Butanol		
PEL	(OSHA)	: 100 ppm, 300 mg/m3
TLV	(ACGIH)	: Ceiling 50 ppm, Skin Notice of Intended Changes (2002) 20 ppm, 8 Hr. TWA
AEL *	(DuPont)	: 20 ppm, 8 Hr. TWA

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Boiling Point	: 70 C (158 F) @ 760 mm Hg
% Volatiles	: 25 WT%
Solubility in Water	: Dispersible
pH	: Slightly acidic
Odor	: Alcoholic
Form	: Liquid, Clear
Color	: Red
Specific Gravity	: 1.02 @ 25C (77F)

STABILITY AND REACTIVITY

Chemical Stability

Stable.

Incompatibility with Other Materials

Incompatible with water. Hydrolyzes slowly forming isopropanol.

Decomposition

Heating generates flammable olefins and other flammable organic compounds.

Polymerization

Conditions leading to polymerization are hydrolysis. Not a hazard.

TOXICOLOGICAL INFORMATION

Animal Data

"Tyzor" GBA

Oral LD50:	3,310 mg/kg in rats

Methanol

Inhalation 1 hour LC50:	>145,000 ppm in rats
Skin Absorption LD50:	15,840 mg/kg in rabbits
Oral LD50:	9,100 mg/kg in rats

Isopropyl Alcohol

Inhalation 4 hour LC50:	16,000 ppm in rats
Skin Absorption LD50:	16.37 ml/kg (c. 12,900 mg/kg) in rabbits

(TOXICOLOGICAL INFORMATION - Continued)

Oral LD50: 4,700 mg/kg in rats

1-Butanol

Inhalation 4 hour LC50: >8,000 ppm in rats
Skin Absorption LD50: 3,400 mg/kg in rabbits
Oral LD50: 2,510 mg/kg in rats

The product contains materials which are skin irritants, and moderate to severe eye irritants.

Toxic effects in animals from short exposure by inhalation or ingestion to the individual alcohols in this product include weight loss, respiratory irritation, cardiac effects, narcosis, anaesthetic effects, adrenal effects, liver effects, kidney effects, lung effects, blood effects, acidosis and blindness.

The effects of single exposure by inhalation of Isopropyl Alcohol include microscopic and morphologic changes of the epethelial cell of the nose and middle ear mucosa. No lung tumors were observed in long term inhalation exposure of Isopropyl Alcohol or Methanol.

No adequate animal test reports are available to define carcinogenic or reproductive hazards of methanol and 1-Butanol. Continued voluntary drinking of 2.5% aqueous Isopropyl Alcohol through two successive generations of rats produced no reproductive effects. The alcohols do not produce genetic damage in bacterial or mammalian cell cultures. Behavioral abnormalities and/or developmental effects were observed in the offspring of rats exposed to the individual alcohols at maternally toxic dose levels.

ECOLOGICAL INFORMATION

Ecotoxicological Information

Aquatic Toxicity

Methanol and Isopropyl Alcohol have very low toxicity with a 96 hour LC50 in fathead minnows of > 5,000 mg/L; for n-Butanol, the 96 hour LC50 in fathead minnows is 1730 mg/L.

DISPOSAL CONSIDERATIONS

Waste Disposal

Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. Recover nonusable free liquid and dispose of in approved and permitted incinerator. Do not flush to surface water or sanitary sewer system.

This material may be a RCRA regulated hazardous waste upon disposal due to the ignitability characteristic.

TRANSPORTATION INFORMATION

Shipping Information

DOT

Proper Shipping Name	: FLAMMABLE LIQUID N.O.S. (CONTAINS ISOPROPANOL, METHANOL, N-BUTANOL)
Hazard Class	: FLAMMABLE LIQUID
I.D. No. (UN/NA)	: UN 1993
DOT Label(s)	: FLAMMABLE LIQUID

DOT/IMO

Proper Shipping Name	: FLAMMABLE LIQUID N.O.S. (CONTAINS ISOPROPANOL AND METHANOL)
Hazard Class	: 3
UN No.	: 1993
DOT/IMO Label	: FLAMMABLE LIQUID
Special Information	: FLASH POINT: >12 C
Packing Group	: II

Shipping Containers

55 gal.steel drum with polyethylene lining
5 gal.steel pail with baked-on enamel lining

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : Reported/Included.

TITLE III HAZARD CLASSIFICATIONS SECTIONS 311, 312

Acute	: Yes
Chronic	: No
Fire	: Yes
Reactivity	: No
Pressure	: No

OTHER INFORMATION

NFPA, NPCA-HMIS

NPCA-HMIS Rating

Health	: 3
Flammability	: 3
Reactivity	: 0

Personal Protection rating to be supplied by user depending on use conditions.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS : MSDS Coordinator
Address : DuPont Chemical Solutions Enterprise
Wilmington, DE 19898
Telephone : 800-441-7515

# Indicates updated section.

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☐ REVISED 1 Page ____ of ____ 2

FACILITY ID# 3 0 0 3 5 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: LAB 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 6 | GRID # J7 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: PRIMARY AMYL ACETATE, MIXED | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☒ No 11 (* If EPCRA see instructions)

COMMON NAME: SAME 9 | An EHS Chemical ☐ Yes ☐ No 12 (*If EHS is "Yes", all amounts must be LBS)

CAS # 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☐ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 18

AVERAGE DAILY AMOUNT: 2 19 | MAXIMUM DAILY AMOUNT: 2 20 | ANNUAL WASTE AMOUNT: NONE 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET 23 ☒ c. POUNDS ☐ d. TONS (*If EHS, amount must be in pounds.) | DAYS ON SITE: 365 DAYS 24 | LARGEST CONTAINER: 1 Gal Can 25

STORAGE CONTAINER (Check all that apply) 26

☐ a. ABOVEGROUND TANK	☐ e. PLASTIC DRUM	☐ i. VAT	☐ m CYLINDER	☐ q. TANK WAGON
☐ b. UNDERGROUND TANK	☐ f. NONMETALLIC DRUM	☐ l. FIBER DRUM	☒ n. GLASS CONTAINER	☐ r. RAIL CAR
☐ c. TANK INSIDE BLDG	☐ g. METAL CONTAINER	☐ l. BAG(S)	☐ o PLASTIC CONTAINER	☐ s. TOTE BIN
☐ d STEEL DRUM	☐ h. CARBOY	☐ l. BOX(S)	☐ p. IN MACH OR EQUIP	☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	65 29	PRIMARY AMYL ACETATE 30	☐ Yes ☐ No 31	628-63-7 32
2	35 29	2-METHYL BUTYL ACETATE 30	☐ Yes ☐ No 31	624-41-9 32
3	<0.1 29	3-METHYL BUTYL ACETATE 30	☐ Yes ☐ No 31	123-92-2 32
4	29	30	☐ Yes ☐ No 31	32
5	29	30	☐ Yes ☐ No 31	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

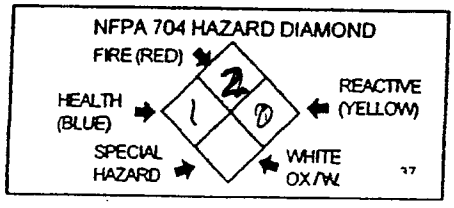
UNDOT # _____ 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS _____ 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____
If EPCRA, Please Sign Here 36

NFPA 704 HAZARD DIAMOND 37



MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

UNION CARBIDE CORPORATION
MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE 02/28/97

Union Carbide urges each customer or recipient of this MSDS to study it carefully to become aware of and understand the hazards associated with the product. The reader should consider consulting reference works or individuals who are experts in ventilation, toxicology, and fire prevention, as necessary or appropriate to use and understand the data contained in this MSDS.

To promote safe handling, each customer or recipient should: (1) notify its employees, agents, contractors and others whom it knows or believes will use this material or the information in this MSDS and any other information regarding hazards or safety; (2) furnish this same information to each of its customers for the product; and (3) request its customers to notify their employees, customers, and other users of the product of this information.

176-660004
Amyl Acetate
Primary Amyl Acetate, Mixed Isomers

I. IDENTIFICATION

PRODUCT NAME:	PRIMARY AMYL ACETATE, MIXED ISOMERS
CHEMICAL NAME:	Primary Amyl Acetate
CHEMICAL FAMILY:	Esters
FORMULA:	CH3COOC5H11 (mixed isomers)
MOLECULAR WEIGHT:	130.19
SYNONYMS:	None
CAS # AND NAME:	See Section III, "Ingredients"

II. PHYSICAL DATA

BOILING POINT, 760 mm Hg:	146 C 294.8 F
SPECIFIC GRAVITY(H2O = 1):	0.8757 AT 20/20 C
FREEZING POINT:	(sets to glass) <-100 C (<-148 F)
VAPOR PRESSURE AT 20°C:	4 mmHg AT 20 C

EMERGENCY PHONE NUMBERS: 1-800-UCC-HELP (NUMBER AVAILABLE AT ALL TIMES) OR (304) 744-3487

UNION CARBIDE CORPORATION
39 Old Ridgebury Road, Danbury, CT 06817-0001

PRODUCT NAME: PRIMARY AMYL ACETATE, MIXED ISOMERS

VAPOR DENSITY (AIR = 1): 4.5

EVAPORATION RATE (Butyl Acetate = 1): 0.42

SOLUBILITY IN WATER by wt: 0.2% AT 20 C

APPEARANCE: Transparent colorless

ODOR: Mild characteristic

PHYSICAL STATE: Liquid

PERCENT VOLATILES (by weight): 100

III. INGREDIENTS

%	MATERIAL	CAS#	EXPOSURE LIMIT
65	Primary Amyl Acetate	628-63-7	See Section V
35	2-Methyl Butyl Acetate	624-41-9	None established
<0.1	3-Methylbutyl Acetate	123-92-2	See Section V

IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:

101 F (38 C)
Tag Closed Cup ASTM D 56

106 F (41 C)
Tag Open Cup ASTM D 1310

FLAMMABLE LIMITS IN AIR % by volume: LOWER: 1.1 UPPER: 7.5

EXTINGUISHING MEDIA: Apply alcohol-type or all-purpose-type foams by manufacturer's recommended techniques for large fires. Use CO2 or dry chemical media for small fires.

SPECIAL FIRE FIGHTING PROCEDURES: Use self-contained breathing apparatus and protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS: This material may produce a floating fire hazard in extreme fire conditions.

PRODUCT NAME: PRIMARY AMYL ACETATE, MIXED ISOMERS

See "Other Precautions" in Section IX.

V. HEALTH HAZARD DATA

EXPOSURE LIMIT(S): Primary Amyl Acetate (n-Pentyl Acetate): 100 ppm TWA, OSHA & ACGIH
Isoamyl Acetate (3-methylbutyl Acetate): 100 ppm TWA, OSHA & ACGIH

EFFECTS OF ACUTE OVEREXPOSURE:

SWALLOWING: May cause abdominal discomfort, nausea, vomiting and diarrhea.

SKIN ABSORPTION: Effects may include those described for swallowing.

INHALATION: May cause irritation of the respiratory tract, experienced as nasal discomfort and discharge, with chest pain, coughing, headache, nausea, vomiting, dizziness, drowsiness, disturbed vision and unconsciousness.

SKIN CONTACT: Brief contact is not irritating.
Prolonged or repeated contact may cause discomfort and local redness.

EYE CONTACT: Causes irritation, experienced as stinging and discomfort or pain.

EFFECTS OF REPEATED OVEREXPOSURE:
No adverse effects anticipated from available information.

OTHER HEALTH HAZARDS:
None currently known.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:
A knowledge of the available toxicology information and of the physical and chemical properties of the material suggests that overexposure is unlikely to aggravate existing medical conditions.

ADDITIONAL TOXICITY INFORMATION:
Exposure of pregnant rats to primary amyl acetate vapor at 1000 ppm and greater resulted in maternal toxicity and evidence of delayed development. Exposure of pregnant rabbits to primary amyl acetate vapor at 1500 ppm resulted in maternal toxicity. However, no evidence of fetotoxicity or developmental toxicity was observed.

EMERGENCY AND FIRST AID PROCEDURES:

SWALLOWING: If patient is fully conscious, give two glasses of water. Induce vomiting. Obtain medical attention.

SKIN: Remove contaminated clothing. Wash skin with soap and water. If irritation persists or if contact has been prolonged, obtain medical attention.

PRODUCT NAME: PRIMARY AMYL ACETATE, MIXED ISOMERS

INHALATION:	Remove to fresh air. Give artificial respiration if not breathing. If breathing is difficult, oxygen may be given by qualified personnel. Obtain medical attention.
EYES:	Immediately flush eyes with water and continue washing for several minutes. Remove contact lenses, if worn. Obtain medical attention if discomfort persists.
NOTES TO PHYSICIAN:	There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient.

VI. REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID: None known.

INCOMPATIBILITY (materials to avoid):
Strong oxidizing agents.
Nitric acid.
Sodium hydroxide.
Alkali metal hydroxides.

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS:
Burning can produce the following products:
Carbon monoxide and/or carbon dioxide.
Carbon monoxide is highly toxic if inhaled; carbon dioxide in sufficient concentrations can act as an asphyxiant.

HAZARDOUS POLYMERIZATION: Will Not Occur

CONDITIONS TO AVOID: None known.

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:
Wear suitable protective equipment.
Collect for disposal.
This product may be toxic to fish; avoid discharge to natural waters.

WASTE DISPOSAL METHOD:
Incinerate in a furnace where permitted under Federal, State, and local regulations.

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION:
Use self-contained breathing apparatus in high vapor concentrations.

PRODUCT NAME: PRIMARY AMYL ACETATE, MIXED ISOMERS

VENTILATION: General (mechanical) room ventilation is expected to be satisfactory where this product is stored and handled in closed equipment. Special, local ventilation is needed at points where vapors can be expected to escape to the workplace air.

PROTECTIVE GLOVES: Butyl

EYE PROTECTION: Monogoggles

OTHER PROTECTIVE EQUIPMENT: Eye Bath, Safety Shower

IX. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

WARNING!
HARMFUL IF INHALED.
CAUSES EYE AND SKIN IRRITATION.
COMBUSTIBLE.

Avoid breathing vapor.
Avoid contact with eyes, skin and clothing.
Keep away from heat and flame.
Keep container closed.
Use with adequate ventilation.
Wash thoroughly after handling.

FOR INDUSTRY USE ONLY

OTHER PRECAUTIONS:

PROCESS HAZARD: Sudden release of hot organic chemical vapors or mists from process equipment operating at elevated temperature and pressure, or sudden ingress of air into hot equipment under a vacuum, may result in ignitions without the presence of obvious ignition sources. Published "autoignition" or "ignition" temperature values cannot be treated as safe operating temperatures in chemical processes without analysis of the actual process conditions.

Any use of this product in elevated-temperature processes should be thoroughly evaluated to establish and maintain safe operating conditions. Further information is available in a technical bulletin entitled "Ignition Hazards of Organic Chemical Vapors."

X. REGULATORY INFORMATION

STATUS ON SUBSTANCE LISTS:

The concentrations shown are maximum or ceiling levels (weight %) to be used for calculations for regulations. Trade Secrets are indicated by "TS".

FEDERAL EPA

PRODUCT NAME: PRIMARY AMYL ACETATE, MIXED ISOMERS

Comprehensive Environmental Response Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center of release of quantities of Hazardous Substances equal to or greater than the reportable quantities (RQs) in 40 CFR 302.4.

Components present in this product at a level which could require reporting under the statute are:

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %
3-Methylbutyl Acetate	123-92-2	0.1
n-Pentyl Acetate	628-63-7	65

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires emergency planning based on Threshold Planning Quantities (TPQs) and release reporting based on Reportable Quantities (RQs) in 40 CFR 355 (used for SARA 302, 304, 311 and 312).

Components present in this product at a level which could require reporting under the statute are:

*** NONE ***

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires submission of annual reports of release of toxic chemicals that appear in 40 CFR 372 (for SARA 313). This information must be included in all MSDSs that are copied and distributed for this material.

Components present in this product at a level which could require reporting under the statute are:

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %

This product does not contain toxic chemicals at levels which require reporting under the statute.

Toxic Substances Control Act (TSCA) STATUS:

The ingredients of this product are on the TSCA inventory.

STATE RIGHT-TO-KNOW

CALIFORNIA Proposition 65

This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

MASSACHUSETTS Right-To-Know, Substance List (MSL) Hazardous Substances and Extraordinarily Hazardous Substances on the MSL must be identified when present in products.

Components present in this product at a level which could require reporting under the statute are:

HAZARDOUS SUBSTANCES (=> 1%)

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %
n-Pentyl Acetate	628-63-7	65

PENNSYLVANIA Right-to-Know, Hazardous Substance List Hazardous Substances and Special Hazardous Substances on the List must be identified when present in products.

Components present in this product at a level which could require reporting under the statute are:

PRODUCT NAME: PRIMARY AMYL ACETATE, MIXED ISOMERS

HAZARDOUS SUBSTANCES (=> 1%)

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %
n-Pentyl Acetate	628-63-7	65

CALIFORNIA SCAQMD RULE 443.1 VOC'S:

VOC 874 g/l; Vapor Pressure 4.0 mm Hg @ 20 C

OTHER REGULATORY INFORMATION:

EPA Hazard Categories: Immediate Health, Delayed Health

NEW YORK STATE BULK STORAGE REGULATIONS (6 NYCRR Parts 595-599)

This product is covered by 6 NYCRR for Bulk Storage and Release Reporting and Response. Technical guidance and recommended practices are as follows:

MATERIALS OF CONSTRUCTION

Suitable materials of construction are: Steel, stainless steel, aluminum, baked phenolic lined steel, galvanized steel, copper and copper alloys.

Materials not to be used: Polyvinyl Chloride.

STORAGE SYSTEM DESIGN

Design should comply with applicable industry, Federal, and local codes for a Class II Combustible liquid with regards to mechanical, electrical, safety and health components. Should also comply with NYS/DEC Chemical Bulk Storage regulations Parts 598.3 to 598.6 (for existing tanks) or Parts 599.2 and 599.7 (for new or substantially modified tanks).

CONDITIONS FOR STORAGE

Store at normal ambient temperatures.

INSPECTION AND MAINTENANCE

A testing/inspection program which ensures structural integrity and proper system operation should be established. Inspection and maintenance procedures and testing of equipment should comply with NYS/DEC regulations Parts 598.7 to 598.10.

TRANSFER AND UNLOADING

These operations should comply with NYS/DEC regulations, Part 598.5.

NOTE ---

The opinions expressed herein are those of qualified experts within Union Carbide. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and the conditions of the use of the product are not under the control of Union Carbide, it is the user's obligation to determine conditions of safe use of the product.

REVISED SECTIONS:

Revisions to this MSDS occurred in Section V - HEALTH HAZARD DATA

PRODUCT: 13741
F NUMBER: C0097H

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☐ REVISED 1 Page ____ of ____ 2

FACILITY ID# 30 035 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: CLASS 1 ROOM 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # I 2 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: TYZOR TnBT TITANATE | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☒ No 11 (* If EPCRA see instructions)

COMMON NAME: SAME 9 | An EHS Chemical ☐ Yes ☐ No 12 (*If EHS is "Yes", all amounts must be LBS)

CAS # 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only): ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only): ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17

FED HAZARD CATEGORIES: ☑ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE 18 ☑ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT: 15 19 | MAXIMUM DAILY AMOUNT: 40 20 | ANNUAL WASTE AMOUNT: NONE 21 | STATE WASTE CODE 22

UNITS: ☐ a. GALLONS ☐ b. CUBIC FEET 23 ☒ c. POUNDS ☐ d. TONS (*If EHS, amount must be in pounds.) | DAYS ON SITE: 365 DAYS 24 | LARGEST CONTAINER: 5 GAL PAIL 25

STORAGE CONTAINER (Check all that apply): ☐ a. ABOVEGROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BLDG ☐ d STEEL DRUM ☐ e. PLASTIC DRUM ☐ f. NONMETALLIC DRUM ☒ g. METAL CONTAINER ☐ h. CARBOY ☐ i. VAT ☐ l. FIBER DRUM ☐ l. BAG(S) ☐ l. BOX(S) ☐ m CYLINDER ☐ n. GLASS CONTAINER ☐ o PLASTIC CONTAINER ☐ p. IN MACH OR EQUIP ☐ q. TANK WAGON ☐ r. RAIL CAR ☐ s. TOTE BIN ☐ t. OTHER_____ 26

STORAGE PRESSURE: ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE: ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	95-99 29	TETRABUTYL TITANATE 30	☐ Yes ☐ No 31	5593-70-4 32
2	1-5 29	TETRAISOPROPYL TITANATE 30	☐ Yes ☐ No 31	546-68-9 32
3	0-2 29	1-BUTANOL 30	☐ Yes ☐ No 31	71-36-3 32
4	29	30	☐ Yes ☐ No 31	32
5	29	30	☐ Yes ☐ No 31	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

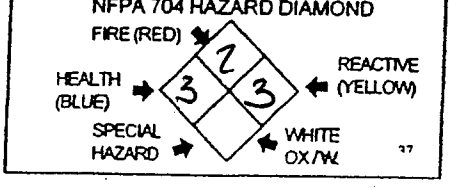
UNDOT # UN 1120 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS 3 (IMO 3.3) 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 37



MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

"Tyzor" TnBT Titanate
5887PP Revised 28-MAR-2002

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"Tyzor" is a registered trademark of DuPont.

Corporate MSDS Number : DU002688

Tradenames and Synonyms

Butyl Titanate
Tetra-n-Butyl Titanate
Tetrabutyl Titanate
Titanium Tetrabutoxide
Butyl Titanate Monomer
"Tyzor" TBT Titanate

Company Identification

MANUFACTURER/DISTRIBUTOR
DuPont Chemical Solutions Enterprise
1007 Market Street
Wilmington, DE 19898

PHONE NUMBERS
Product Information : 1-800-441-7515 (outside the U.S. 302-774-1000)
Transport Emergency : CHEMTREC 1-800-424-9300(outside U.S. 703-527-3887)
Medical Emergency : 1-800-441-3637 (outside the U.S. 302-774-1000)

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
Tetrabutyl Titanate	5593-70-4	95-99
Impurity:		
Tetraisopropyl Titanate	546-68-9	1-5
*1-Butanol	71-36-3	0-2

* Disclosure as a toxic chemical is required under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

(COMPOSITION/INFORMATION ON INGREDIENTS - Continued)

Components (Remarks)

Various titanate impurities collectively expressed as tetraisopropyl titanate.

HAZARDS IDENTIFICATION

Potential Health Effects

Skin contact with "Tyzor" TnBT may cause irritation with itching, burning, redness, swelling or rash.

Eye contact with "Tyzor" TnBT may cause severe eye irritation with tearing, pain or blurred vision.

Inhalation of n-Butanol may cause irritation of the nose and throat with sneezing, sore throat or runny nose. There are reports that suggest headache, hearing loss and vertigo (dizziness) in workers exposed to less than 110 ppm.

Eye contact with n-Butanol vapor or aerosol may cause eye irritation with tearing, pain or blurred vision, and photophobia.

Repeated or excessive over-exposure of n-Butanol by inhalation or ingestion may cause central nervous depression with dizziness, confusion, incoordination, drowsiness or unconsciousness; impaired functioning of the blood-forming system with alterations in blood cell counts and/or anemia; and abnormal liver and kidney function with altered results on blood tests.

Carcinogenicity Information

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

FIRST AID MEASURES

First Aid

INHALATION

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

SKIN CONTACT

Flush skin with water after contact. Wash contaminated clothing before reuse.

(FIRST AID MEASURES - Continued)

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

If swallowed, do not induce vomiting. Immediately give 2 glasses of water. Never give anything by mouth to an unconscious person. Call a physician.

Notes to Physicians

Activated charcoal mixture may be administered. To prepare activated charcoal mixture, suspend 50 grams activated charcoal in 400 mL water and mix thoroughly. Administer 5 mL/kg, or 350 mL for an average adult.

The product hydrolyzes with water and may form a precipitate on contact with eyes. Mechanical removal of the precipitate may be advisable.

FIRE FIGHTING MEASURES

Flammable Properties

The flash point (PMCC) of freshly made "Tyzor" TnBT is 47 degC. If this material is exposed to water or to moist air, it will react, producing the alcohol associated with the titanium. This will cause the flash point to decrease. The flash point (PMCC) of a mixture of 80% (wt.) "Tyzor" TnBT and 20% (wt.) water, after 20 minutes exposure, is 34 - 38 degC. This water-exposed product should then be considered as DOT flammable.

Combustible.

Use explosion-proof exhaust systems to vent fumes resulting from hydrolysis or pyrolysis during use.

Extinguishing Media

Foam, Dry Chemical, CO2.

Avoid using water on large spills. Water may be used to flush away residue.

Fire Fighting Instructions

Wear self-contained breathing apparatus. Wear full protective equipment.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Initial Containment

Remove source of heat, sparks, flame, impact, friction or electricity. Prevent material from entering sewers, waterways, or low areas.

Spill Clean Up

Soak up with sawdust, sand, oil dry or other absorbent material.

Accidental Release Measures

Place in container for disposal. Do not apply water to a large spill. Sweep up or use a non-sparking shovel for cleanup.

The CERCLA Reportable Quantity (RQ) for 1-Butanol is 5,000 pounds.

HANDLING AND STORAGE

Handling (Personnel)

Do not get in eyes, on skin, or on clothing. Avoid breathing vapors or mist. Wash thoroughly after handling.

Storage

Store in a well ventilated place. Keep container tightly closed.

Keep in dry container. Use only dry, clean utensils when handling. Freezing will affect physical condition but will not damage. Thaw and mix before using. Keep away from heat and flames.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

Use only with adequate ventilation. Keep container tightly closed.

Keep away from heat and flames. Vent dryer fumes outside work area.

(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

Personal Protective Equipment

EYE/FACE PROTECTION

Wear coverall chemical splash goggles.

RESPIRATORS

Wear NIOSH approved respiratory protection, as appropriate.

PROTECTIVE CLOTHING

Where there is potential for skin contact have available and wear as appropriate, impervious gloves, apron, pants, and jacket.

Exposure Guidelines

Applicable Exposure Limits

Tetraisopropyl Titanate		
PEL	(OSHA)	: None Established
TLV	(ACGIH)	: None Established
AEL *	(DuPont)	: 10 mg/m3, 8 Hr. TWA, total dust
1-Butanol		
PEL	(OSHA)	: 100 ppm, 300 mg/m3
TLV	(ACGIH)	: Ceiling 50 ppm, Skin Notice of Intended Changes (2002) 20 ppm, 8 Hr. TWA
AEL *	(DuPont)	: 20 ppm, 8 Hr. TWA

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Boiling Point	: 180-184 C (356-363 F) @ 10 mm Hg
% Volatiles	: Less than 2%
Solubility in Water	: Hydrolyzes
pH	: Neutral
Odor	: Butyl alcohol
Form	: Liquid, Clear
Color	: Pale Yellow
Specific Gravity	: 0.99 @ 25C (77F)

STABILITY AND REACTIVITY

Chemical Stability

Stable.

Incompatibility with Other Materials

Incompatible with water. Hydrolyzes very rapidly forming butanol.

Decomposition

Heating generates flammable olefins and other flammable organic compounds.

Polymerization

Conditions leading to polymerization are hydrolysis. Not a hazard.

TOXICOLOGICAL INFORMATION

Animal Data

"Tyzor" TnBT:

Oral LD50:	7,500 mg/kg in rats
Inhalation 4 hour ALC:	11 mg/L in rats (tested as 25% in kerosene)

n-Butanol:

Oral LD50:	790 mg/kg in rats
Dermal LD50:	3,400 mg/kg in rabbits
Inhalation 4 hour LC50:	>8,000 ppm in rats

Animal testing indicates "Tyzor" TnBT is a moderate to severe eye irritant, a severe skin irritant, but not a skin sensitizer. Single exposure by inhalation to high doses of "Tyzor" TnBT (25% in kerosene) caused nasal and ocular discharge and non-specific effects such as weight loss. No animal data are available to define the carcinogenicity, developmental, reproductive or mutagenic hazards of "Tyzor" TnBT.

Animal testing indicates n-Butanol is a severe eye irritant and a moderate skin irritant. Single exposure by ingestion to n-Butanol caused narcosis. Repeated exposure caused increased adrenal weight and histopathological changes of the liver. Single exposure by inhalation to n-Butanol caused irritation of the respiratory tract, central nervous system depression and narcosis. Repeated exposure caused eye irritation; narcosis; histopathological changes of the

(TOXICOLOGICAL INFORMATION - Continued)

lungs, liver and kidneys; and altered hematology. No adequate animal data are available to define the carcinogenic or reproductive potential of n-Butanol. Animal data show developmental effects only at or near levels producing other toxic effects in the adult animal. Tests have shown that n-Butanol does not cause genetic damage in bacterial or mammalian cell cultures. It has not been tested in animals for genetic toxicity.

DISPOSAL CONSIDERATIONS

Waste Disposal

Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. Recover nonusable free liquid and dispose of in approved and permitted incinerator. Do not flush to surface water or sanitary sewer system.

TRANSPORTATION INFORMATION

Shipping Information

DOT/IMO/IATA

Proper Shipping Name	: Butanol Solution
Hazard Class	: 3 (IMO-3.3)
UN No.	: 1120
Packing Group	: III
Label(s)	: Flammable Liquid

Shipping Containers

Steel Drums	: 55 gal drum; 5 gal pail

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : Reported/Included.

TITLE III HAZARD CLASSIFICATIONS SECTIONS 311, 312

Acute	: Yes
Chronic	: Yes
Fire	: Yes
Reactivity	: No
Pressure	: No

OTHER INFORMATION

NFPA, NPCA-HMIS

NPCA-HMIS Rating

Health	: 3
Flammability	: 2
Reactivity	: 0

Personal Protection rating to be supplied by user depending on use conditions.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsible for MSDS	: MSDS Coordinator
>	: DuPont Chemical Solutions Enterprise
Address	: Wilmington, DE 19898
Telephone	: (800) 441-7515

# Indicates updated section.

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☒ REVISED 1 Page ____ of ____ 2

FACILITY ID# 30035 38 | BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: RAW MATERIAL STORAGE 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # J5 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: IRGASPERSE BLUE 1614-02 | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☒ No 11 (* If EPCRA see instructions)

COMMON NAME: DYE 9 | An EHS Chemical ☐ Yes ☐ No 12 (*If EHS is "Yes", all amounts must be LBS)

CAS # 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☐ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☐ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 18

AVERAGE DAILY AMOUNT: 1 19 | MAXIMUM DAILY AMOUNT: 5 20 | ANNUAL WASTE AMOUNT: NONE 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET ☒ c. POUNDS ☐ d. TONS 23 (*If EHS, amount must be in pounds.) | DAYS ON SITE: 365 DAYS 24 | LARGEST CONTAINER: 1 GAL CAN 25

STORAGE CONTAINER (Check all that apply) 26
☐ a. ABOVEGROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BLDG ☐ d STEEL DRUM ☐ e. PLASTIC DRUM ☐ f. NONMETALLIC DRUM ☒ g. METAL CONTAINER ☐ h. CARBOY ☐ i. VAT ☐ l. FIBER DRUM ☐ l. BAG(S) ☐ l. BOX(S) ☐ m CYLINDER ☐ n. GLASS CONTAINER ☐ o PLASTIC CONTAINER ☐ p. IN MACH OR EQUIP ☐ q. TANK WAGON ☐ r. RAIL CAR ☐ s. TOTE BIN ☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	1-10 29	PROPRIETARY DYE 30	☐ Yes ☐ No 31	TRADE SECRET 32
2	1-10 29	PROPRIETARY DYE 30	☐ Yes ☐ No 31	TRADE SECRET 32
3	60-70 29	PROPYLENE GLYCOL METHYL ETHER 30	☐ Yes ☐ No 31	107-98-2 32
4	1-10 29	1,2-PROPANEDIOL 30	☐ Yes ☐ No 31	57-55-6 32
5	10-20 29	WATER 30	☐ Yes ☐ No 31	7732-18-5 32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

UNDOT # UN 3092 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS 3 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 37
FIRE (RED) 2
HEALTH (BLUE) 2
REACTIVE (YELLOW) 0
SPECIAL HAZARD WHITE OX/W

MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Ciba Specialty Chemicals Corporation

Ciba

Material Safety Data Sheet

OSHA / ANSI Z400.1-2004 Compliant

MSDS date: 17-Apr-2006

NFPA Rating:	**Health:** 2	**Flammability:** 2	**Instability:** 0	
HMIS Rating:	**Health:** 2	**Flammability:** 2	**Physical Hazard:** 0	**Personal Protection:** X

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: **IRGASPERSE BLUE 1614-U2**

Product Number: **0339009**

Chemical Family: Anthraquinone dye solution

Intended Use: Dye solution

Manufacturer/Supplier:

Ciba Specialty Chemicals Corporation
540 White Plains Road
Tarrytown, NY 10591
8:30am - 5pm Phone Number: 1-914-785-2000
MSDS Request Line (voicemail): 1-800-431-2360
Customer Service/Product Information 1-800-474-4731

Emergency 24-Hour Health/Environmental Phone: 1-800-873-1138

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Signal Word:	WARNING!
Physical Form:	Liquid
Color:	Blue
Odor:	Aromatic
Health:	This product may be an eye and skin irritant.. Prolonged skin contact with high amounts may cause drowsiness..
Physical Hazards:	Flammable liquid.
Environmental:	Releases to the environment are to be avoided.

OSHA Hazardous Substance: This material is classified as hazardous under OSHA regulations.

Potential Health Effects: Target Organ Effects: None Identified.

Primary Route(s) of Entry: Ingestion, Skin, Inhalation, Eyes.

3. COMPOSITION/INFORMATION ON INGREDIENTS

HAZARDOUS COMPONENTS

Components	CAS Number	Weight %
Proprietary dye	Trade Secret	1 - 10
Proprietary dye	Trade Secret	1 - 10
Propylene Glycol Methyl Ether	107-98-2	60 - 70
1,2-Propanediol	57-55-6	1 - 10

203-539-1
200-338-0

NON-HAZARDOUS COMPONENTS

Components	CAS Number	Weight %
Water	7732-18-5	10 - 20

231-791-2

4. FIRST AID MEASURES

Eyes: Immediately flush the eye(s) with lukewarm, gently flowing water for 15 minutes or until the chemical is removed. Get immediate medical attention if irritation persists.

Skin: If clothing is contaminated, remove and launder before reuse. Wash off immediately with soap and plenty of water. Get medical attention if irritation occurs.

Inhalation: Remove to fresh air, if not breathing give artificial respiration. If breathing is difficult, give oxygen and get immediate medical attention.

Ingestion: Do not induce vomiting. If vomiting occurs naturally, have casualty lean forward to reduce the risk of aspiration. Seek medical attention immediately.

5. FIRE FIGHTING MEASURES

Fire Fighting Measures: Standard procedure for chemical fires.

Suitable Extinguishing Media: Carbon dioxide, dry chemical or foam.

Fire Fighting Equipment: Wear self-contained breathing apparatus and protective suit.

Hazardous Combustion Products: Burning may produce toxic combustion products.

6. ACCIDENTAL RELEASE MEASURES

Cleanup Instructions: Absorb spill with inert material (e.g. dry sand or earth), then place in a chemical waste container. Wear suitable protective equipment. Should not be released into the environment.

7. HANDLING AND STORAGE

Handling: As with all industrial chemicals, use good industrial practices when handling. Avoid eye, skin, and clothing contact. Do not inhale. Do not taste or swallow. Use only with adequate ventilation.

Storage: Keep containers tightly closed in a cool, well-ventilated place.

Explosion Hazards: Flammable liquid. Keep this product away from heat, sparks, and open flames.

For Industrial Use Only

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines:

Exposure Summary:

Components	OSHA PEL	OSHA STEL	ACGIH TWA	ACGIH STEL	Ciba/ Manufacturer IEL:
Propylene Glycol Methyl Ether 107-98-2		553 mg/m³ 150 ppm	100 ppm	150 ppm	

Personal Protective Equipment

Eye/Face Protection: Wear splash proof chemical goggles.

Skin Protection: Wear chemical resistant gloves and protective clothing.

Respiratory Protection: Use NIOSH approved respirator as needed to mitigate exposure.

Engineering Controls: Work in well ventilated areas. Do not breathe vapors or mist.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical Form: Liquid
Color: Blue
Odor: Aromatic.
Boiling Point: 130 - 140°C (266 - 284°F)
Freezing/Melting Point: Not determined
Solubility in water: Miscible
Vapor Density: Not determined
Vapor Pressure: Not determined
Density: ~1 g/cm3 @ 20°C (68°F)
Specific Gravity: Not determined
pH: 5.5 - 6.5
Percent Volatile: 80 - 90 % (by weight)
VOC: ~ 76 %
Partition Coefficient (Octanol/Water): Not determined
Autoignition Temperature: Not determined
Decomposition Temperature: Not determined
Flammability Limits in Air:
Upper Not determined
Lower Not determined

Flash point: 45°C (113°F)
Test Method (for Flash Point): Not determined

10. STABILITY AND REACTIVITY

Stability: Stable.

Conditions to Avoid: None known

Incompatibility: Strong oxidizing agents, strong acids, strong bases.

Hazardous Decomposition Products: No decomposition expected under normal storage conditions.

Possibility of Hazardous Reactions: None expected.

11. TOXICOLOGICAL INFORMATION

Acute Oral Toxicity:

7732-18-5 Water	Not determined.
Proprietary dye	Not determined.
Proprietary dye	Not determined.
107-98-2 Propylene Glycol Methyl Ether	Not determined.
57-55-6 1,2-Propanediol	(Rats) LD50 20 g/kg

Acute Dermal Toxicity:

7732-18-5 Water	Not determined
Proprietary dye	Not determined
Proprietary dye	Not determined
107-98-2 Propylene Glycol Methyl Ether	(Rabbits) LD50 13 g/kg
57-55-6 1,2-Propanediol	Not determined

Acute Inhalation Toxicity:

7732-18-5 Water	4700 ppm (0.5 hour) (Rats)
Proprietary dye	Not determined.
Proprietary dye	Not determined.
107-98-2 Propylene Glycol Methyl Ether	(Rats) 10000 ppm (5 hours) May cause dizziness or headaches. Causes irritation to the respiratory tract.
57-55-6 1,2-Propanediol	Not determined.

Eye Irritation:

7732-18-5 Water	Not determined.
Proprietary dye	Not determined.
Proprietary dye	Not determined.

107-98-2 Propylene Glycol Methyl Ether	(Rabbits) Mild to moderate irritant.
57-55-6 1,2-Propanediol	(Rabbits) Mild eye irritant.

Skin Irritation:

7732-18-5 Water	Not determined.
Proprietary dye	Not determined.
Proprietary dye	Not determined.
107-98-2 Propylene Glycol Methyl Ether	(Rabbits) Mild skin irritant. (RTECS, 1995)
57-55-6 1,2-Propanediol	(Humans) Mild skin irritant.

Skin Sensitization:

7732-18-5 Water	Not determined
Proprietary dye	Not determined
Proprietary dye	Not determined
107-98-2 Propylene Glycol Methyl Ether	Not determined
57-55-6 1,2-Propanediol	Not determined

Carcinogenicity (IARC; NTP; OSHA; ACGIH): None of the components in this product at concentrations greater than 0.1% are listed by IARC; NTP, OSHA or ACGIH as a carcinogen.

Mutagenicity:

7732-18-5 Water	Not determined
Proprietary dye	Not determined
Proprietary dye	Not determined
107-98-2 Propylene Glycol Methyl Ether	Ames Salmonella test (with or without activation):Non-mutagenic Chinese Hamster ovary cells: Non-clastogenic Rat primary hepatocytes: Non-clastogenic
57-55-6 1,2-Propanediol	Not determined

Reproductive Toxicity:

7732-18-5 Water	Not determined
Proprietary dye	Not determined
Proprietary dye	Not determined
107-98-2 Propylene Glycol Methyl Ether	Inhalation exposure to make rats and rabbits of 300, 1,000 or 3,000 ppm, six hours/day, 5-day/week for 13 weeks did not show evidence of testicular effects.

57-55-6 1,2-Propanediol	Not determined

Teratogenicity:

7732-18-5 Water	Not determined.
Proprietary dye	Not determined.
Proprietary dye	Not determined.
107-98-2 Propylene Glycol Methyl Ether	(Rats) (Mice) (Rabbits) Exposure to 0.04 to 2 mg/kg/day during the first 18 to 21 days of gestation were found to cause no effects in mice and rabbits; delayed ossification was seen in the rat. (Rats) Inhalation of 3,000 ppm for 6 hrs/day on day 6 to 15 of pregnancy was found to cause delayed ossification in offspring. (Rats)
57-55-6 1,2-Propanediol	Not determined.

Neurotoxicity:

7732-18-5 Water	Not determined
Proprietary dye	Not determined
Proprietary dye	Not determined
107-98-2 Propylene Glycol Methyl Ether	Not determined
57-55-6 1,2-Propanediol	Not determined

Subacute Toxicity:

7732-18-5 Water	Not determined
Proprietary dye	Not determined
Proprietary dye	Not determined
107-98-2 Propylene Glycol Methyl Ether	Not determined
57-55-6 1,2-Propanediol	Not determined

Subchronic Toxicity:

7732-18-5 Water	Not determined
Proprietary dye	Not determined
Proprietary dye	Not determined
107-98-2 Propylene Glycol Methyl Ether	Repeated overexposure to 1-methoxy-2-propanol may cause liver and kidney damage and delayed skeletal development of the fetus, based on animal studies.
57-55-6 1,2-Propanediol	Chronic exposure may produce central nervous system and kidney effects.

Chronic toxicity:

7732-18-5 Water	Not determined

Proprietary dye	Not determined
Proprietary dye	Not determined
107-98-2 Propylene Glycol Methyl Ether	Not determined
57-55-6 1,2-Propanediol	Not determined

Absorption / Distribution / Excretion / Metabolism:

7732-18-5 Water	Not determined
Proprietary dye	Not determined
Proprietary dye	Not determined
107-98-2 Propylene Glycol Methyl Ether	Not determined
57-55-6 1,2-Propanediol	Not determined

Additional Information:

7732-18-5 Water	Not determined
Proprietary dye	Not determined
Proprietary dye	Not determined
107-98-2 Propylene Glycol Methyl Ether	Prolonged skin contact with very large amounts may cause drowsiness
57-55-6 1,2-Propanediol	May also cause central nervous system effects including drowsiness, dizziness, headache and blurred vision.

12. ECOLOGICAL INFORMATION

Toxicity to Fish: Not determined

Toxicity to Invertebrates: Not determined

Toxicity to Algae: Not determined

Toxicity to Sewage Bacteria: Not determined

Activated Sludge Respiration Inhibition Test: Not determined

Biochemical Oxygen Demand (BOD): Not determined

Chemical Oxygen Demand (COD): Not determined

Total Oxygen Demand (TOD): Not determined

Biodegradability: Not determined

Bioaccumulation: Not determined

Additional Environmental Data: Not determined

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Dispose in accordance with local, state, provincial and federal regulations.

14. TRANSPORT INFORMATION

U.S. Department of Transportation (DOT):

Proper shipping name: 1-Methoxy-2-propanol solution
Hazard Class: 3
ID Number: UN3092
Packing group: III

International Maritime Dangerous Goods (IMDG):

Proper shipping name: 1-Methoxy-2-propanol solution
Hazard Class: 3
ID Number: UN3092
Packing group: III

International Air Transportation Authority (IATA):

Proper shipping name: 1-Methoxy-2-propanol solution
Hazard Class: 3
ID Number: UN3092
Packing group: III

15. REGULATORY INFORMATION

Federal Regulations

OSHA Hazardous Substance: This material is classified as hazardous under OSHA regulations

Clean Air Act - Hazardous Air Pollutants (HAP): This product does not contain any Hazardous Air Pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

Clean Air Act - Volatile Organic Compounds (VOC): This product contains the following SOCMI Intermediate or Final Volatile Organic Compounds (VOC), as defined by the U.S. Clean Air Act Section 111 (40 CFR 60.489).

Components	CAA Section 111 Volatile Organic Compounds
1,2-Propanediol 57-55-6	Listed.

Clean Air Act - Ozone Depleting Substances (ODS): This product neither contains, nor was manufactured with, a Class I or Class II ozone depleting substance (ODS), as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App. A+B).

Clean Water Act - Priority Pollutants (PP): This product does not contain any priority pollutants listed under the U.S. Clean Water Act Section 307 (2)(1) Priority Pollutant List (40 CFR 401.15).

Resource Conservation and Recovery Act (RCRA): Not a hazardous waste under RCRA (40 CFR 261.21).

SARA Section 302 Extremely Hazardous Substances (EHS): This product does not contain any components regulated under Section 302 (40 CFR 355) as Extremely Hazardous Substances.

SARA Section 304 CERCLA Hazardous Substances: This product does not contain any components regulated under Section 304 (40 CFR 302) as hazardous chemicals for emergency release notification ("CERCLA" List).

Components	Section 304 CERCLA Hazardous Substances	CERCLA Reportable Quantity
Propylene Glycol Methyl Ether 107-98-2 (60 - 70 %)	Listed.	100 LBS

SARA Section 311/312 Hazard Communication Standard (HCS): This product is regulated under Section 311/312 HCS (40 CFR 370). Its hazard(s):

SARA Section 313 Toxic Chemical List (TCL): This product does not contain any component(s) listed on the Section 313 Toxic Chemical List.

TSCA Section 8(b) Inventory Status: All component(s) comprising this product are either exempt or listed on the TSCA inventory.

TSCA Section 5(e) Consent Orders: This product is not subject to a Section 5(e) Consent Order.

TSCA Significant New Use Rule (SNUR): This product is not subject to a Significant New Use Rule (SNUR).

TSCA Section 5(f): This product is not subject to a Section 5(f)/6(a) rule.

TSCA Section 12(b) Export Notification: This product does not contain any component(s) that are subject to a Section 12(b) Export Notification

State Regulations

California Proposition 65: This product does not contain any components currently on the California list of Known Carcinogens and Reproductive Toxins.

Pennsylvania Right-To-Know: This product contains the following component(s) which are subject to Pennsylvania Right-to-Know disclosure requirement.

Components	CAS Number	Pennsylvania Right-to-Know
Propylene Glycol Methyl Ether	107-98-2	Listed.
1,2-Propanediol	57-55-6	Listed.

International Regulations

Chemical Weapons Convention (CWC): This product does not contain any component(s) listed under the Chemical Weapons Convention Schedule of Chemicals.

Domestic Substance List (DSL) Status: All components either exempt or listed on the DSL.

16. OTHER INFORMATION

Disclaimer: The information contained herein is based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to such data or information. The user is responsible for determining whether the product is suitable for its intended conditions of use.

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☐ REVISED 1 Page _____ of _____ 2

FACILITY ID# 3 0 0 3 5 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: Material Storage Area 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 MAP # 6 GRID # G2 - G7 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: AC-502 Part B

WASTE ☐ Yes 8

TRADE SECRET ☐ Yes ☒ No 11 * If EPCRA see instructions

COMMON NAME: Primer 9

An EHS Chemical ☐ Yes ☐ No 12 *If EHS is "Yes", all amounts must be LBS

CAS # 10

FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14

RADIOACTIVE ☐ Yes ☒ No 15

CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17

FED HAZARD CATEGORIES ☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☒ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH 18

AVERAGE DAILY AMOUNT: 1 19

MAXIMUM DAILY AMOUNT: 100 20

ANNUAL WASTE AMOUNT: NONE 21

STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET ☒ c. POUNDS ☐ d. TONS 23 *If EHS, amount must be in pounds.

DAYS ON SITE: 365 DAYS 24

LARGEST CONTAINER: 1 Gal Can 25

STORAGE CONTAINER (Check all that apply) 26

- ☐ a. ABOVEGROUND TANK
- ☐ b. UNDERGROUND TANK
- ☐ c. TANK INSIDE BLDG
- ☐ d STEEL DRUM
- ☐ e. PLASTIC DRUM
- ☐ f. NONMETALLIC DRUM
- ☒ g. METAL CONTAINER
- ☐ h. CARBOY
- ☐ i. VAT
- ☐ l. FIBER DRUM
- ☐ l. BAG(S)
- ☐ l. BOX(S)
- ☐ m CYLINDER
- ☐ n. GLASS CONTAINER
- ☐ o PLASTIC CONTAINER
- ☐ p. IN MACH OR EQUIP
- ☐ q. TANK WAGON
- ☐ r. RAIL CAR
- ☐ s. TOTE BIN
- ☐ t. OTHER_____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)		EHS		CAS #	
1	50-60 29	4-Chlorobenzotrifluoride	30	☐ Yes	☐ No 31	98-56-6	32
2	5-10 29	Nitroethane	30	☐ Yes	☐ No 31	79-24-3	32
3	29		30	☐ Yes	☐ No 31		32
4	29		30	☐ Yes	☐ No 31		32
5	29		30	☐ Yes	☐ No 31		32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

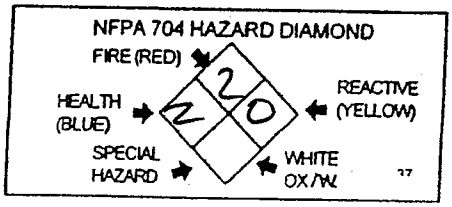
UNDOT # UN 1263 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS 3 (IATA/CFR49) 3.3 (IMO)
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 37



MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Material Safety Data Sheet
AC-® 502 Part B

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

SIN #834-100

Product ID: AC-502 Part B
Generic Description: Primer
Product Use: Aircraft Coating

For information, contact:
Advanced Chemistry & Technology
7341 Anaconda Avenue
Garden Grove, CA 92841-2921
714 - 373 - 2837

ChemTrec Emergency
1 - 800 - 424 - 9300

HAZARD RATINGS		
	HMIS	NFPA
Health	2*	2
Fire	2	2
Reactivity	0	0
	* = Chronic	

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMMON NAME	CAS #	Approximate % (w/w)
4-Chlorobenzotrifluoride	98-56-6	50 – 60
Nitroethane	79-24-3	5 – 10
Non-hazardous and other ingredients below reportable levels	Proprietary	Balance

3.HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: FLAMMABLE LIQUID AND VAPOR. MAY CAUSE ALLERGIC SKIN REACTION. CAUSES EYE IRRITATION. CAUSES SKIN IRRITATION. CAUSES DIGESTIVE TRACT IRRITATION. INHALATION MAY CAUSE DIZZINESS, HEADACHE AND LOSS OF COORDINATION. INGESTION CAN CAUSE DIZZINESS, FAINTNESS, HEADACHE AND INCOORDINATION. MAY CAUSE RESPIRATORY TRACT IRRITATION. INGESTION MAY CAUSE NAUSEA, VOMITING, PAIN, UPSET STOMACH, DIARRHEA. INHALATION MAY CAUSE NAUSEA, VOMITING, UPSET STOMACH. See sections 3, 5, & 6.

PRIMARY ROUTES OF EXPOSURE: Eye. Skin. Inhalation (breathing).

EYE CONTACT: Causes irritation. Can cause burning sensation, tearing, and redness.

SKIN CONTACT: Causes irritation. May cause allergic skin reactions and sensitization.

INHALATION (Breathing): Irritating to the eyes, nose, and respiratory tract. Can cause dizziness, headaches, and loss of coordination. Nausea, vomiting, and stomach upset can occur.

INGESTION (Swallowing): irritating to the mouth, throat, and stomach. May cause nausea, vomiting, pain, and stomach upset (e.g., diarrhea). Can cause dizziness, faintness, headache, and loss of coordination.

TARGET ORGANS/CHRONIC EFFECTS: Liver. Kidneys. Nervous system. Eyes. Skin. Reproductive system

CONDITIONS AGGRAVATED BY EXPOSURE: Liver. Kidneys., Nervous system. Blood and/or blood-forming organs. Lungs and respiratory system. Skin. Immune systems and/or specific chemical allergies..

CARCINOGENICITY:

	ACGIH	IARC	NTP	OSHA
4-Chlorobenzotrifluoride	No	No	No	No
Nitroethane	No	No	No	No

4. FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. If irritation persists get medical attention.

SKIN CONTACT: Immediately flush with plenty of water for at least 15 minutes. For large exposures use an emergency shower. Remove contaminated clothing and shoes. Wash clothing and shoes before re-use.

INHALATION (Breathing): Remove to fresh air. If symptoms develop, seek immediate medical attention. If not breathing, give artificial respiration.

INGESTION (swallowing): Seek medical attention. **Do Not** induce vomiting unless directed by medical personnel. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIANS: Treatment should be directed at preventing absorption, administering to symptoms (if they occur), and providing supportive therapy.

5. FIRE FIGHTING METHODS

Flash Point:	86°F 30°C	Method:	Tag Closed Cup
Explosive Limits:	LEL (%) 0.9	UEL(%)	10.5
Autoignition:	414°C		

HAZARDOUS COMBUSTION AND DECOMPOSITION PRODUCTS: Smoke, soot, and toxic/irritating fumes (i.e., carbon dioxide, carbon monoxide, etc.). Oxides of nitrogen (NO, NO_2, ...) Halogenated compounds, hydrogen chloride, hydrogen fluoride.

FIRE AND EXPLOSION HAZARDS: Flammable. High temperatures can cause sealed containers to rupture due to a build up of internal pressure. Cool with water. Vapors can travel to a source of ignition (flame, electric motor, hot surface, cigarette, etc. (and flash back. During a fire irritating and highly toxic gases may be generated during combustion or decomposition.

EXTINGUISHING MEDIA: SMALL FIRES: Dry chemical or carbon dioxide. LARGE FIRES: Water spray, fog, or foam.

FIRE FIGHTING PROCEDURES/EQUIPMENT: Fire fighters and others who may be exposed to the products of combustion should be equipped with NIOSH-approved positive pressure self-contained breathing apparatus (SCBA) and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

EVACUATION: Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Eliminate all sources of ignition.

CONTAINMENT: Safely stop discharge. Contain material, as necessary, with a dike or barrier. Stop material from contaminating soil, or from entering sewers or bodies of water.

CLEAN-UP/PERSONAL PROTECTION EQUIPMENT: Appropriate safety measures and protective equipment should be used. Use supplied air respirator or self-contained breathing apparatus in enclosed spaces or if airborne exposure limits can be exceeded. See Section 8.

COLLECTION AND DISPOSAL: Stop discharge, if safe to do so. Use proper protective equipment. Use non-sparking tools and/or explosion-proof equipment. Stop ignition sources. Cover spills with absorbent clay or sawdust and place in closed chemical waste containers. Dispose of according to applicable local, state and federal regulations.

REPORTING: Spills of this material in excess of a component's RQ must be reported to the National Response Center (1-800-424-8802) and to the appropriate state and local emergency response organizations.

7. HANDLING AND STORAGE

STORAGE CONDITIONS: Store in cool, dry, well ventilated area away from heat, ignition sources, and direct sunlight. Keep containers tightly closed. **WARNING:** Hot organic chemical vapors or mists can suddenly and without warning combust when mixed with air. Ignition can occur at typical elevated temperature process conditions. Any use in such processes should be evaluated thoroughly to assure safe operating conditions.

TRANSFER: Containers should be supported and grounded before opening, dispensing, mixing, pouring, and emptying. Open with non-sparking tools. If container is warm, open bung slowly to release internal pressure.

PERSONAL HYGIENE: Wash thoroughly after handling, especially before eating, drinking, smoking, and using restroom facilities. Wash contaminated goggles face-shield, and gloves. Launder contaminated clothing before re-use .

EMPTY CONTAINER PRECAUTIONS: **Attention!** This container hazardous when empty. Follow label warnings even after container is emptied since empty containers may retain product residues. Do not use heat, sparks, open flames, torches, cigarettes on or near empty container. Do not reuse empty container without professional cleaning for food, clothing, or products for human or animal consumption or where skin contact can occur.

8. EXPOSURE: CONTROL/PERSONAL PROTECTION

EXPOSURE GUIDELINES:

ACGIH - TLV		
4-Chlorobenzotrifluoride	4	ppm
Nitroethane	100	ppm
OSHA - PEL		
4-Chlorobenzotrifluoride	4	ppm
Nitroethane	100	ppm

ENGINEERING CONTROLS/VENTILATION: Local exhaust ventilation is recommended when vapors, mists, or dusts can be released in excess of established airborne exposure limits (TLVs or PELs).

EYE PROTECTION: An eye wash facility should be readily available. Wear chemical splash goggles.

SKIN PROTECTION: Wear protective clothing, and appropriate impervious gloves. Because a variety of protective gloves exist, consult glove manufacturer to determine the proper type for a specific operation. An emergency shower should be readily available.

RESPIRATORY PROTECTION: Avoid breathing vapor and/or mists. Wear NIOSH/MSHA-approved equipment. Determine the appropriate type by consulting the respirator manufacturer. High airborne concentrations may necessitate the use of self-contained breathing apparatus (SCBA) or a supplied air respirator. Respiratory protection programs must be in compliance with 29 CFR 1910.134.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear	Odor:	Nitroethane
Physical State:	Liquid	Solubility:	Slightly
pH:	Acidic	VOC Coating:	187 g/L (1.57 lbs./gal.)
VOC Material:	88 g/L (0.74 lbs./gal.)	Vapor density:	Heavier than air
Specific Gravity:	1.30	%Non-Vol.(w/w):	0.0

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under normal conditions of use.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: High temperatures.

INCOMPATIBILITY WITH OTHER MATERIALS: Oxidizers. Reducers. Strong bases. Amines

11. TOXICITY INFORMATION

COMPONENTS:

4-Chlorobenzotrifluoride:			
Oral LD50	Rat	>6800	mg/kg
Oral LD50	Mouse	11,500	mg/kg
Vapor LC50 (4 hour)	Rat	4479	mg/kg
Dermal LD50	Rabbit	>2700	mg/kg
Nitroethane:			
LD50	Mouse	850	mg/kg

12. ECOLOGICAL INFORMATION

Ecotoxicity

LC50 (96 hour)	Rainbow Trout	13.5	mg/L
LC50 (96 hour)	Bluegill sunfish	12.0	mg/L
MATC (31 day)	Fathead Minnow	<1.4	mg/L
LC50 (48 hour)	Water Flea	12.4	mg/L
MATC (21 day)	Water Flea	<0.05	mg/L
IC50 (72 hour)	Green & Blue-green algae	500	mg/L

13. DISPOSAL CONSIDERATIONS

DISPOSAL: When a decision is made to discard this material as supplied, it meets RCRA's characteristic definition of ignitability.

GENERAL STATEMENTS: Federal regulations may apply to empty container. State and/or local regulations may be different.

GENERAL RECOMMENDATIONS: Of the methods of disposal currently available, it is recommended that an alternative be selected according to the following order of preference, based upon environmental acceptability: (l) recycle or rework, if feasible; (2) incinerate at an authorized facility; or (3) treat at an acceptable waste treatment facility.

SPECIAL INSTRUCTIONS: Be sure to contact the appropriate government environmental agencies if further guidance is required.

14. TRANSPORT INFORMATION

Weight (lb.)	Shipping Name	49 CFR	IATA	IMO
	Paint	Y	Y	Y

DOT Label.....: Flammable Liquid
Hazard Class.....: 3 (IATA/49CFR) 3.3 (IMO)
Packing Group.....: III

UN/NA Id Num...: UN 1263
USPS Mailability: No

All the information in this section is for non-bulk packaging (119 gallons or less; 882 lbs. or less for solids).

15. REGULATORY INFOR5IATION

FEDERAL:

This product is considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

SARA Title III - Section 311/312 - Hazard Categories:

Y - Fire Hazard
N - Sudden Release of Pressure Hazard
N - Reactivity Hazard
Y - Immediate (acute) Health Hazard
Y - Delayed (chronic) Health Hazard

Ozone-Depleting Chemicals - No regulated ingredients.

SARA Section 302 Extremely Hazardous Mat - none

SARA Section 313 Toxic Chemicals
Barium chromate
Chromium compounds

TSCA Section 8(d) Data Reporting Rule – None

STATE RIGHT-TO-KNOW:

Pennsylvania - New Jersey R - T - K

Barium chromate Environmental Hazard.	10294-40-3	20 – 25
Butyl Cellosolve	111-76-2	10 – 15
Non-hazardous trade secret ingredient(s)	Proprietary	Balance

California - California Proposition 65 – None

CONEG - No data available.

CANADA:
This is a "controlled product" under the Canadian Workplace Hazardous Materials Information System (WHMIS).
Class B Division 2 Class D Division 2 Sub-division B

CEPA – NPRI
None

16. 0THER INFORMATION

USER RESPONSIBILITY: A bulletin such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions - in addition to those described herein - are required. Any health hazard and safety information herein should be passed on to your customers or employees, as the case may be.

DISCCAIMER OF LIABILITY: The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of suitability of the chemical is the sole responsibility of the user. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or any other nature are made hereunder with respect to the information contained herein or the chemical to which the information refers. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.

END OF MATERIAL SAFETY DATA SHEET

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☐ REVISED 1 Page ____ of ____ 2

FACILITY ID# 30 0 3 5 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: Material Storage Area 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 6 | GRID # G2-G7 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: AC-502 Part A | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☐ No 11 (* If EPCRA see instructions)

COMMON NAME: Primer 9 | An EHS Chemical ☐ Yes ☐ No 12 (*If EHS is "Yes", all amounts must be LBS)

CAS # 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE 18 ☒ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT 1 19 | MAXIMUM DAILY AMOUNT 100 20 | ANNUAL WASTE AMOUNT NONE 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET 23 ☒ c. POUNDS ☐ d. TONS (*If EHS, amount must be in pounds.) | DAYS ON SITE 365 DAYS 24 | LARGEST CONTAINER 1 Gal Can 25

STORAGE CONTAINER (Check all that apply) 26
☐ a. ABOVEGROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BLDG ☐ d STEEL DRUM ☐ e. PLASTIC DRUM ☐ f. NONMETALLIC DRUM ☒ g. METAL CONTAINER ☐ h. CARBOY ☐ i. VAT ☐ l. FIBER DRUM ☐ l. BAG(S) ☐ l. BOX(S) ☐ m CYLINDER ☐ n. GLASS CONTAINER ☐ o PLASTIC CONTAINER ☐ p. IN MACH OR EQUIP ☐ q. TANK WAGON ☐ r. RAIL CAR ☐ s. TOTE BIN ☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)		EHS		CAS #	
1	20-25 29	Barium Chromate	30	☐ Yes	☐ No 31	10294-40-3	32
2	10-15 29	Butyl Cellosolve	30	☐ Yes	☐ No 31	111-76-2	32
3	10-15 29	Solvent naptha (petroleum)	30	☐ Yes	☐ No 31	~~64742~~-95-6	32
4	29		30	☐ Yes	☐ No 31		32
5	29		30	☐ Yes	☐ No 31		32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

UNDOT # UN 1263 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS 3 (IATA/ICAO) 3.3 (IMO) 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 37
FIRE (RED) 2
HEALTH (BLUE) 3
REACTIVE (YELLOW) 0
SPECIAL HAZARD WHITE OX/W

MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Revised 2/02 -- haz-inven2.doc

Material Safety Data Sheet
AC-® 502 Part A

MSDS No: 350210-01
Effective: 01/27/09
Supercedes: 09/14/05

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

SIN #834-100

Product ID: AC-502 Part A
Generic Description: Primer
Product Use: Aircraft Coating

For information, contact:
Advanced Chemistry & Technology
7341 Anaconda Avenue
Garden Grove, CA 92841-2921
714 - 373 - 2837

ChemTrec Emergency
1 - 800 - 424 - 9300

HAZARD RATINGS		
	HMIS	NFPA
Health	3*	3
Fire	2	2
Reactivity	0	0
	* = Chronic	

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMMON NAME	CAS #	Approximate % (w/w)
Barium chromate	10294-40-3	20 – 25
Butyl Cellosolve	111-76-2	10 – 15
Solvent naphtha (petroleum), Light aromatic	64742-95-6	10 – 15
Non-hazardous and other ingredients below reportable levels	Proprietary	Balance

3.HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: COMBUSTIBLE LIQUID AND VAPOR. MAY CAUSE ALLERGIC SKIN REACTION. CAUSES SEVERE EYE IRRITATION. CAUSES SEVERE SKIN IRRITATION. CAUSES SEVERE DIGESTIVE TRACT IRRITATION. INHALATION MAY CAUSE DIZZINESS, HEADACHE AND LOSS OF COORDINATION. INGESTION CAN CAUSE DIZZINESS, FAINTNESS, HEADACHE AND INCOORDINATION. MAY CAUSE RESPIRATORY TRACT IRRITATION. INGESTION MAY CAUSE NAUSEA, VOMITING, PAIN, UPSET STOMACH, DIARRHEA. INHALATION MAY CAUSE NAUSEA, VOMITING, UPSET STOMACH. See sections 3, 5, & 6.

PRIMARY ROUTES OF EXPOSURE: Eye. Skin. Inhalation (breathing).

EYE CONTACT: Causes severe irritation. Can cause burning sensation, tearing, and redness.

SKIN CONTACT: Causes severe irritation. May be absorbed through the skin. May cause allergic skin reactions and sensitization.

INHALATION (Breathing): Irritating to the eyes, nose, and respiratory tract. Can cause dizziness, headaches, and loss of coordination. Nausea, vomiting, and stomach upset can occur.

INGESTION (Swallowing): Severely irritating to the mouth, throat, and stomach. May cause nausea, vomiting, pain, and stomach upset (e.g., diarrhea). Can cause dizziness, faintness, headache, and loss of coordination.

TARGET ORGANS/CHRONIC EFFECTS: Liver. Kidneys. Nervous system. Eyes. Skin. Reproductive system

CONDITIONS AGGRAVATED BY EXPOSURE: Liver. Kidneys., Nervous system. Blood and/or blood-forming organs. Lungs and respiratory system. Skin. Immune systems and/or specific chemical allergies..

CARCINOGENICITY:

	ACGIH	IARC	NTP	OSHA
Barium chromate	A4	1	Yes	No
Butyl Cellosolve	No	No	No	No
Solvent naphtha (petroleum), Light aromatic	No	No	No	No

4. FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Get immediate medical attention.

SKIN CONTACT: Immediately flush with plenty of water for at least 15 minutes. For large exposures use an emergency shower. Remove contaminated clothing and shoes. Get immediate medical attention. Professionally wash clothing and shoes before re-use.

INHALATION (Breathing): Remove to fresh air. If symptoms develop, seek immediate medical attention. If not breathing, give artificial respiration.

INGESTION (swallowing): Seek medical attention. **Do Not** induce vomiting unless directed by medical personnel. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIANS: Treatment should be directed at preventing absorption, administering to symptoms (if they occur), and providing supportive therapy.

5. FIRE FIGHTING METHODS

Flash Point:	116°F 46.7°C	Method:	Setaflash Closed Cup
Explosive Limits:	LEL (%) 1	UEL(%)	10
Autoignition:	Not Determined		

HAZARDOUS COMBUSTION AND DECOMPOSITION PRODUCTS: Smoke, soot, and toxic/irritating fumes (i.e., carbon dioxide, carbon monoxide, etc.). Low molecular weight hydrocarbons.

FIRE AND EXPLOSION HAZARDS: Combustible. High temperatures can cause sealed containers to rupture due to a build up of internal pressure. Cool with water. Vapors can travel to a source of ignition (flame, electric motor, hot surface, cigarette, etc. (and flash back. During a fire irritating and highly toxic gases may be generated during combustion or decomposition.

EXTINGUISHING MEDIA: SMALL FIRES: Dry chemical or carbon dioxide. LARGE FIRES: Water spray, fog, or foam.

FIRE FIGHTING PROCEDURES/EQUIPMENT: Fire fighters and others who may be exposed to the products of combustion should be equipped with NIOSH-approved positive pressure self-contained breathing apparatus (SCBA) and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

EVACUATION: Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Eliminate all sources of ignition.

CONTAINMENT: Safely stop discharge. Contain material, as necessary, with a dike or barrier. Stop material from contaminating soil, or from entering sewers or bodies of water.

CLEAN-UP/PERSONAL PROTECTION EQUIPMENT: Appropriate safety measures and protective equipment should be used. Use supplied air respirator or self-contained breathing apparatus in enclosed spaces or if airborne exposure limits can be exceeded. See Section 8.

COLLECTION AND DISPOSAL: Stop discharge, if safe to do so. Use proper protective equipment. Use non-sparking tools and/or explosion-proof equipment. Stop ignition sources. Cover spills with absorbent clay or sawdust and place in closed chemical waste containers. Dispose of according to applicable local, state and federal regulations.

REPORTING: Spills of this material in excess of a component's RQ must be reported to the National Response Center (1-800-424-8802) and to the appropriate state and local emergency response organizations.

7. HANDLING AND STORAGE

STORAGE CONDITIONS: Store in cool, dry, well ventilated area away from heat, ignition sources, and direct sunlight. Keep containers tightly closed. **WARNING:** Hot organic chemical vapors or mists can suddenly and without warning combust when mixed with air. Ignition can occur at typical elevated temperature process conditions. Any use in such processes should be evaluated thoroughly to assure safe operating conditions.

TRANSFER: Containers should be supported and grounded before opening, dispensing, mixing, pouring, and emptying. Open with non-sparking tools. If container is warm, open bung slowly to release internal pressure.

PERSONAL HYGIENE: Wash thoroughly after handling, especially before eating, drinking, smoking, and using restroom facilities. Wash contaminated goggles face-shield, and gloves. Professionally launder contaminated clothing before re-use .

EMPTY CONTAINER PRECAUTIONS: **Attention!** This container hazardous when empty. Follow label warnings even after container is emptied since empty containers may retain product residues. Do not use heat, sparks, open flames, torches, cigarettes on or near empty container. Do not reuse empty container without professional cleaning for food, clothing, or products for human or animal consumption or where skin contact can occur.

8. EXPOSURE: CONTROL/PERSONAL PROTECTION

EXPOSURE GUIDELINES:

ACGIH - TLV		
Barium chromate	0.5	mg/M^3
Butyl Cellosolve	25	ppm
Solvent naphtha (petroleum), Light aromatic	Not	Available
OSHA - PEL		
Barium chromate	0.1	mg/M^3 Ceiling
Butyl Cellosolve	25	ppm
Solvent naphtha (petroleum), Light aromatic	Not	Available

ENGINEERING CONTROLS/VENTILATION: Local exhaust ventilation is recommended when vapors, mists, or dusts can be released in excess of established airborne exposure limits (TLVs or PELs).

EYE PROTECTION: An eye wash facility should be readily available. Wear chemical splash goggles.

SKIN PROTECTION: Wear protective clothing, and appropriate impervious gloves. Because a variety of protective gloves exist, consult glove manufacturer to determine the proper type for a specific operation. An emergency shower should be readily available.

RESPIRATORY PROTECTION: Avoid breathing vapor and/or mists. Wear NIOSH/MSHA-approved equipment. Determine the appropriate type by consulting the respirator manufacturer. High airborne concentrations may necessitate the use of self-contained breathing apparatus (SCBA) or a supplied air respirator. Respiratory protection programs must be in compliance with 29 CFR 1910.134.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Yellow	Odor:	Glycol ether
Physical State:	Liquid	Solubility:	Insoluble
pH:	Not Applicable	VOC:	389 g/L (3.28 lbs./gal.)
VOC Material:	389 g/L (3.28 lbs./gal.)	Vapor density:	Heavier than air
Specific Gravity:	1.52	%Non-Vol.(w/w):	73.9

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under normal conditions of use.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: High temperatures.

INCOMPATIBILITY WITH OTHER MATERIALS: Oxidizers. Reducers. Strong bases. Acids.

11. TOXICITY INFORMATION

COMPONENTS:

Butyl cellosolve:

Oral LD50	Rat	470	mg/kg
Oral LD50	Mouse	1230	mg/kg
Oral LD50	Rabbit	300	mg/kg
Dermal LD50	Rabbit	220	mg/kg
Dermal LD50	Guinea pig	230	mg/kg

Solvent naphtha (petroleum), light aromatic

LD50 None Available

Barium chromate:
Can cause liver, kidney, and reproductive injury. Possible skin and respiratory sensitizer. Chromate dusts have been shown to cause lung and other cancers in humans and laboratory animals. The product has the barium chromate fully encapsulated, so dusts are not anticipated.

LD50 None Available

12. ECOLOGICAL INFORMATION

No data are available on this product.

13. DISPOSAL CONSIDERATIONS

DISPOSAL: When a decision is made to discard this material as supplied, it meets RCRA's characteristic definition of ignitability.

GENERAL STATEMENTS: Federal regulations may apply to empty container. State and/or local regulations may be different.

GENERAL RECOMMENDATIONS: Of the methods of disposal currently available, it is recommended that an alternative be selected according to the following order of preference, based upon environmental acceptability: (l) recycle or rework, if feasible; (2) incinerate at an authorized facility; or (3) treat at an acceptable waste treatment facility.

SPECIAL INSTRUCTIONS: Be sure to contact the appropriate government environmental agencies if further guidance is required.

14. TRANSPORT INFORMATION

Weight (lb.)	Shipping Name	49 CFR	IATA	IMO
	Paint	Y	Y	Y

DOT Label.....: Flammable Liquid
Hazard Class.....: 3 (IATA/49CFR) 3.3 (IMO)
Packing Group.....: III

UN/NA Id Num...: UN 1263
USPS Mailability: No

All the information in this section is for non-bulk packaging (119 gallons or less; 882 lbs. or less for solids).

15. REGULATORY INFOR5IATION

FEDERAL:

This product is considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

SARA Title III - Section 311/312 - Hazard Categories:

Y - Fire Hazard
N - Sudden Release of Pressure Hazard
N - Reactivity Hazard
Y - Immediate (acute) Health Hazard
Y - Delayed (chronic) Health Hazard

Ozone-Depleting Chemicals - No regulated ingredients.

SARA Section 302 Extremely Hazardous Mat - none

SARA Section 313 Toxic Chemicals
Barium chromate
Chromium compounds

TSCA Section 8(d) Data Reporting Rule – None

STATE RIGHT-TO-KNOW:

Pennsylvania - New Jersey R - T - K

Barium chromate Environmental Hazard.	10294-40-3	20 – 25
Butyl Cellosolve	111-76-2	10 – 15
Solvent naphtha (petroleum), Light aromatic	64742-95-6	10 – 15
Non-hazardous trade secret ingredient(s)	Proprietary	Balance

California - California Proposition 65
WARNING: This product contains a chemical(s) known to the State of California to cause cancer and birth defects or other reproductive harm.

Barium chromate Cancer Hazard and Reproductive Hazard	10294-40-3	20 – 25

* Trace = present at less than 0.01 percent.

CONEG - No data available.

CANADA:
This is a "controlled product" under the Canadian Workplace Hazardous Materials Information System (WHMIS).
Class B Division 2
Class D Division 2 Sub-division A
Class D Division 2 Sub-division B

CEPA - NPRI
Barium chromate
Chromium compounds

16. 0THER INFORMATION

USER RESPONSIBILITY: A bulletin such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions - in addition to those described herein - are required. Any health hazard and safety information herein should be passed on to your customers or employees, as the case may be.

DISCCAIMER OF LIABILITY: The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of suitability of the chemical is the sole responsibility of the user. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or any other nature are made hereunder with respect to the information contained herein or the chemical to which the information refers. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.

END OF MATERIAL SAFETY DATA SHEET

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☐ REVISED 1 Page ____ of ____ 2

FACILITY ID# 3 0 0 3 5 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: Raw Material Storage 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # J5 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: P-CHLOROBENZOTRIFLUORIDE | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☒ No 11 * If EPCRA see instructions

COMMON NAME: OXSOL 9 | An EHS Chemical ☐ Yes ☐ No 12 *If EHS is "Yes", all amounts must be LBS

CAS # 98-56-6 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☒ a. PURE ☐ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☐ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE 18 ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT 500 19 | MAXIMUM DAILY AMOUNT 1000 20 | ANNUAL WASTE AMOUNT NONE 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET 23 ☐ c. POUNDS ☐ d. TONS *If EHS, amount must be in pounds. | DAYS ON SITE 365 DAYS 24 | LARGEST CONTAINER 50 Gal DRUM 25

STORAGE CONTAINER (Check all that apply) 26
☐ a. ABOVEGROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BLDG ☐ d STEEL DRUM ☐ e. PLASTIC DRUM ☐ f. NONMETALLIC DRUM ☑ g. METAL CONTAINER ☐ h. CARBOY ☐ i. VAT ☐ l. FIBER DRUM ☐ l. BAG(S) ☐ l. BOX(S) ☐ m CYLINDER ☐ n. GLASS CONTAINER ☐ o PLASTIC CONTAINER ☐ p. IN MACH OR EQUIP ☐ q. TANK WAGON ☐ r. RAIL CAR ☐ s. TOTE BIN ☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	29	30	☐ Yes ☐ No 31	32
2	29	30	☐ Yes ☐ No 31	32
3	29	30	☐ Yes ☐ No 31	32
4	29	30	☐ Yes ☐ No 31	32
5	29	30	☐ Yes ☐ No 31	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

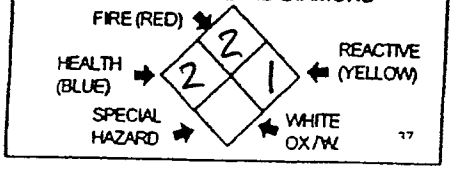
UNDOT # UN 2234 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS 3 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 37



MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Friday, June 01, 2007

660008
recd. 5-30-07

Monday, December 04, 2006

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDETIFICATION

Product Identity: P-Chlorobenzotrifluoride

Technical Information: 270-830-1200
Emergency Number: 800-424-9300 (CHEMTREC)

Company Identity: Distributed by a Brenntag Company
Company Address: Brenntag Great Lakes LLC.
4420 N. Harley Davidson Avenue
Wauwatosa, WI 53225

Brenntag Mid-South Inc.
1405 Hwy 136 W
Henderson, KY 42420

Brenntag Northeast, Inc.
81 West Huller Lane
Reading, PA 19605

Brenntag Southeast, Inc.
2000 East Pettigrew Street
Durham, NC 27703

Brenntag Southwest, Inc.
610 Fisher Road
Longview, TX 75604

Brenntag Pacific, Inc.
10747 Patterson Place
Santa Fe Springs, CA 90670

2. COMPOSITION, INFORMATION ON INGREDIENTS

Product Name: P-Chlorobenzotrifluoride
Content: 99.0 % min
Cas No: 98-56-6 P-Chloro-A,A,A-Trifluorotoluene 98 202-681-1
Appearance: Colorless Transparent liquid

3. HAZARDS IDENTIFICATION

The material may cause eye and skin irritation. May cause respiratory and digestive tract irritation.

Eye: May cause eye irritation.

Skin: May cause skin irritation.

Flash Point: 47 deg C. Warning! Flammable liquid and vapor.

4. FIRST AID MEASURES

Eyes contact:

Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

Skin: contact:

Get medical aid. Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

Ingestion: Never give anything by mouth to an unconscious person. Get medical aid. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.

Inhalation: Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid. Notes to Physician: Treat symptomatically and supportively.

5. FIRE FIGHTING MEASURES

Extinguishing Media:

For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. For large fires, use water spray, fog, or alcohol-resistant foam. Use water spray to cool fire-exposed containers. Water may be ineffective. Do NOT use straight streams of water.

Autoignition Temperature: > 650 ^{0}C (> 1,202.00 ^{0}F)

Flash Point: 47^{0} C (116.60 ^{0} F)

NFPA Rating: (estimated) Health: 2; Flammability: 2; Instability: 1

6. ACCIDENTAL RELEASE MEASURES

Spills/Leaks:

Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Remove all sources of ignition. Use a spark-proof tool. Provide ventilation. A vapor suppressing foam may be used to reduce vapors.

7. HANDLING AND STORAGE

Handling:

Wash thoroughly after handling. Use with adequate ventilation. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Avoid contact with heat, sparks and flame. Avoid ingestion and inhalation. Wash clothing before reuse. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.

Storage:

Keep away from heat, sparks, and flame. Keep away from sources of ignition. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Flammables-area.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

Engineering Controls:

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local explosion-proof ventilation to keep airborne levels to acceptable levels.

PERSONAL PROTECTIVE EQUIPMENT

Eyes:

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin:

Wear appropriate protective gloves to prevent skin exposure.

Clothing:

Wear appropriate protective clothing to prevent skin exposure.

Respirators:

A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant a respirator's use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid

Color: clear, colorless

Odor: fish-like

Boiling Point: 136-138°C @ 760.00mmHg

Freezing/Melting Point: -36°

Specific Gravity/Density: 1.348cm^3

Molecular Formula: C7H4ClF3

Molecular Weight: 180.58

10. TABILITY AND REACTIVITY

Chemical Stability:

Stable at room temperature in closed containers under normal storage and handling conditions.

Conditions to Avoid:

Incompatible materials, ignition sources, excess heat, strong oxidants.

Incompatibilities with Other Materials: Oxidizing agents.

Hazardous Decomposition Products:

Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide, hydrogen fluoride.

11. TOXICOLOGICAL INFORMATION

RTECS#:

CAS# 98-56-6: XS9145000

LD50/LC50:

CAS# 98-56-6: Inhalation, mouse: LC50 = 20 gm/m3; Inhalation, rat: LC50 = 22 gm/m3; Oral, mouse: LD50 = 11500 mg/kg; Oral, rat: LD50 = 13 gm/kg.

Carcinogenicity:
P-Chloro-A,A,A-Trifluorotoluene -
ACGIH: A4 - Not Classifiable as a Human Carcinogen (as F) (listed
12. DISPOSAL CONSIDERATIONS
Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification. d.
14. TRANSPORT INFORMATION
US DOT
Shipping Name: CHLOROBENZOTRIFLUORIDES
Hazard Class: 3
UN Number: 2234
Packing Group: III
15. REGULATORY INFORMATION
US FEDERAL
TSCA
CAS# 98-56-6 is listed on the TSCA inventory.
Health & Safety Reporting List
CAS# 98-56-6: Effective Date: 4/29/83; Sunset Date: 4/29/93
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
P-Chloro-A,A,A-Trifluorotoluen can be found on the following state right to know lists: California, (listed as ** no name **), Pennsylvania, (listed as ** no name **), Minnesota, (listed as ** no name **).
California No Significant Risk Level: None of the chemicals in this product are listed.
European/International Regulations
European Labeling in Accordance with EC Directives
Hazard Symbols: XI
Risk Phrases:
R 10 Flammable.

R 36/37/38 Irritating to eyes, respiratory system and skin.

Safety Phrases:

S 9 Keep container in a well-ventilated place.

S 16 Keep away from sources of ignition - No smoking.

S 24/25 Avoid contact with skin and eyes.

S 28A After contact with skin, wash immediately with plenty of water.

S 33 Take precautionary measures against static discharges.

S 37 Wear suitable gloves.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

WGK (Water Danger/Protection)

CAS# 98-56-6: 2

United Kingdom Occupational Exposure Limits

CAS# 98-56-6: OES-United Kingdom, TWA (listed as ** undefined **): 2.5 mg/m3 TWA (inorganic, as F)

This product has a WHMIS classification of B3, D2B.

CAS# 98-56-6 is not listed on Canada's Ingredient Disclosure List.

Exposure Limits

CAS# 98-56-6: OEL-RUSSIA:STEL 20 mg/m3;Skin

16. ADDITIONAL INFORMATION

MSDS Creation Date: 9/02/1997, Revision #4 Date: 3/18/2003

MSDS Distributed by a Brenntag Company

Brenntag Great Lakes LLC.
4420 N. Harley Davidson Avenue
Wauwatosa, WI 53225

Brenntag Mid-South Inc.
1405 Hwy 136 W
Henderson, KY 42420

Brenntag Northeast, Inc.
81 West Huller Lane
Reading, PA 19605

Brenntag Southeast, Inc.
2000 East Pettigrew Street
Durham, NC 27703

Brenntag Southwest, Inc.
610 Fish... Road
Longview, TX 75604

Brenntag Pacific, Inc.
10747 Patterson Place
Santa Fe Springs, CA 90670

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☐ REVISED 1 Page ____ of ____ 2

FACILITY ID# 3 0 0 3 5 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: Raw Material Storage 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # J5 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: BENZOYL CHLORIDE | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☒ No 11 (* If EPCRA see instructions)

COMMON NAME: SAME 9 | An EHS Chemical ☐ Yes ☐ No 12 (*If EHS is "Yes", all amounts must be LBS)

CAS # 98-88-4 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☒ a. PURE ☐ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☐ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE 18 ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT: 2 19 | MAXIMUM DAILY AMOUNT: 4 20 | ANNUAL WASTE AMOUNT: NONE 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET 23 ☒ c. POUNDS ☐ d. TONS (*If EHS, amount must be in pounds.) | DAYS ON SITE: 365 DAYS 24 | LARGEST CONTAINER: 1 Gal Can 25

STORAGE CONTAINER (Check all that apply) 26
☐ a. ABOVEGROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BLDG ☐ d STEEL DRUM ☐ e. PLASTIC DRUM ☐ f. NONMETALLIC DRUM ☒ g. METAL CONTAINER ☐ h. CARBOY ☐ i. VAT ☐ l. FIBER DRUM ☐ l. BAG(S) ☐ l. BOX(S) ☐ m CYLINDER ☒ n. GLASS CONTAINER ☐ o PLASTIC CONTAINER ☐ p. IN MACH OR EQUIP ☐ q. TANK WAGON ☐ r. RAIL CAR ☐ s. TOTE BIN ☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	29	30	☐ Yes ☐ No 31	32
2	29	30	☐ Yes ☐ No 31	32
3	29	30	☐ Yes ☐ No 31	32
4	29	30	☐ Yes ☐ No 31	32
5	29	30	☐ Yes ☐ No 31	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

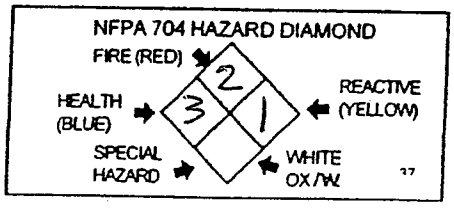
UNDOT # 1736 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS 8 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 37



MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Material Safety Data Sheet

Version 3.3
Revision Date 01/11/2008
Print Date 02/12/2008

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Benzoyl chloride

Product Number : 259950
Brand : Sigma-Aldrich

Company : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA
Telephone : +1 800-325-5832
Fax : +1 800-325-5052
Emergency Phone # : (314) 776-6555

2. COMPOSITION/INFORMATION ON INGREDIENTS

Formula : C7H5ClO
Molecular Weight : 140.57 g/mol

CAS-No.	EC-No.	Index-No.	Concentration
Benzoyl chloride			
98-88-4	202-710-8	607-012-00-0	-

3. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards

Combustible Liquid
Toxic by inhalation.
Harmful by ingestion.
Toxic by skin absorption
Corrosive
Carcinogen

HMIS Classification

Health Hazard: 3
Chronic Health Hazard: *
Flammability: 2
Physical hazards: 1

NFPA Rating

Health Hazard: 3
Fire 2
Reactivity Hazard: 1

Potential Health Effects

Inhalation	Toxic if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract. May cause respiratory tract irritation.
Skin	Toxic if absorbed through skin. Causes skin burns.
Eyes	May cause eye irritation. Causes eye burns.
Ingestion	Harmful if swallowed. Causes burns.

4. FIRST AID MEASURES

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing give artificial respiration Consult a physician.

In case of skin contact
Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Continue rinsing eyes during transport to hospital.Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIRE-FIGHTING MEASURES

Flammable properties

Flash point	72 °C (162 °F) - closed cup
Ignition temperature	569 °C (1,056 °F)

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Specific hazards
Container explosion may occur under fire conditions.

Special protective equipment for fire-fighters
Wear self contained breathing apparatus for fire fighting if necessary.

Further information
Water hydrolyzes material liberating acidic gas which in contact with metal surfaces can generate flammable and/or explosive hydrogen gas.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

Environmental precautions
Do not let product enter drains.

Methods for cleaning up
Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Handling
Avoid inhalation of vapour or mist.
Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

Storage
Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Store under inert gas. Moisture sensitive.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value	Control parameters	Update	Basis
Benzoyl chloride	98-88-4	CEIL	0.5 ppm 2.8 mg/m3	1995-05-23	US. American Conference of Governmental and Industrial Hygienists Threshold Limit Values for Chemical Substances in the Work Environment; Annual Reports for the Year 2004:Committees on Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs)
Remarks	1995-1996 Adoption. Refers to Appendix A -- Carcinogens.				

Personal protective equipment

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection
Handle with gloves.

Eye protection
Safety glasses

Skin and body protection
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	liquid
Colour	colourless

Safety data

pH	2 at 1 g/l
Melting point	-1 °C (30 °F)
Boiling point	73 - 74 °C (163 - 165 °F) at 15 hPa (11 mmHg) 198 °C (388 °F) at 1,013 hPa (760 mmHg)
Flash point	72 °C (162 °F) - closed cup

Ignition temperature	569 °C (1,056 °F)
Lower explosion limit	1.2 %(V)
Upper explosion limit	4.9 %(V)
Vapour pressure	1 hPa (1 mmHg) at 32 °C (90 °F)
Density	1.212 g/cm3
Water solubility	2 g/l
Relative vapour density	4.85 - (Air = 1.0)

10. STABILITY AND REACTIVITY

Storage stability
Stable under recommended storage conditions.

Conditions to avoid
Exposure to moisture.

Materials to avoid
Strong oxidizing agents, Strong bases, Alcohols

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides, Hydrogen chloride gas

11. TOXICOLOGICAL INFORMATION

Acute toxicity

LD50 Oral - rat - 1,900 mg/kg

LC50 Inhalation - rat - 2 h - 1,870 mg/m3

LD50 Dermal - rabbit - 790 mg/kg

Irritation and corrosion

Skin - rabbit - Severe skin irritation - 24 h

Eyes - rabbit - Severe eye irritation

Sensitisation

no data available

Chronic exposure

This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

IARC:	Group 2A - The agent (mixture) is probably carcinogenic to humans. (Benzoyl chloride)
ACGIH:	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP:	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA:	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Signs and Symptoms of Exposure

spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, burning sensation, Cough, wheezing, laryngitis, Shortness of breath, Headache, Nausea, Vomiting, Lachrymation, Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Potential Health Effects

Inhalation	Toxic if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract. May cause respiratory tract irritation.
Skin	Toxic if absorbed through skin. Causes skin burns.
Eyes	May cause eye irritation. Causes eye burns.
Ingestion	Harmful if swallowed. Causes burns.

12. ECOLOGICAL INFORMATION

Elimination information (persistence and degradability)

Biodegradability

Ecotoxicity effects

Toxicity to fish — LC50 - Pimephales promelas (fathead minnow) - 34.1 mg/l - 96 h

LC0 - Brachydanio rerio (zebra fish) - 7.5 mg/l - 96 h

Further information on ecology

no data available

13. DISPOSAL CONSIDERATIONS

Product
This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
UN-Number: 1736 Class: 8 Packing group: II
Proper shipping name: Benzoyl chloride

IMDG
UN-Number: 1736 Class: 8 Packing group: II EMS-No: F-A, S-B
Proper shipping name: BENZOYL CHLORIDE
Marine pollutant: No

IATA
UN-Number: 1736 Class: 8 Packing group: II
Proper shipping name: Benzoyl chloride

15. REGULATORY INFORMATION

OSHA Hazards
Combustible Liquid, Toxic by inhalation., Harmful by ingestion., Toxic by skin absorption, Corrosive, Carcinogen

TSCA Status
On TSCA Inventory

DSL Status
All components of this product are on the Canadian DSL list.

SARA 302 Components
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components

	CAS-No.	Revision Date
Benzoyl chloride	98-88-4	1987-01-01

SARA 311/312 Hazards
Fire Hazard, Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

	CAS-No.	Revision Date
Benzoyl chloride	98-88-4	1987-01-01

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
Benzoyl chloride	98-88-4	1987-01-01

New Jersey Right To Know Components

	CAS-No.	Revision Date
Benzoyl chloride	98-88-4	1987-01-01

California Prop. 65 Components
This product does not contain any chemicals known to State of California to cause cancer, birth, or any other reproductive defects.

16. OTHER INFORMATION

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Co., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☒ REVISED 1 Page ____ of ____ 2

FACILITY ID# 3 0 0 3 5 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: Class A Room 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # I 2 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: 1,1,3,3-TETRAMETHYLGUANIDINE | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☒ No 11 (* If EPCRA see instructions)

COMMON NAME: TMG 9 | An EHS Chemical ☐ Yes ☐ No 12 (*If EHS is "Yes", all amounts must be LBS)

CAS # 80-70-6 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☒ a. PURE ☐ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☑ a. FIRE ☑ b. REACTIVE ☐ c. PRESSURE RELEASE 18 ☑ d. ACUTE HEALTH ☑ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT 20 19 | MAXIMUM DAILY AMOUNT 80 20 | ANNUAL WASTE AMOUNT NONE 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET 23 ☒ c. POUNDS ☐ d. TONS (*If EHS, amount must be in pounds.) | DAYS ON SITE 365 DAYS 24 | LARGEST CONTAINER 5 Gal Pail 25

STORAGE CONTAINER (Check all that apply) 26

☐ a. ABOVEGROUND TANK	☐ e. PLASTIC DRUM	☐ i. VAT	☐ m CYLINDER	☐ q. TANK WAGON
☐ b. UNDERGROUND TANK	☐ f. NONMETALLIC DRUM	☐ l. FIBER DRUM	☑ n. GLASS CONTAINER	☐ r. RAIL CAR
☐ c. TANK INSIDE BLDG	☑ g. METAL CONTAINER	☐ l. BAG(S)	☐ o PLASTIC CONTAINER	☐ s. TOTE BIN
☐ d STEEL DRUM	☐ h. CARBOY	☐ l. BOX(S)	☐ p. IN MACH OR EQUIP	☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	29	30	☐ Yes ☐ No 31	32
2	29	30	☐ Yes ☐ No 31	32
3	29	30	☐ Yes ☐ No 31	32
4	29	30	☐ Yes ☐ No 31	32
5	29	30	☐ Yes ☐ No 31	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

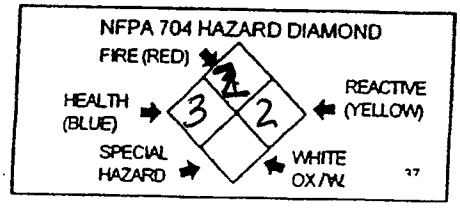
UNDOT # UN 2920 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS 8 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 37



MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Lonza

SAFETY DATA SHEET

1,1,3,3-Tetramethylguanidine

Version: 12.11.2008 / EN

1. Identification of the substance/preparation and of the company/undertaking

Trade name	:	1,1,3,3-Tetramethylguanidine
Molecular formula	:	C5H13N3
Use	:	Foaming agent, Intermediate
Company	:	Lonza Ltd Muenchensteinerstrasse 38 CH-4002 Basel, Switzerland Telephone: +41 61 316 81 11
Emergency telephone	:	Lonza Ltd, CH-4002 Basel, Switzerland Telephone: +41 61 313 94 94 (24h)
Contact person	:	prodinfo@lonza.com

2. Hazards identification

Classification

Flammable.
Harmful if swallowed.
Causes burns.

3. Composition/information on ingredients

Components / EC Label	Concentration
1,1,3,3-Tetramethylguanidine (CAS-No.: 80-70-6) (EEC-No.: 201-302-7) C; R10, R22, R34	>= 99 %

R-phrase(s) See chapter 16

4. First aid measures

Inhalation	:	Move to fresh air. Call a physician immediately. If breathing is irregular or stopped, administer artificial respiration.
Skin contact	:	Take off all contaminated clothing immediately. After contact with skin, wash immediately with plenty of soap and water. Call a physician immediately.

Eye contact	:	Immediately flush eye(s) with plenty of water. Call a physician immediately.
Ingestion	:	Call a physician immediately. Clean mouth with water and drink afterwards plenty of water. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person.

5. Fire-fighting measures

Suitable extinguishing media	:	Water spray, Dry powder, Foam
Specific hazards during fire fighting	:	Heating or fire can release toxic gas.
Special protective equipment for fire-fighters	:	In the event of fire, wear self-contained breathing apparatus.
Additional advice	:	Use water spray to cool unopened containers.

6. Accidental release measures

Personal precautions	:	Use respirator when performing operations involving potential exposure to vapour of the product.
Environmental precautions	:	Do not flush into surface water or sanitary sewer system.
Methods for cleaning up	:	Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

7. Handling and storage

Handling

Safe handling advice	:	Avoid contact with skin and eyes. Provide sufficient air exchange and/or exhaust in work rooms.
Advice on protection against fire and explosion	:	Highly flammable. Keep away from sources of ignition - No smoking. Take precautionary measures against static discharges.

Storage

Requirements for storage areas and containers	:	To maintain product quality, do not store in heat or direct sunlight. Keep container tightly closed. Keep in a dry, cool and well-ventilated place.
Storage stability	:	Keep under nitrogen.

8. Exposure controls/personal protection

Personal protective equipment

Hygiene measures	:	Wash hands before breaks and immediately after handling the product. Avoid contact with skin, eyes and clothing.
Respiratory protection	:	In the case of vapour formation use a respirator with an approved filter. Respirator with a vapour filter (EN 141) Respirator with ABEK filter.
Hand protection	:	Suitable material : Nitrile rubber Break through time : > 480 min Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact).
Eye protection	:	Tightly fitting safety goggles Face-shield
Skin and body protection	:	Choose body protection according to the amount and concentration of the dangerous substance at the work place., Rubber or plastic apron, Rubber or plastic boots

9. Physical and chemical properties

Appearance

Physical state	:	liquid
Colour	:	colorless to yellowish
Odour	:	amine-like

Safety data

pH	:	12,7 (10 g/l ; 25 °C)
Melting point/range	:	< -30 °C
Boiling point/boiling range	:	162 °C
Flash point	:	50 °C Method: Abel-Pensky c.c. DIN 51755
Ignition temperature	:	350 °C
Upper explosion limit	:	7,5 %(V)
Lower explosion limit	:	1,0 %(V)
Vapour pressure	:	2,2 hPa (20 °C)
Density	:	0,912 g/cm3 (20 °C) Method: DIN 51757
		0.9160 g/cm3 (20 °C)
		0,8984 g/cm3 (40 °C)
		0,8805 g/cm3 (60 °C)
Water solubility	:	completely miscible
Solubility	:	Organic solvents: completely miscible
Viscosity, dynamic	:	1,4 mPa.s (20 °C)
Relative vapour density	:	4,04

Other data

Hygroscopy	:	hygroscopic

10. Stability and reactivity

Conditions to avoid	:	no data available
Materials to avoid	:	Strong acids
Hazardous reactions	:	Stable under normal conditions.

11. Toxicological information

Acute oral toxicity (LD50)	:	835 mg/kg Species: rat Method: OECD Test Guideline 401
Acute inhalation toxicity (LC50)	:	> 9 g/m3 Species: rat Exposure time: 4 h Method: OECD Test Guideline 403
Skin irritation	:	Corrosive Species: rabbit Exposure time: 1 h Method: DOT
Genotoxicity in vitro	:	negative Ames test, Salmonella typhimurium

12. Ecological information

Further information

Additional advice	:	There is no data available for this product.

13. Disposal considerations

Waste from residues	:	Dispose of in accordance with local regulations. Contact waste disposal services.
Contaminated packaging	:	Do not re-use empty containers. Uncontrolled disposal or recycling of this packaging is not permitted and can be dangerous.

14. Transport information

ADR : Class: 8
Packaging group: II
Classification Code: CF1
Labels: Corrosive substance No. 8
Flammable liquid No. 3
Hazard identification No : 83
UN/ID No. : UN 2920
Proper shipping name : CORROSIVE LIQUID, FLAMMABLE, N.O.S.
(1,1,3,3-Tetramethylguanidine)

RID : Class: 8
Packaging group: II
Classification Code: CF1
Labels: Corrosive substance No. 8
Flammable liquid No. 3
Hazard identification No : 83
UN/ID No. : UN 2920
Proper shipping name : CORROSIVE LIQUID, FLAMMABLE, N.O.S.
(1,1,3,3-Tetramethylguanidine)

IATA Cargo : Class: 8
Packaging group: II
Labels: Corrosive substance No. 8
Flammable liquid No. 3
Packing instruction (cargo aircraft): 812
UN/ID No. : UN 2920
Proper shipping name : Corrosive liquid, flammable, n.o.s.
(1,1,3,3-Tetramethylguanidine)

IATA Passenger : Class: 8
Packaging group: II
Labels: Corrosive substance No. 8
Flammable liquid No. 3
Packing instruction (passenger aircraft): 808
UN/ID No. : UN 2920
Proper shipping name : Corrosive liquid, flammable, n.o.s.
(1,1,3,3-Tetramethylguanidine)

SAFETY DATA SHEET

1,1,3,3-Tetramethylguanidine

Version: 12.11.2008 / EN

IMDG-Code	:	Class: 8 Packaging group: II Labels: Corrosive substance No. 8 Flammable liquid No. 3 EmS: F-E , S-C
UN/ID No.	:	UN 2920
Proper shipping name	:	CORROSIVE LIQUID, FLAMMABLE, N.O.S. (1,1,3,3-Tetramethylguanidine)

49 CFR	:	Class: 8 Packaging group: II Labels: Corrosive substance No. 8 Flammable liquid No. 3
UN/ID No.	:	UN 2920
Proper shipping name	:	Corrosive liquids, flammable, n.o.s. (1,1,3,3-Tetramethylguanidine)

TDG	:	Class: 8 Packaging group: II Labels: Corrosive substance No. 8 Flammable liquid No. 3
UN/ID No.	:	UN 2920
Proper shipping name	:	CORROSIVE LIQUID, FLAMMABLE, N.O.S. (1,1,3,3-Tetramethylguanidine)

15. Regulatory information

Additional advice : Classification and labelling according to Directive 67/548/EEC.

Symbol(s) :

:

Corrosive

R-phrase(s)

R10: Flammable.
R22: Harmful if swallowed.
R34: Causes burns.

S-phrase(s)

S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S28: After contact with skin, wash immediately with plenty of soap and water.
S36/37/39: Wear suitable protective clothing, gloves and eye/face protection.

National legislation

Water contaminating class (Germany) : WGK 1: slightly water endangering

16. Other information

R-phrase(s)

R10 : Flammable.
R22 : Harmful if swallowed.
R34 : Causes burns.

Changes since the last version are highlighted in the margin. This version replaces all previous versions.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☐ REVISED 1 Page ____ of ____ 2

FACILITY ID# 30035 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: MATERIAL STORAGE AREA 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # G2 → G7 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: Polysulfide Sealant | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☒ No 11 (* If EPCRA see instructions)

COMMON NAME: AC-236 Class C Base 9 | An EHS Chemical ☐ Yes ☒ No 12 (*If EHS is "Yes", all amounts must be LBS)

CAS # 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☐ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE 18 ☒ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT: 45 19 | MAXIMUM DAILY AMOUNT: 7,500 20 | ANNUAL WASTE AMOUNT: 500 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET 23 ☒ c. POUNDS ☐ d. TONS (*If EHS, amount must be in pounds.) | DAYS ON SITE: 365 DAYS 24 | LARGEST CONTAINER: 50 Gallon Drum 25

STORAGE CONTAINER (Check all that apply) 26
☐ a. ABOVEGROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BLDG ☐ d STEEL DRUM ☐ e. PLASTIC DRUM ☐ f. NONMETALLIC DRUM ☒ g. METAL CONTAINER ☐ h. CARBOY ☐ i. VAT ☐ j. FIBER DRUM ☐ k. BAG(S) ☐ l. BOX(S) ☐ m CYLINDER ☐ n. GLASS CONTAINER ☐ o PLASTIC CONTAINER ☐ p. IN MACH OR EQUIP ☐ q. TANK WAGON ☐ r. RAIL CAR ☐ s. TOTE BIN ☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)		EHS		CAS #	
1	5-10 29	Toluene	30	☐ Yes	☐ No 31	108-88-3	32
2	10-25 29	Calcium Carbonate	30	☐ Yes	☐ No 31	471-34-1	32
3	10-25 29	Limestone	30	☐ Yes	☐ No 31	1317-65-3	32
4	1-5 29	Titanium Dioxide	30	☐ Yes	☐ No 31	13463-67-7	32
5	29		30	☐ Yes	☐ No 31		32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

UNDOT # Not Regulated 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS — 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 37
FIRE (RED) 2 | HEALTH (BLUE) 1 | REACTIVE (YELLOW) 0 | SPECIAL HAZARD WHITE OX/W

MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Material Safety Data Sheet
AC-®236 Class C Base

MSDS No: 32363-05
Effective: 01/26/09
Supercedes: 12/13/04

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

SIN #834-100

Product ID: AC-236 Class C Base
Generic Description: Polysulfide sealant
Product Use: Faying grade aircraft sealant

For information, contact:
Advanced Chemistry & Technology
7341 Anaconda Avenue
Garden Grove, CA 92841-2921
714 - 373 - 2837

ChemTrec Emergency
1 - 800 - 424 - 9300

HAZARD RATINGS		
	HMIS	NFPA
Health	1	1
Fire	2	2
Reactivity	0	0
	* = Chronic	

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMMON NAME	CAS #	Approximate % (w/w)
Toluene	108 – 88 – 3	5 – 10
Calcium carbonate	471 – 34 – 1	10 – 25
Limestone	1317 – 65 – 3	10 – 25
Titanium Dioxide	13463 – 67 – 7	1 – 5
Non - hazardous and other ingredients below reportable levels	Proprietary	Balance

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: CAUSES SEVERE EYE IRRITATION. INHALATION MAY CAUSE DIZZINESS, HEADACHE AND LOSS OF COORDINATION. INGESTION CAN CAUSE DIZZINESS, FAINTNESS, HEADACHE AND LOSS OF COORDINATION. COMBUSTIBLE LIQUID AND VAPOR MAY CAUSE RESPIRATORY TRACT IRRITATION. MAY CAUSE DIGESTIVE TRACT IRRITATION. INGESTION MAY CAUSE NAUSEA, VOMITING, PAIN, UPSET STOMACH, DIARRHEA. INHALATION MAY CAUSE NAUSEA, VOMITING, UPSET STOMACH. MAY CAUSE SKIN IRRITATION. PROLONGED OR REPEATED CONTACT MAY DRY SKIN AND CAUSE IRRITATION. See sections 3, 5, & 6.

PRIMARY ROUTES OF EXPOSURE: Eye. Skin.

EYE CONTACT: May cause slight to mild irritation.

SKIN CONTACT: Prolonged or repeated contact may cause irritation.

INHALATION (Breathing): Can be irritation to eyes, nose, and respiratory tract following prolonged exposure.

INGESTION (Swallowing): Not hazardous in normal industrial use. May cause nausea, vomiting, pain, and stomach upset (e.g., diarrhea).

TARGET ORGANS/CHRONIC EFFECTS: Lungs and respiratory system.

CONDITIONS AGGRAVATED BY EXPOSURE: Lungs and respiratory system.

CARCINOGENICITY:

	ACGIH	IARC	NTP	OSHA
Calcium Carbonate	No	No	No	No
Toluene	No	No	No	No
Limestone	No	No	No	No
Titanium Dioxide	No	No	No	No

4. FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation persists.

SKIN CONTACT: Immediately flush with water. Remove contaminated clothing and shoes. Get medical attention if irritation persists. Professionally wash clothing and shoes before re-use.

INHALATION (Breathing): Remove to fresh air. If symptoms develop, seek immediate medical attention. If not breathing, give artificial respiration.

INGESTION (Swallowing): Seek medical attention. Immediately induce vomiting, as directed by medical personnel. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIANS: Treatment should be directed at preventing absorption, administering to symptoms (if they occur), and providing supportive therapy.

5. FIRE FIGHTING METHODS

Flash Point.....:	157F (69.4C)	Method:.....:	Setaflash Closed Cup
Explosive Lmts.....:	LEL (%) Not Determined UEL (%) Not Determined		
Autoignition.....:	Not Determined		

HAZARDOUS COMBUSTION AND DECOMPOSITION PRODUCTS: Smoke, soot, and toxic/irritating fumes (i.e., carbon dioxide, carbon monoxide, etc.). Formaldehyde and/or other aldehydes. Oxides of sulfur. Hydrogen sulfide.

FIRE AND EXPLOSION HAZARDS: During a fire, irritating and highly toxic gases may be generated during combustion or decomposition.

EXTINGUISHING MEDIA: SMALL FIRES: Dry chemical, carbon dioxide, halon, water spray, or foam. LARGE FIRES: Water spray, fog, or alcohol foam.

FIRE FIGHTING PROCEDURES/EQUIPMENT: Fire fighters and others who may be exposed to the products of combustion should be equipped with NIOSH-approved positive pressure self-contained breathing apparatus (SCBA) and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

EVACUATION: Isolate hazard area. Keep unnecessary and unprotected personnel from entering.

CONTAINMENT: Safely stop discharge. Contain material, as necessary, with a dike or barrier. Stop material from contaminating soil, or from entering sewers or bodies of water.

CLEAN-UP/PERSONAL PROTECTION EQUIPMENT: Appropriate safety measures and protective equipment should be used. Use supplied air respirator or self-contained breathing apparatus in enclosed spaces or if airborne exposure limits can be exceeded. See Section 8.

COLLECTION AND DISPOSAL: Stop discharge, if safe to do so. Use proper protective equipment. Cover spills with absorbent clay or sawdust and place in closed chemical waste containers. Dispose of according to applicable local, state and federal regulations.

REPORTING: Spills of this material in excess of a component's RQ must be reported to the National Response Center (1-800-424-8802) and to the appropriate state and local emergency response organizations.

Toluene	RQ = 1000 LB

7. HANDLING AND STORAGE

STORAGE CONDITIONS: Store in cool, dry, well ventilated area.

TRANSFER: No special precautions are needed. Follow good manufacturing and handling practices.

PERSONAL HYGIENE: Wash thoroughly after handling, especially before eating, drinking, smoking, and using restroom facilities. Wash contaminated goggles, face-shield, and gloves. Professionally launder contaminated clothing before re-use.

EMPTY CONTAINER PRECAUTIONS: **Attention!** This container can be hazardous when empty. Follow label warnings even after container is emptied since empty containers may retain product residues. Do not reuse empty container without professional cleaning for food, clothing, or products for human or animal consumption or where skin contact can occur.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE GUIDELINES:

ACGIH - TLV			
	Calcium carbonate	10	mg/M^3 Total dust
	Toluene	50	ppm - Skin
	Limestone	10	mg/M^3 Total dust
	Titanium Dioxide	10	mg/M^3
OSHA - PEL			
	Calcium carbonate	5	mg/M^3 Resp. dust
	Toluene	100	ppm
	Limestone	5	mg/M^3 Resp. dust
	Titanium Dioxide	10	mg/M^3
OSHA - STEL			
	Toluene	150	ppm

ENGINEERING CONTROLS/VENTILATION: Local exhaust ventilation is recommended when vapors, mists, or dusts can be released in excess of established airborne exposure limits (TLV's or PEL's).

EYE PROTECTION: Wear chemical splash goggles or safety glasses with side shields. An eye wash facility should be readily available.

SKIN PROTECTION: Wear protective clothing and appropriate impervious gloves. Because a variety of protective gloves exist, consult glove manufacturer to determine the proper type for a specific operation.

RESPIRATORY PROTECTION: Wear NIOSH/MSHA-approved equipment. Determine the appropriate type by consulting the respirator manufacturer. High airborne concentrations may necessitate the use of self-contained breathing apparatus (SCBA) or a supplied air respirator. Respiratory protection programs must be in compliance with 29 CFR 1910.134.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance.....:	Off-white	Odor.....:	Sulfide
Physical State....:	Paste	Solubility.....:	Insoluble
pH.....:	Not Applicable	VOC Material.....:	120 g/l (1.0 lbs/gal)
Specific Gravity...:	1.61	% Non – Vol. (w/w):	92 – 95

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under normal conditions of use.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Not Applicable.

INCOMPATIBILITY WITH OTHER MATERIALS: Oxidizers. Reducers. Acids.

11. TOXICITY INFORMATION

COMPONENTS:

Toluene:

Oral LD50	Rat	5,000	mg/kg
Dermal LD50	Rabbit	12,124	mg/kg
Inhalation LC50	Mouse	5,320	ppm/8-Hours

Calcium carbonate:
Repeated exposure to dusts can lead to particulate deposition in the lungs (i.e., pneumoconiosis).

Limestone:
Repeated exposure to dusts can lead to particulate deposition in the lungs (i.e., pneumoconiosis). Can contain trace amounts of crystalline silica as an impurity.

Titanium Dioxide:
In a 2-year study in rats, an increase in benign and malignant lung tumors were observed at 250-mg/M^3 respirable dust level. This level is 50 times the current occupational exposure level and is not expected to correlate to human exposures.

12. ECOLOGICAL INFORMATION

No data are available on this product.

13. DISPOSAL CONSIDERATIONS

DISPOSAL: Dispose in accordance with all local, state, and federal regulations.

GENERAL STATEMENTS: Federal regulations may apply to empty container. State and/or local regulations may be different.

GENERAL RECOMMENDATIONS: Of the methods of disposal currently available, it is recommended that an alternative be selected according to the following order of preference, based upon environmental acceptability: (1) recycle or rework, if feasible; (2) incinerate at an authorized facility; or (3) treat at an acceptable waste treatment facility.

SPECIAL INSTRUCTIONS: Be sure to contact the appropriate government environmental agencies if further guidance is required.

14. TRANSPORT INFORMATION

Weight (lb.)	Shipping Name	49 CFR	IATA	IMO
	Resin solution	Y	Y	Y

DOT Label.....: Non regulated
Hazard Class.....: Not Applicable

UN/NA Id Num..: Not Applicable
USPS Mailability: No

For a two-compartment container that contains parts A and B. See above information.

15. REGULATORY INFORMATION

FEDERAL:
This product is considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

SARA Title III - Section 311/312 - Hazard Categories:
Y - Fire Hazard
N - Sudden Release of Pressure Hazard
N - Reactivity Hazard
Y - Immediate (acute) Health Hazard
Y - Delayed (chronic) Health Hazard

Ozone - Depleting Chemicals - No regulated ingredients.

SARA Section 302 Extremely Hazardous Mat

SARA Section 313 Toxic Chemicals
Toluene

TSCA Section 8(d) Data Reporting Rule
Toluene

CHEMICAL LISTING - Listed on the following Country's Chemical Inventories:

United States Toxic Substance Control Act
Chemical component(s) in this product are on the section 8(b) Chemical Substance Inventory List (40 CFR 710).

STATE RIGHT - TO - KNOW:

Pennsylvania - New Jersey R - T - K

Toluene	108 – 88 – 3	5 – 10
Calcium carbonate	471 – 34 – 1	10 – 25
Limestone	1317 – 65 – 3	10 – 25
Titanium Dioxide	13463 – 67 – 7	1 – 5
Environmental and Special Hazard.		
Non - hazardous trade secret ingredient(s)	Proprietary	Balance

California - California Proposition 65
WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

Quartz (crystalline silica)	14808 – 60 – 7	< 0.01
Cancer Hazard.		
Toluene	108 – 88 – 3	5 – 10
Reproductive Hazard.		
Formaldehyde	50 – 00 – 0	Trace *
Cancer Hazard.		

* Trace = Present at less than 0.01 percent.

CONEG - No data available.
CANADA:
This is a "controlled product" under the Canadian Workplace Hazardous Materials Information System (WHMIS).
Class B Division 3 Class D Division 2 Sub-division A
Class D Division 2 Sub-division B

CEPA - NPRI
Toluene

16. OTHER INFORMATION

USER RESPONSIBILITY: A bulletin such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions - in addition to those described herein - are required. Any health hazard and safety information herein should be passed on to your customers or employees, as the case may be.

DISCLAIMER OF LIABILITY: The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of suitability of the chemical is the sole responsibility of the user. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or any other nature are made hereunder with respect to the information contained herein or the chemical to which the information refers. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.

End of Material Safety Data Sheet

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☐ REVISED 1 Page ____ of ____ 2

FACILITY ID# 30035 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: MATERIAL STORAGE AREA 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # G2 → G7 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: Polysulfide Sealant | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☒ No 11 (* If EPCRA see instructions)

COMMON NAME: AC-632 B Class B Base 9 | An EHS Chemical ☐ Yes ☒ No 12 (*If EHS is "Yes", all amounts must be LBS)

CAS # 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☑ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE 18 ☒ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT: 3 19 | MAXIMUM DAILY AMOUNT: 250 20 | ANNUAL WASTE AMOUNT: 10 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET 23 ☒ c. POUNDS ☐ d. TONS (*If EHS, amount must be in pounds.) | DAYS ON SITE: 365 DAYS 24 | LARGEST CONTAINER: 50 Gallon Drum 25

STORAGE CONTAINER (Check all that apply) 26

☐ a. ABOVEGROUND TANK	☐ e. PLASTIC DRUM	☐ i. VAT	☐ m CYLINDER	☐ q. TANK WAGON
☐ b. UNDERGROUND TANK	☐ f. NONMETALLIC DRUM	☐ j. FIBER DRUM	☐ n. GLASS CONTAINER	☐ r. RAIL CAR
☐ c. TANK INSIDE BLDG	☒ g. METAL CONTAINER	☐ k. BAG(S)	☐ o PLASTIC CONTAINER	☐ s. TOTE BIN
☐ d STEEL DRUM	☐ h. CARBOY	☐ l. BOX(S)	☐ p. IN MACH OR EQUIP	☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)		EHS		CAS #	
1	10-20 29	Limestone	30	☐ Yes	☐ No 31	1317-65-3	32
2	5-10 29	Aluminum	30	☐ Yes	☐ No 31	7429-90-5	32
3	1-5 29	Toluene	30	☐ Yes	☐ No 31	108-88-3	32
4	1-5 29	Titanium Dioxide	30	☐ Yes	☐ No 31	13463-67-7	32
5	29		30	☐ Yes	☐ No 31		32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

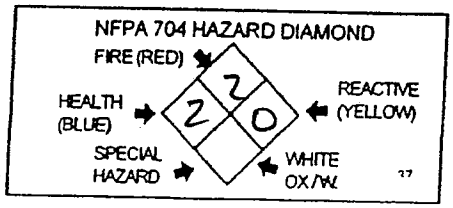
UNDOT # UN1866 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS 3 (IATA/CFR49) 3.3 (IMO) 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 37



MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Material Safety Data Sheet
AC-® 632 Class B Base

MSDS No: 36322-09
Effective: 01/27/09
Supercedes: 02/11/08

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

SIN #834-100

Product ID: AC-632 Class B Base
Generic Description: Polysulfide sealant compound
Product Use: Aerodynamic smoothing compound

For information, contact:
Advanced Chemistry & Technology
7341 Anaconda Avenue
Garden Grove, CA 92841-2921
714 - 373 - 2837

ChemTrec Emergency
1 - 800 - 424 - 9300

HAZARD RATINGS		
	HMIS	NFPA
Health	2*	2
Fire	3	2
Reactivity	0	0
	* = Chronic	

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMMON NAME	CAS #	Approximate % (w/w)
Limestone	1317 - 65 - 3	10 – 20
Aluminum	7429 - 90 - 5	5 – 10
Toluene	108 - 88 - 3	1 – 5
Titanium Dioxide	13463 - 67 - 7	1 – 5
Non-hazardous and other ingredients below reportable levels	Proprietary	Balance

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: CAUSES SEVERE EYE IRRITATION. INHALATION MAY CAUSE DIZZINESS, HEADACHE AND LOSS OF COORDINATION. INGESTION CAN CAUSE DIZZINESS, FAINTNESS, HEADACHE AND LOSS OF COORDINATION. MAY CAUSE RESPIRATORY TRACT IRRITATION. MAY CAUSE DIGESTIVE TRACT IRRITATION. INGESTION MAY CAUSE NAUSEA, VOMITING, PAIN, UPSET STOMACH, DIARRHEA. INHALATION MAY CAUSE NAUSEA, VOMITING, UPSET STOMACH. MAY CAUSE SKIN IRRITATION. PROLONGED OR REPEATED CONTACT MAY DRY SKIN AND CAUSE IRRITATION. See sections 3, 5, & 6.

PRIMARY ROUTES OF EXPOSURE: Eye. Skin. Inhalation (breathing).

EYE CONTACT: Causes severe irritation. Can cause burning sensation, tearing, and redness.

SKIN CONTACT: May cause slight to mild irritation. Prolonged or repeated contact may dry the skin and lead to irritation (i.e. dermatitis).

INHALATION (Breathing): Irritating to the eyes, nose, and respiratory tract. Can cause dizziness, headaches, and loss of coordination. Nausea, vomiting, and stomach upset can occur.

INGESTION (Swallowing): Irritating to the mouth, throat, and stomach. May cause nausea, vomiting, pain, and stomach upset (e.g., diarrhea). Can cause dizziness, faintness, headache, and loss of coordination.

TARGET ORGANS/CHRONIC EFFECTS: Liver. Kidneys. Nervous system. Lungs and respiratory system. Eyes. Skin.

CONDITIONS AGGRAVATED BY EXPOSURE: Nervous system. Lungs and respiratory system. Skin.

CARCINOGENICITY:

	ACGIH	IARC	NTP	OSHA
Limestone	No	No	No	No
Aluminum	No	No	No	No
Toluene	No	No	No	No
Titanium Dioxide	No	No	No	No

4. FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Get immediate medical attention.

SKIN CONTACT: Immediately flush with water. Remove contaminated clothing and shoes. Get medical attention if irritation persists. Professionally wash clothing and shoes before re-use.

INHALATION (Breathing): Remove to fresh air. If symptoms develop, seek immediate medical attention. If not breathing, give artificial respiration.

INGESTION (Swallowing): Seek medical attention. Immediately induce vomiting, as directed by medical personnel. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIANS: Treatment should be directed at preventing absorption, administering to symptoms (if they occur), and providing supportive therapy.

5. FIRE FIGHTING METHODS

Flash Point:	45°F (7°C)		Method:	Seta
Explosive Limit:		LEL(%) Not Established	UEL(%) Not Established	
Autoignition:	Not Available			

HAZARDOUS COMBUSTION AND DECOMPOSITION PRODUCTS: Smoke, soot, and toxic/irritating fumes (i.e., carbon dioxide, carbon monoxide, etc.). Formaldehyde and/or other aldehydes. Oxides of sulfur. Hydrogen sulfide.

FIRE AND EXPLOSION HAZARDS: High temperatures can cause sealed containers to rupture due to a build up of internal pressure. Cool with water. During a fire, irritating and highly toxic gases may be generated during combustion or decomposition.

EXTINGUISHING MEDIASMALL FIRES: Dry chemical, carbon dioxide, halon, water spray, or foam. LARGE FIRES: Water spray, fog, or alcohol foam.

FIRE FIGHTING PROCEDURES/EQUIPMENT: Fire fighters and others who may be exposed to the products of combustion should be equipped with NIOSH-approved positive pressure self-contained breathing apparatus (SCBA) and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

EVACUATION: Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Eliminate all sources of ignition.

CONTAINMENT: Safely stop discharge. Contain material, as necessary, with a dike or barrier. Stop material from contaminating soil, or from entering sewers or bodies of water.

CLEAN-UP/PERSONAL PROTECTION EQUIPMENT: Appropriate safety measures and protective equipment should be used. Use supplied air respirator or self-contained breathing apparatus in enclosed spaces or if airborne exposure limits can be exceeded. See Section 8.

COLLECTION AND DISPOSAL: Stop discharge, if safe to do so. Use proper protective equipment. Cover spills with absorbent clay or sawdust and place in closed chemical waste containers. Dispose of according to applicable local, state and federal regulations.

REPORTING: Spills of this material in excess of a component's RQ must be reported to the National Response Center (1-800-424-8802) and to the appropriate state and local emergency response organizations.

Toluene RQ = 1000 LB

7. HANDLING AND STORAGE

Storage Temperature < 120F 48.8C

STORAGE CONDITIONS: Store in cool, dry, well ventilated area away from heat, ignition sources, and direct sunlight. Keep containers tightly closed.

TRANSFER: No special precautions are needed. Follow good manufacturing and handling practices.

PERSONAL HYGIENE: Wash thoroughly after handling, especially before eating, drinking, smoking, and using restroom facilities. Wash contaminated goggles, face-shield, and gloves. Professionally launder contaminated clothing before re-use.

EMPTY CONTAINER PRECAUTIONS: Attention! This container can be hazardous when empty. Follow label warnings even after container is emptied since empty containers may retain product residues. Do not reuse empty container without professional cleaning for food, clothing, or products for human or animal consumption or where skin contact can occur.

SPECIAL INSTRUCTIONS: See container and/or technical data sheet for instructions on use. See container and/or technical data sheet for instructions on use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE GUIDELINES:

ACGIH - TLV		
Limestone	10	mg/M^3 Total dust
Aluminum (Metal dust, as Al)	10	mg/M^3
Toluene	50	ppm
Titanium Dioxide	10	mg/M^3
OSHA - PEL		
Limestone	5	mg/M^3 Resp. dust
Aluminum (Metal dust, as Al)	10	mg/M^3
Toluene	100 ppm	
Titanium Dioxide	10	mg/M^3
OSHA - STEL		
Toluene	150	ppm

ENGINEERING CONTROLS/VENTILATION: Local exhaust ventilation is recommended when vapors, mists, or dusts can be released in excess of established airborne exposure limits (TLVs or PELs).

EYE PROTECTION: Wear chemical splash goggles. An eye wash facility should be readily available.

SKIN PROTECTION: Wear protective clothing and appropriate impervious gloves. Because a variety of protective gloves exist, consult glove manufacturer to determine the proper type for a specific operation. Neoprene gloves. Butyl rubber gloves. An emergency shower should be readily available.

RESPIRATORY PROTECTION: Avoid breathing vapor and/or mists. Wear NIOSH/MSHA-approved equipment. Determine the appropriate type by consulting the respirator manufacturer. High airborne concentrations may necessitate the use of self-contained breathing apparatus (SCBA) or a supplied air respirator. Respiratory protection programs must be in compliance with 29 CFR 1910.134.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Aluminum	Odor:	Mercaptan
Physical State:	Paste	Solubility:	Insoluble
pH:	Not Applicable	Vapor Pressure:	Not Established
Vapor Density:	Heavier than air	Evaporation Rate:	Not Applicable
VOC Material.....:	70 g/l (0.6 lbs/gal)	Specific Gravity:	1.57
%Non-Vol(w/w)..:	95		

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under normal conditions of use.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: High temperatures.

INCOMPATIBILITY WITH OTHER MATERIALS: Oxidizers. Reducers. Acids. Strong bases.

11. TOXICITY INFORMATION

COMPONENTS:

Limestone:
Repeated exposure to dusts can lead to particulate deposition in the lungs (i.e., pneumoconiosis). Can contain trace amounts of crystalline silica as an impurity.

Aluminum:
Prolonged breathing of dust can lead to particulate deposition within the lungs. May cause transient irritation to eyes and/or skin.

Toluene:

Oral LD50	Rat	5,000	mg/kg
Dermal LD50	Rabbit	12,124	mg/kg
Inhalation LC50	Mouse	5,320	ppm/8-Hours

Titanium Dioxide:
In a 2-year study in rats, an increase in benign and malignant lung tumors was observed at 250 mg/M^3 respirable dust level. This level is 50 times the current occupational exposure level and is not expected to correlate to human exposures.

12. ECOLOGICAL INFORMATION

No ecological data on the product itself is available.

The product must not be allowed to run into drains or waterways.

Ecotoxicity:

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

13. DISPOSAL CONSIDERATIONS

DISPOSAL: Dispose in accordance with all local, state, and federal regulations.

GENERAL STATEMENTS: Federal regulations may apply to empty container. State and/or local regulations may be different.

GENERAL RECOMMENDATIONS: Of the methods of disposal currently available, it is recommended that an alternative be selected according to the following order of preference, based upon environmental acceptability: (1) recycle or rework, if feasible; (2) incinerate at an authorized facility; or (3) treat at an acceptable waste treatment facility.

SPECIAL INSTRUCTIONS: Be sure to contact the appropriate government environmental agencies if further guidance is required.

14. TRANSPORT INFORMATION

Weight (lb)	Shipping Name	49 CFR	IATA	IMO
	Resin Solution, Flammable	Y	Y	Y

DOT Label:	Flammable Liquid	UN/NA Id:	UN 1866
DOT Packaging Group:	II	Hazard Class:	3(IATA/49CFR) 3.3 (IMO)

For a two-compartment container that contains Parts A and B. See the above information.

15. REGULATORY INFORMATION

FEDERAL:
This product is considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

SARA Title III - Section 311/312 - Hazard Categories:
Y - Fire Hazard
N - Sudden Release of Pressure Hazard
N - Reactivity Hazard
Y - Immediate (acute) Health Hazard
Y - Delayed (chronic) Health Hazard

Ozone-Depleting Chemicals - No regulated ingredients.

SARA Section 302 Extremely Hazardous Mat
Formaldehyde

SARA Section 313 Toxic Chemicals
Aluminum, Toluene, Formaldehyde

TSCA Section 8(d) Data Reporting Rule
Toluene

STATE RIGHT-TO-KNOW:
Pennsylvania - New Jersey R-T-K

Limestone	1317 - 65 - 3	10 - 20
Aluminum	7429 - 90 - 5	5 - 10
Environmental Hazard.		
Toluene	108 - 88 - 3	1 - 5
Environmental Hazard.		
Titanium Dioxide	13463 - 67 - 7	1 - 5
Formaldehyde	50 - 00 - 0	*
Environmental and Special Hazard.		
Non-hazardous trade secret ingredient(s)	Proprietary	Balance

California - California Proposition 65
WARNING: This product contains a chemical(s) known to the State of California to cause cancer and birth defects or other reproductive harm.

Toluene	108 - 88 - 3	1 - 5
Formaldehyde	50 - 00 - 0	*

* Trace = present at less than 0.01 percent.

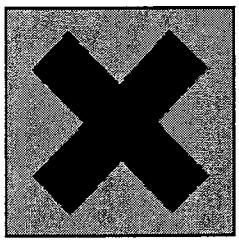
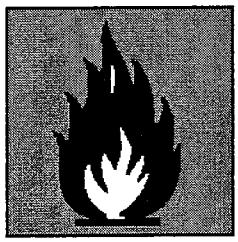
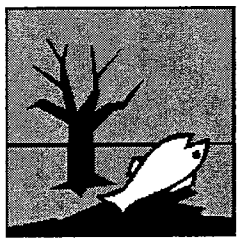
CONEG - No data available.

CANADA:
This is a "controlled product" under the Canadian Workplace Hazardous Materials Information System (WHMIS).
Class D Division 2 Sub-division A Class D Division 2 Sub-division B

CEPA - NPRI
Aluminum, Toluene

European Union:
Preparation classification:

Harmful **Highly Flammable** **Dangerous for Environment**

Contains:
601-021-00-3 TOLUENE
Particular hazards associated with the preparation and safety recommendations:

R 11	Highly flammable.
R20/22	Harmful by inhalation and if swallowed.
R 52/53	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R 63	Possible risk of harm to the unborn child.
S 9	Keep container in a well-ventilated place.
S 16	Keep away from sources of ignition - no smoking.
S25	Avoid contact with eyes.
S 36/37	Wear suitable protective clothing and gloves.
S 60	This material and its container must be disposed of as hazardous waste.
S 61	Avoid release to the environment. Refer to special instructions/Safety data sheets.

16. OTHER INFORMATION

USER RESPONSIBILITY: A bulletin such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions - in addition to those described herein - are required. Any health hazard and safety information herein should be passed on to your customers or employees, as the case may be.

DISCLAIMER OF LIABILITY: The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of suitability of the chemical is the sole responsibility of the user. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or any other nature are made hereunder with respect to the information contained herein or the chemical to which the information refers. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.

End of Material Safety Data Sheet

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☐ REVISED 1 Page ____ of ____ 2

FACILITY ID# 3 0 0 3 5 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: MATERIAL STORAGE AREA 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # G2 → G7 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: Polysulfide Sealant | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☒ No 11 (* If EPCRA see instructions)

COMMON NAME: AC-645 Accelerator 9 | An EHS Chemical ☐ Yes ☒ No 12 (*If EHS is "Yes", all amounts must be LBS)

CAS # 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☐ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE 18 ☑ d. ACUTE HEALTH ☑ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT: 0.2 19 | MAXIMUM DAILY AMOUNT: 50 20 | ANNUAL WASTE AMOUNT: 1 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET 23 ☒ c. POUNDS ☐ d. TONS (*If EHS, amount must be in pounds.) | DAYS ON SITE: 365 DAYS 24 | LARGEST CONTAINER: 50 Gallon Drum 25

STORAGE CONTAINER (Check all that apply) 26
☐ a. ABOVEGROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BLDG ☐ d STEEL DRUM ☐ e. PLASTIC DRUM ☐ f. NONMETALLIC DRUM ☒ g. METAL CONTAINER ☐ h. CARBOY ☐ i. VAT ☐ j. FIBER DRUM ☐ k. BAG(S) ☐ l. BOX(S) ☐ m CYLINDER ☐ n. GLASS CONTAINER ☐ o PLASTIC CONTAINER ☐ p. IN MACH OR EQUIP ☐ q. TANK WAGON ☐ r. RAIL CAR ☐ s. TOTE BIN ☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)		EHS		CAS #	
1	50-60 29	Manganese Oxide	30	☐ Yes	☐ No 31	1313-13-9	32
2	30-40 29	Terphenyl hydrogenated	30	☐ Yes	☐ No 31	61788-32-7	32
3	1-5 29	Terphenyl	30	☐ Yes	☐ No 31	26140-60-3	32
4	1-5 29	Sodium hydroxide	30	☐ Yes	☐ No 31	1310-73-2	32
5	29		30	☐ Yes	☐ No 31		32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

UNDOT # _____ 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS _____ 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____
If EPCRA, Please Sign Here 36

NFPA 704 HAZARD DIAMOND 37
FIRE (RED) 2 | HEALTH (BLUE) 2 | REACTIVE (YELLOW) 0 | SPECIAL HAZARD WHITE OX/W

MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Material Safety Data Sheet
AC–645 Accelerator

MSDS No: 26452-04
Effective: 01/27/09
Supercedes: 11/18/05

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

SIN# 834-100

Product ID: AC-645 Accelerator
Generic Description: Blend of metallic oxides
Product Use: Accelerator

For information, contact:
Advanced Chemistry & Technology
7341 Anaconda Avenue
Garden Grove, CA 92841-2921
714 - 373 - 2837

ChemTrec Emergency
1 - 800 - 424 - 9300

HAZARD RATINGS		
	HMIS	NFPA
Health	2*	2
Fire	2	2
Reactivity	0	0
	* = Chronic	

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMMON NAME	CAS #	Approximate % (w/w)
Manganese oxide	1313-13-9	50 – 60
Terphenyl, hydrogenated	61788-32-7	30 – 40
Terphenyl	26140-60-3	1 – 5
Sodium hydroxide	1310-73-2	1 – 5
Non-hazardous and other ingredients below reportable levels	Proprietary	Balance

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: INHALATION MAY CAUSE DIZZINESS, HEADACHE AND INCOORDINATION. MAY CAUSE MODERATE EYE IRRITATION. MAY CAUSE RESPIRATORY TRACT IRRITATION. MAY CAUSE DIGESTIVE TRACT IRRITATION. INGESTION MAY CAUSE NAUSEA, VOMITING, PAIN, UPSET STOMACH, DIARRHEA. INHALATION MAY CAUSE NAUSEA, VOMITING, UPSET STOMACH. MAY CAUSE SKIN IRRITATION. See sections 3, 5, & 6.

PRIMARY ROUTES OF EXPOSURE: Eye. Skin. Inhalation (breathing).

EYE CONTACT: May cause moderate irritation.

SKIN CONTACT: May cause slight to mild irritation.

INHALATION (Breathing): Irritating to the eyes, nose, and respiratory tract. Can cause dizziness, headaches, and incoordination. Nausea, vomiting, and stomach upset can occur. Can cause wheezing, coughing, shortness of breath, and tightness in the chest.

INGESTION (Swallowing): Irritating to the mouth, throat, and stomach. May cause nausea, vomiting, pain, and stomach upset (e.g., diarrhea).

TARGET ORGANS/CHRONIC EFFECTS: Liver. Kidneys. Nervous system. Blood and/or blood-forming organs. Lungs and respiratory system. Eyes. Skin.

CONDITIONS AGGRAVATED BY EXPOSURE: Liver. Kidneys. Lungs and respiratory system. Skin.

CARCINOGENICITY:

	ACGIH	IARC	NTP	OSHA
Manganese oxide	No	No	No	No
Terphenyl, hydrogenated	No	No	No	No
Terphenyl	No	No	No	No
Sodium hydroxide	No	No	No	No

4. FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation persists.

SKIN CONTACT: Immediately flush with water. Remove contaminated clothing and shoes. Get medical attention if irritation persists. Professionally wash clothing and shoes before re-use.

INHALATION (Breathing): Remove to fresh air. If symptoms develop, seek immediate medical attention. If not breathing, give artificial respiration.

INGESTION (Swallowing): Seek medical attention. Immediately induce vomiting, as directed by medical personnel. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIANS: Treatment should be directed at preventing absorption, administering to symptoms (if they occur), and providing supportive therapy.

5. FIRE FIGHTING METHODS

Flash Point.....: > 200F 93.3C Method.....: Not Applicable
Explosive Lmts: LEL(%) Not Determined UEL(%) Not Determined
Autoignition....: Not Determined

HAZARDOUS COMBUSTION AND DECOMPOSITION PRODUCTS: Smoke, soot, and toxic/irritating fumes (i.e., carbon dioxide, carbon monoxide, etc.). Metallic oxides.

FIRE AND EXPLOSION HAZARDS: During a fire, irritating and highly toxic gases may be generated during combustion or decomposition.

EXTINGUISHING MEDIA: SMALL FIRES: Dry chemical, carbon dioxide, halon, water spray, or foam. LARGE FIRES: Water spray, fog, or alcohol foam.

FIRE FIGHTING PROCEDURES/EQUIPMENT: Fire fighters and others who may be exposed to the products of combustion should be equipped with NIOSH-approved positive pressure self-contained breathing apparatus (SCBA) and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

EVACUATION: Isolate hazard area. Keep unnecessary and unprotected personnel from entering.

CONTAINMENT: Safely stop discharge. Contain material, as necessary, with a dike or barrier. Stop material from contaminating soil, or from entering sewers or bodies of water.

CLEAN-UP/PERSONAL PROTECTION EQUIPMENT: Appropriate safety measures and protective equipment should be used. Use supplied air respirator or self-contained breathing apparatus in enclosed spaces or if airborne exposure limits can be exceeded. See Section 8.

COLLECTION AND DISPOSAL: Stop discharge, if safe to do so. Use proper protective equipment. Cover spills with absorbent clay or sawdust and place in closed chemical waste containers. Dispose of according to applicable local, state and federal regulations.

REPORTING: Spills of this material in excess of a component's RQ must be reported to the National Response Center (1-800-424-8802) and to the appropriate state and local emergency response organizations.

Sodium hydroxide RQ = 1000 LB

7. HANDLING AND STORAGE

STORAGE CONDITIONS: Store in cool, dry, well ventilated area away from heat, ignition sources, and direct sunlight. Keep containers tightly closed.

TRANSFER: No special precautions are needed. Follow good manufacturing and handling practices.

PERSONAL HYGIENE: Wash thoroughly after handling, especially before eating, drinking, smoking, and using restroom facilities. Wash contaminated goggles, face-shield, and gloves. Professionally launder contaminated clothing before re-use.

EMPTY CONTAINER PRECAUTIONS: Attention! This container can be hazardous when empty. Follow label warnings even after container is emptied since empty containers may retain product residues. Do not reuse empty container without professional cleaning for food, clothing, or products for human or animal consumption or where skin contact can occur.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE GUIDELINES:

ACGIH - TLV		
Manganese oxide, Dusts and compounds, as Mn	5	mg/M^3
Manganese oxide, Fume	1	mg/M^3
Terphenyl, hydrogenated	0.5	ppm - Ceiling
Terphenyl	0.53	ppm - Ceiling
Sodium hydroxide	2	mg/M^3
OSHA - PEL		
Manganese oxide, Fume	1	mg/M^3
Terphenyl, hydrogenated	0.5	ppm
Terphenyl	0.5	ppm - Ceiling
Sodium hydroxide	2	mg/M^3

ENGINEERING CONTROLS/VENTILATION: Local exhaust ventilation is recommended when vapors, mists, or dusts can be released in excess of established airborne exposure limits (TLVs or PELs).

EYE PROTECTION: Wear chemical splash goggles or safety glasses with side shields. An eye wash facility should be readily available.

SKIN PROTECTION: Wear protective clothing and appropriate impervious gloves. Because a variety of protective gloves exist, consult glove manufacturer to determine the proper type for a specific operation.

RESPIRATORY PROTECTION: Avoid breathing vapor and/or mists. Wear NIOSH/MSHA-approved equipment. Determine the appropriate type by consulting the respirator manufacturer. High airborne concentrations may necessitate the use of self-contained breathing apparatus (SCBA) or a supplied air respirator. Respiratory protection programs must be in compliance with 29 CFR 1910.134.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance.....:	Black	Odor.....:	Amine
Physical State....:	Paste	Solubility.....:	Insoluble
pH.....	Not Applicable	Evaporation Rate.:	< 1 (n-Butyl alcohol)
VOC Material.....:	Not Established	Specific Gravity..:	1.9
%Non-Vol. (w/w).:	100		

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under normal conditions of use.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: High temperatures.

INCOMPATIBILITY WITH OTHER MATERIALS: Oxidizers. Acids.

11. TOXICITY INFORMATION

COMPONENTS:

Manganese oxide:
Eye, skin, and respiratory tract irritant. Can cause liver and kidney injury.

Terphenyl, hydrogenated:			
Oral LD50	Rat	17,500	mg/kg
	Mouse	12,500	mg/kg
Dermal LD50	Rabbit	> 2,000	mg/kg
Terphenyl:			
Oral LD50	Rat	13,200	mg/kg
Sodium hydroxide:			
Corrosive! Causes eye and skin burns.			
Dermal LD50	Rabbit	1000	mg/kg

12. ECOLOGICAL INFORMATION

No data are available on this product.

13. DISPOSAL CONSIDERATIONS

DISPOSAL: Dispose in accordance with all local, state, and federal regulations.

GENERAL STATEMENTS: Federal regulations may apply to empty container. State and/or local regulations may be different.

GENERAL RECOMMENDATIONS: Of the methods of disposal currently available, it is recommended that an alternative be selected according to the following order of preference, based upon environmental acceptability: (1) recycle or rework, if feasible; (2) incinerate at an authorized facility; or (3) treat at an acceptable waste treatment facility.

SPECIAL INSTRUCTIONS: Be sure to contact the appropriate government environmental agencies if further guidance is required.

14. TRANSPORT INFORMATION

Weight (lb.)	Shipping Name	49 CFR	IATA	IMO
	Non-regulated	Y	Y	

DOT Label.....: Not applicable UN/NA Id Num..: Not Applicable

15. REGULATORY INFORMATION

FEDERAL:

This product is considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

SARA Title III - Section 311/312 - Hazard Categories:
N - Fire Hazard
N - Sudden Release of Pressure Hazard
N - Reactivity Hazard
Y - Immediate (acute) Health Hazard
Y - Delayed (chronic) Health Hazard

Ozone-Depleting Chemicals - No regulated ingredients.

SARA Section 302 Extremely Hazardous Mat - No regulated ingredients.

SARA Section 313 Toxic Chemicals
Manganese oxide

STATE RIGHT-TO-KNOW:

Pennsylvania - New Jersey R-T-K		
Manganese oxide	1313-13-9	50 – 60
Terphenyl, hydrogenated	61788-32-7	30 – 40
Terphenyl	26140-60-3	1 – 5
Sodium hydroxide	1310-73-2	1 – 5
Environmental Hazard.		
Non-hazardous trade secret ingredient(s)	Proprietary	Balance

California - California Proposition 65 - No regulated ingredients.

CONEG - No data available.

CANADA:
This is a "controlled product" under the Canadian Workplace Hazardous Materials Information System (WHMIS).
Class D Division 2 Sub-division B

CEPA - NPRI
Manganese oxide

16. OTHER INFORMATION

USER RESPONSIBILITY: A bulletin such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions - in addition to those described herein - are required. Any health hazard and safety information herein should be passed on to your customers or employees, as the case may be.

DISCLAIMER OF LIABILITY: The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of suitability of the chemical is the sole responsibility of the user. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or any other nature are made hereunder with respect to the information contained herein or the chemical to which the information refers. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.

End of Material Safety Data Sheet

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☐ REVISED 1 Page ____ of ____ 2

FACILITY ID# 30035 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: MATERIAL STORAGE AREA 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # G2 → G7 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: Polysulfide Sealant | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☒ No 11 (* If EPCRA see instructions)

COMMON NAME: AC-665 Class C Base 9 | An EHS Chemical ☐ Yes ☒ No 12 (*If EHS is "Yes", all amounts must be LBS)

CAS # 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☑ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE 18 ☑ d. ACUTE HEALTH ☑ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT: 15 19 | MAXIMUM DAILY AMOUNT: 3,000 20 | ANNUAL WASTE AMOUNT: 100 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET 23 ☒ c. POUNDS ☐ d. TONS (*If EHS, amount must be in pounds.) | DAYS ON SITE: 365 DAYS 24 | LARGEST CONTAINER: 50 Gallon Drum 25

STORAGE CONTAINER (Check all that apply) 26
☐ a. ABOVEGROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BLDG ☐ d STEEL DRUM ☐ e. PLASTIC DRUM ☐ f. NONMETALLIC DRUM ☒ g. METAL CONTAINER ☐ h. CARBOY ☐ i. VAT ☐ j. FIBER DRUM ☐ k. BAG(S) ☐ l. BOX(S) ☐ m CYLINDER ☐ n. GLASS CONTAINER ☐ o PLASTIC CONTAINER ☐ p. IN MACH OR EQUIP ☐ q. TANK WAGON ☐ r. RAIL CAR ☐ s. TOTE BIN ☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	10-20 29	Calcium carbonate 30	☐ Yes ☐ No 31	471-34-1 32
2	5-10 29	Calcium chromate 30	☐ Yes ☐ No 31	13765-19-0 32
3	1-5 29	Toluene 30	☐ Yes ☐ No 31	108-88-3 32
4	<1 29	Strontium chromate 30	☐ Yes ☐ No 31	7789-06-2 32
5	29	30	☐ Yes ☐ No 31	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

UNDOT # UN 1866 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS 3 (IATA/CFR49) 3.3 (IMO)
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 17
FIRE (RED) 2 | HEALTH (BLUE) 3 | REACTIVE (YELLOW) 0 | SPECIAL HAZARD WHITE OX/W

MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Material Safety Data Sheet
AC-® 665 Class C Base

MSDS No: 36653-15
Effective: 01/27/09
Supercedes: 09/07/07

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

SIN #834-100

Product ID: AC-665 Class C Base
Generic Description: Polysulfide sealant
Product Use: Aircraft sealant

HAZARD RATINGS		
	HMIS	NFPA
Health	3*	3
Fire	2	2
Reactivity	0	0
	* = Chronic	

For information, contact:
Advanced Chemistry & Technology
7341 Anaconda Avenue
Garden Grove, CA 92841-2921
714 - 373 - 2837

ChemTrec Emergency
1 - 800 - 424 - 9300

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMMON NAME	CAS #	Approximate % (w/w)
Calcium carbonate	471 - 34 - 1	10 – 20
Calcium chromate	13765 - 19 - 0	5 – 10
Toluene	108 - 88 - 3	1 – 5
Strontium chromate	7789 - 06 - 2	<1
Non-hazardous and other ingredients below reportable levels	Proprietary	Balance

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: CAUSES SEVERE DIGESTIVE TRACT BURNS. COMBUSTIBLE LIQUID AND VAPOR (FLAMMABLE IF SHIPPED BY AIR/VESSEL). MAY CAUSE ALLERGIC SKIN REACTION AND SENSITIZATION. CAUSES SEVERE EYE IRRITATION. INHALATION MAY CAUSE DIZZINESS, HEADACHE AND LOSS OF COORDINATION. INGESTION CAN CAUSE DIZZINESS, FAINTNESS, HEADACHE AND LOSS OF COORDINATION. MAY CAUSE MODERATE SKIN IRRITATION. MAY CAUSE RESPIRATORY TRACT IRRITATION. INGESTION MAY CAUSE NAUSEA, VOMITING, PAIN, UPSET STOMACH, DIARRHEA. INHALATION MAY CAUSE NAUSEA, VOMITING, UPSET STOMACH. PROLONGED OR REPEATED CONTACT MAY DRY SKIN AND CAUSE IRRITATION. See sections 3, 5, & 6.

PRIMARY ROUTES OF EXPOSURE: Eye. Skin. Inhalation (breathing).

EYE CONTACT: Causes severe irritation. Can cause burning sensation, tearing and redness.

SKIN CONTACT: Prolonged or repeated contact may dry the skin and lead to irritation (i.e. dermatitis). May cause moderate irritation. May be harmful if absorbed through the skin. May cause allergic skin reactions and sensitization. Can cause redness, itching, and burning sensation.

INHALATION (Breathing): Irritating to the eyes, nose, and respiratory tract. Can cause dizziness, headaches, and loss of coordination. Nausea, vomiting, and stomach upset can occur.

INGESTION (Swallowing): Causes severe burns to the mouth, throat, and stomach. May cause nausea, vomiting, pain, and stomach upset (e.g., diarrhea). Can cause dizziness, faintness, headache, and loss of coordination.

TARGET ORGANS/CHRONIC EFFECTS: Liver. Kidneys. Nervous system. Eyes. Skin.

CONDITIONS AGGRAVATED BY EXPOSURE: Liver. Kidneys. Skin. Immune systems and/or specific chemical allergies. Nervous system.

CARCINOGENICITY:

	ACGIH	IARC	NTP	OSHA
Calcium carbonate	No	No	No	No
Calcium chromate	A1	1	Yes	No
Toluene	No	No	No	No
Strontium chromate	A1	1	Yes	No

4. FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Get immediate medical attention.

SKIN CONTACT: Immediately flush with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get prompt medical attention. Professionally wash clothing before re-use.

INHALATION (Breathing): Remove to fresh air. If symptoms develop, seek immediate medical attention. If not breathing, give artificial respiration.

INGESTION (Swallowing): Seek medical attention. Immediately induce vomiting, as directed by medical personnel. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIANS: Treatment should be directed at preventing absorption, administering to symptoms (if they occur), and providing supportive therapy.

5. FIRE FIGHTING METHODS

Flash Point.....: 110F 43.3C Method.....: Setaflash Closed Cup
Explosive Lmts....: LEL(%) Not Established UEL(%) Not Established
Autoignition.....: Not Established

HAZARDOUS COMBUSTION AND DECOMPOSITION PRODUCTS: Smoke, soot, and toxic/irritating fumes (i.e., carbon dioxide, carbon monoxide, etc.). Formaldehyde and/or other aldehydes. Oxides of sulfur. Hydrogen sulfide. Chromium compounds. Low molecular weight hydrocarbons.

FIRE AND EXPLOSION HAZARDS: During a fire, irritating and highly toxic gases may be generated during combustion or decomposition. High temperatures can cause sealed containers to rupture due to a build up of internal pressure. Cool with water. Vapors can travel to a source of ignition (flame, electric motor, hot surface, cigarette, etc.) and flash back.

EXTINGUISHING MEDIA: SMALL FIRES: Dry chemical, carbon dioxide, halon, water spray, or foam. LARGE FIRES: Water spray, fog, or alcohol foam.

FIRE FIGHTING PROCEDURES/EQUIPMENT: Fire fighters and others who may be exposed to the products of combustion should be equipped with NIOSH-approved positive pressure self-contained breathing apparatus (SCBA) and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

EVACUATION: Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Eliminate all sources of ignition.

CONTAINMENT: Safely stop discharge. Contain material, as necessary, with a dike or barrier. Stop material from contaminating soil, or from entering sewers or bodies of water.

CLEAN-UP/PERSONAL PROTECTION EQUIPMENT: Appropriate safety measures and protective equipment should be used. Use supplied air respirator or self-contained breathing apparatus in enclosed spaces or if airborne exposure limits can be exceeded. See Section 8.

COLLECTION AND DISPOSAL: Stop discharge, if safe to do so. Use proper protective equipment. Use non-sparking tools and/or explosion-proof equipment. Stop ignition sources. Cover spills with absorbent clay or sawdust and place in closed chemical waste containers. Dispose of according to applicable local, state and federal regulations.

REPORTING: Spills of this material in excess of a component's RQ must be reported to the National Response Center (1-800-424-8802) and to the appropriate state and local emergency response organizations.

Calcium chromate	RQ = 10 LB
Toluene	RQ = 1000 LB

7. HANDLING AND STORAGE

Storage Temperature 75F 23.8C

STORAGE CONDITIONS: Store in cool, dry, well ventilated area away from heat, ignition sources, and direct sunlight. Keep containers tightly closed. **WARNING**: Hot organic chemical vapors or mists can suddenly and without warning combust when mixed with air. Ignition can occur at typical elevated temperature process conditions. Any use in such processes should be evaluated thoroughly to assure safe operating conditions.

TRANSFER: Containers should be supported and grounded before opening, dispensing, mixing, pouring, and emptying. Open with non-sparking tools. If container is warm, open bung slowly to release internal pressure.

PERSONAL HYGIENE: Wash thoroughly after handling, especially before eating, drinking, smoking, and using restroom facilities. Wash contaminated goggles, face-shield, and gloves. Professionally launder contaminated clothing before re-use.

EMPTY CONTAINER PRECAUTIONS: **Attention!** This container hazardous when empty. Follow label warnings even after container is emptied since empty containers may retain product residues. Do not use heat, sparks, open flames, torches, cigarettes on or near empty container. Do not reuse empty container without professional cleaning for food, clothing, or products for human or animal consumption or where skin contact can occur.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE GUIDELINES:

ACGIH - TLV		
Calcium carbonate	10	mg/M^3 Total dust
Calcium chromate Chromium (VI) insoluble cpds., as Cr	1.0	$\mu g/M^3$
Toluene	50	ppm
Strontium chromate	1.0	$\mu g/M^3$
OSHA - PEL		
Calcium carbonate	5	mg/M^3 Resp. dust
Calcium chromate Chromium (VI) insoluble cpds., as Cr	5.0	$\mu g/M^3$-Ceiling
Toluene	100	ppm
Strontium chromate Chromium (VI) insoluble cpds., as Cr	5.0	$\mu g/M^3$-Ceiling
OSHA - STEL		
Toluene	150	ppm

ENGINEERING CONTROLS/VENTILATION: Local exhaust ventilation is recommended when vapors, mists, or dusts can be released in excess of established airborne exposure limits (TLVs or PELs).

EYE PROTECTION: An eye wash facility should be readily available. Wear chemical splash goggles.

SKIN PROTECTION: Wear protective clothing and appropriate impervious gloves. Because a variety of protective gloves exist, consult glove manufacturer to determine the proper type for a specific operation. Neoprene gloves. Butyl rubber gloves. An emergency shower should be readily available.

RESPIRATORY PROTECTION: Avoid breathing vapor and/or mists. Industrial hygiene consultation is recommended because airborne exposure levels vary depending on the nature of the operation performed. Wear NIOSH/MSHA-approved equipment. Determine the appropriate type by consulting the respirator manufacturer. High airborne concentrations may necessitate the use of self-contained breathing apparatus (SCBA) or a supplied air respirator. Respiratory protection programs must be in compliance with 29 CFR 1910.134. Organic vapor respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Yellow, pale	Odor:	Mercaptan
Physical State:	Paste	Solubility:	Insoluble
pH:	Not Applicable	Vapor Pressure:	Not Established
Vapor Density:	Not Established	Evaporation Rate:	Not Established
VOC Material:	48 g/L 0.4 lbs./gal.	%Non-Vol(w/w):	95
Specific Gravity:	1.46 g/cc	Wt(lbs)/gal:	12.1

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under normal conditions of use.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID High temperatures.

INCOMPATIBILITY WITH OTHER MATERIALS: Oxidizers. Reducers. Strong bases. Acids. Peroxides.

11. TOXICITY INFORMATION

COMPONENTS:

Calcium carbonate:
Repeated exposure to dusts can lead to particulate deposition in the lungs (i.e., pneumoconiosis).

Calcium chromate:
Can cause liver and kidney injury. Penetrating slow healing ulcers may occur after contact with non-intact skin or mucous membranes. Chromate dusts have been shown to cause lung and other cancers in humans and laboratory animals. Possible skin and respiratory sensitizer. The calcium chromate is fully encapsulated so there is no dust.

Toluene:

Oral LD50	Rat	5,000	mg/kg
Dermal LD50	Rabbit	12,124	mg/kg
Inhalation LC50	Mouse	5,320	ppm/8-Hours

Strontium chromate:
Can cause liver and kidney injury. Possible skin and respiratory sensitizer. Penetrating slow healing ulcers may occur after contact with non-intact skin or mucous membranes. Chromate dusts have been shown to cause lung and other cancers in humans and laboratory animals. The strontium chromate is fully encapsulated so there is no dust.

Oral LD50	Rat	3,118	mg/kg

12. ECOLOGICAL INFORMATION

No data are available on this product.

13. DISPOSAL CONSIDERATIONS

DISPOSAL: The toxicity characteristic (TC) has not been evaluated by the Toxicity Characteristic Leaching Procedure (TCLP). When a decision is made to discard this material as supplied, it meets RCRA's characteristic definition of ignitability.

GENERAL STATEMENTS: Federal regulations may apply to empty container. State and/or local regulations may be different.

GENERAL RECOMMENDATIONS: Of the methods of disposal currently available, it is recommended that an alternative be selected according to the following order of preference, based upon environmental acceptability: (1) recycle or rework, if feasible; (2) incinerate at an authorized facility; or (3) treat at an acceptable waste treatment facility.

SPECIAL INSTRUCTIONS: Be sure to contact the appropriate government environmental agencies if further guidance is required.

14. TRANSPORT INFORMATION

Weight (lb.)	Shipping Name	49 CFR	IATA	IMO
< 133	Resin solution	Y	Y	Y
≥ 133	RQ Resin solution (strontium chromate, calcium chromate)	Y	Y	Y

DOT Label.....:	Flammable Liquid	UN/NA Id Num..:	UN 1866
Hazard Class.....:	3 (IATA/49CFR) 3.3 (IMO)	USPS Mailability:	No
Packing Group....:	III		

15. REGULATORY INFORMATION

FEDERAL:
This product is considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

SARA Title III - Section 311/312 - Hazard Categories:
Y - Fire Hazard
N - Sudden Release of Pressure Hazard
N - Reactivity Hazard
Y - Immediate (acute) Health Hazard
Y - Delayed (chronic) Health Hazard

Ozone-Depleting Chemicals - No regulated ingredients.

SARA Section 302 Extremely Hazardous Mat
Formaldehyde

SARA Section 313 Toxic Chemicals
Calcium chromate
Chromium compounds
Toluene
Strontium chromate
Chromium compounds

TSCA Section 8(d) Data Reporting Rule
Toluene

CHEMICAL LISTING - Listed on the following Country's Chemical Inventories:

United States Toxic Substance Control Act
Chemical component(s) in this product are on the section 8(b) Chemical Substance Inventory List (40 CFR 710).

STATE RIGHT-TO-KNOW:

Pennsylvania - New Jersey R-T-K

Calcium carbonate	471 - 34 - 1	10 – 20
Calcium chromate	13765 - 19 - 0	5 – 10
Environmental and Special Hazard.		
Toluene	108 - 88 - 3	1 – 5
Environmental Hazard.		
Strontium chromate	7789 - 06 - 2	<1
Environmental and Special Hazard.		
Non-hazardous trade secret ingredient(s)	Proprietary	Balance

California - California Proposition 65
WARNING: This product contains a chemical(s) known to the State of California to cause cancer and birth defects or other reproductive harm.

Calcium chromate	13765 - 19 - 0	5 – 10
Cancer Hazard.		
Toluene	108 - 88 - 3	1 – 5
Reproductive Hazard.		
Strontium chromate	7789 - 06 - 2	<1
Cancer Hazard.		
Formaldehyde	50 - 00 - 0	< 0.01*
Cancer Hazard.		

* Trace = present at less than 0.01 percent.

CONEG - No data available.

CANADA:

This is a "controlled product" under the Canadian Workplace Hazardous Materials Information System (WHMIS).
Class B Division 3
Class D Division 2 Sub-division A
Class D Division 2 Sub-division B

CEPA - NPRI

Calcium chromate
Chromium compounds
Toluene
Strontium chromate
Chromium compounds

16. OTHER INFORMATION

USER RESPONSIBILITY: A bulletin such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions - in addition to those described herein - are required. Any health hazard and safety information herein should be passed on to your customers or employees, as the case may be.

DISCLAIMER OF LIABILITY: The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of suitability of the chemical is the sole responsibility of the user. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or any other nature are made hereunder with respect to the information contained herein or the chemical to which the information refers. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.

End of Material Safety Data Sheet

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☐ REVISED 1 Page ____ of ____ 2

FACILITY ID# 30 035 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: RAW MATERIAL STORAGE 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # J5 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: ACETIC ACID, GLACIAL | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☒ No 11 * If EPCRA see instructions

COMMON NAME: SAME 9 | An EHS Chemical ☐ Yes ☐ No 12 *If EHS is "Yes", all amounts must be LBS

CAS # 64-19-7 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☒ a. PURE ☐ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 18

AVERAGE DAILY AMOUNT 3 19 | MAXIMUM DAILY AMOUNT 10 20 | ANNUAL WASTE AMOUNT NONE 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET ☒ c. POUNDS ☐ d. TONS 23 *If EHS, amount must be in pounds. | DAYS ON SITE 365 DAYS 24 | LARGEST CONTAINER 2.5 ML BOTTLE 25

STORAGE CONTAINER (Check all that apply) 26

☐ a. ABOVEGROUND TANK	☐ e. PLASTIC DRUM	☐ i. VAT	☐ m CYLINDER	☐ q. TANK WAGON
☐ b. UNDERGROUND TANK	☐ f. NONMETALLIC DRUM	☐ l. FIBER DRUM	☒ n. GLASS CONTAINER	☐ r. RAIL CAR
☐ c. TANK INSIDE BLDG	☐ g. METAL CONTAINER	☐ l. BAG(S)	☐ o PLASTIC CONTAINER	☐ s. TOTE BIN
☐ d STEEL DRUM	☐ h. CARBOY	☐ l. BOX(S)	☐ p. IN MACH OR EQUIP	☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	29	30	☐ Yes ☐ No 31	32
2	29	30	☐ Yes ☐ No 31	32
3	29	30	☐ Yes ☐ No 31	32
4	29	30	☐ Yes ☐ No 31	32
5	29	30	☐ Yes ☐ No 31	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

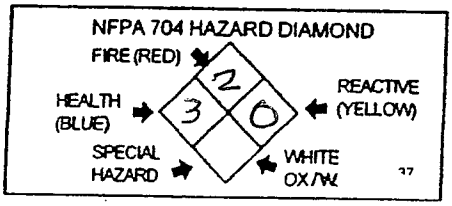
UNDOT # UN 2789 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS 8 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 37



MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Material Safety Data Sheet

Acetic Acid, Glacial, GR

EMD

Section 1. Product and Company Identification

Product name	: Acetic Acid, Glacial, GR
Product code	: AX0073
Synonym	: ACETIC ACID, GLACIAL ; ETHANOIC ACID
Material uses	: Other non-specified industry: Analytical reagent.
Manufacturer	: EMD Chemicals Inc. P.O. Box 70 480 Democrat Road Gibbstown, NJ 08027 856-423-6300 Technical Service Monday - Friday: 8:00 - 5:00 PM
Validation date	: **7/10/2006.**
Print date	: 7/12/2006.
In case of emergency	: 800-424-9300 CHEMTREC (USA) 613-996-6666 CANUTEC (Canada) 24 Hours/Day: 7 Days/Week

Section 2. Hazards Identification

Physical state	: Liquid. (Colorless.)
Odor	: Pungent.
OSHA/HCS status	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Emergency overview	: DANGER! POISON! MAY BE FATAL IF SWALLOWED. CAUSES EYE AND SKIN BURNS. HARMFUL IF INHALED. CAUSES RESPIRATORY TRACT IRRITATION. CAUSES DAMAGE TO THE FOLLOWING ORGANS: RESPIRATORY TRACT, SKIN, EYE, LENS OR CORNEA, TEETH. FLAMMABLE LIQUID AND VAPOR. VAPOR MAY CAUSE FLASH FIRE. Do not ingest. Do not get in eyes or on skin or clothing. Avoid breathing vapor or mist. Keep away from heat, sparks and flame. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.
Routes of entry	: Dermal contact. Inhalation. Ingestion.

Potential acute health effects

Eyes	: Corrosive to eyes.
Skin	: Corrosive to the skin.
Inhalation	: Toxic by inhalation. Irritating to respiratory system.
Ingestion	: Very toxic if swallowed. May cause burns to mouth, throat and stomach.
Carcinogenic effects	: No known significant effects or critical hazards.
Mutagenic effects	: No known significant effects or critical hazards.
Teratogenicity / Reproductive toxicity	: No known significant effects or critical hazards.
Medical conditions aggravated by over-exposure	: Repeated skin exposure can produce local skin destruction or dermatitis. Repeated or prolonged exposure to the substance can produce lung damage. Repeated or prolonged contact with spray or mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to the substance can produce target organs damage.

See toxicological information (section 11)

Continued on Next Page

Section 3. Composition/Information on Ingredients

United States

Name	CAS number	% by Weight
Acetic Acid	64-19-7	100

Section 4. First Aid Measures

Eye contact : Get medical attention immediately. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician.

Skin contact : Get medical attention immediately. Flush contaminated skin with plenty of water. Continue to rinse for at least 10 minutes. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing or wear gloves. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Inhalation : Get medical attention immediately. Move exposed person to fresh air. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Ingestion : Get medical attention immediately. Wash out mouth with water. Remove dentures if any. Move exposed person to fresh air. Keep person warm and at rest. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing or wear gloves.

Section 5. Fire Fighting Measures

Flammability of the product : Flammable liquid and vapor. Vapor may cause flash fire. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard.

Products of combustion : These products are carbon oxides (CO, CO_2).

Extinguishing media

Suitable : Use dry chemical, CO_2, water spray (fog) or foam.

Not suitable : Do not use water jet.

Special exposure hazards : Not available.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Special remarks on fire hazards : Vapor may travel a considerable distance to source of ignition and flash back.

Continued on Next Page

Section 6. Accidental Release Measures

Personal precautions : Immediately contact emergency personnel. Eliminate all ignition sources. Keep unnecessary personnel away. Use suitable protective equipment. Do not touch or walk through spilled material.

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Methods for cleaning up : If emergency personnel are unavailable, contain spilled material. For small spills, add absorbent (soil may be used in the absence of other suitable materials) and use a non-sparking or explosion-proof means to transfer material to a sealable, appropriate container for disposal. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. Place spilled material in an appropriate container for disposal.

Section 7. Handling and Storage

Handling : Do not ingest. Do not get in eyes or on skin or clothing. Keep container closed. Use only with adequate ventilation. Avoid breathing vapor or mist. Keep away from heat, sparks and flame. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Wash thoroughly after handling.

Storage : Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Section 8. Exposure Controls/Personal Protection

Product name	Exposure limits
United States	
Acetic Acid	**ACGIH TLV (United States, 1/2006).** STEL: 37 mg/m^3 15 minute/minutes. Form: All forms STEL: 15 ppm 15 minute/minutes. Form: All forms TWA: 25 mg/m^3 8 hour/hours. Form: All forms TWA: 10 ppm 8 hour/hours. Form: All forms **NIOSH REL (United States, 12/2001).** STEL: 37 mg/m^3 15 minute/minutes. Form: All forms STEL: 15 ppm 15 minute/minutes. Form: All forms TWA: 25 mg/m^3 10 hour/hours. Form: All forms TWA: 10 ppm 10 hour/hours. Form: All forms **OSHA PEL (United States, 8/1997).** TWA: 25 mg/m^3 8 hour/hours. Form: All forms TWA: 10 ppm 8 hour/hours. Form: All forms **OSHA PEL 1989 (United States, 3/1989).** TWA: 25 mg/m^3 8 hour/hours. Form: All forms TWA: 10 ppm 8 hour/hours. Form: All forms

Consult local authorities for acceptable exposure limits.

Engineering measures : Use only with adequate ventilation. If user operations generate dust, fumes, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Personal protection

Eyes : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts.
Recommended: splash goggles , face shield

Continued on Next Page

Section 8. Exposure Controls/Personal Protection

Skin : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Body: Recommended: safety apron

Respiratory : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hands : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Recommended: neoprene

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Section 9. Physical and Chemical Properties

Physical state : Liquid. (Colorless.)

Flash point : Closed cup: 39.85°C (103.7°F).

Auto-ignition temperature : 425.85 to 462.85°C (798.5 to 865.1°F)

Flammable limits : Lower: 4% Upper: 19.9%

Color : Clear.

Odor : Pungent.

Molecular weight : 60.06 g/mole

Molecular formula : C2-H4-O2

Boiling/condensation point : 117.78°C (244°F)

Melting/freezing point : 16.67°C (62°F)

Relative density : 1.051 (Water = 1)

Vapor density : 2.1 (Air = 1)

Odor threshold : 1 ppm

Evaporation rate : 1.34 compared with(n-BUTYL ACETATE=1)

Section 10. Stability and Reactivity

Stability and reactivity : The product is stable.

Incompatibility with various substances : Reactive or incompatible with the following materials: oxidizing materials, metals and alkalis.

Hazardous decomposition products : carbon oxides (CO, CO_2)

Hazardous polymerization : Will not occur.

Conditions of reactivity : Highly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge, heat and oxidizing materials.
Vapor may travel a considerable distance to source of ignition and flash back.
Highly explosive in the presence of the following materials or conditions: open flames, sparks and static discharge, heat and oxidizing materials.

Continued on Next Page

Section 11. Toxicological Information

Toxicity data

United States

Product/ingredient name	Test	Result	Route	Species
Acetic Acid	LD50	3310 mg/kg	Oral	Rat
	LD50	4960 mg/kg	Oral	Mammal
	LD50	1060 mg/kg	Dermal	Mammal
	LDLo	600 mg/kg	Oral	Rabbit
	LDLo	600 mg/kg	Oral	Rabbit
	LC50	5620 ppm (1 hour/hours)	Inhalation	Muskrat

Chronic effects on humans : Causes damage to the following organs: upper respiratory tract, skin, eye, lens or cornea, teeth.

Other toxic effects on humans : Extremely hazardous in case of skin contact (corrosive), of eye contact (corrosive), of ingestion, of inhalation (lung corrosive).
Very hazardous in case of inhalation (lung irritant).

Specific effects

Carcinogenic effects : No known significant effects or critical hazards.

Mutagenic effects : No known significant effects or critical hazards.

Teratogenicity / Reproductive toxicity : No known significant effects or critical hazards.

Sensitization

Ingestion : May cause burns to mouth, throat and stomach.

Inhalation : Irritating to respiratory system.

Eyes : Corrosive to eyes.

Skin : Corrosive to the skin.

Section 12. Ecological Information

Ecotoxicity data

United States

Product/ingredient name	Species	Period	Result
Acetic Acid	Daphnia magna (EC50)	48 hour/hours	65 mg/l
	Lepomis macrochirus (LC50)	96 hour/hours	75 mg/l
	Pimephales promelas (LC50)	96 hour/hours	79 mg/l
	Pimephales promelas (LC50)	96 hour/hours	88 mg/l

Environmental precautions : No known significant effects or critical hazards.

Products of degradation : These products are carbon oxides (CO, CO_2) and water.

Toxicity of the products of biodegradation : The products of degradation are less toxic than the product itself.

Section 13. Disposal Considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

The information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.

Continued on Next Page

Section 13. Disposal Considerations

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

Section 14. Transport Information

Regulatory information	UN number	Proper shipping name	Class	PG*	Label	Additional information
DOT Classification	UN2789	ACETIC ACID, GLACIAL	8	II		**Reportable quantity** 5000 lbs. (2268 kg)

PG* : Packing group

Section 15. Regulatory Information

United States

HCS Classification : Combustible liquid
Highly toxic material
Corrosive material
Target organ effects

U.S. Federal regulations : TSCA 8(b) inventory: Listed

SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: Acetic Acid
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Acetic Acid : Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard

Clean Water Act (CWA) 307: No products were found.

Clean Water Act (CWA) 311: Acetic Acid

Clean Air Act (CAA) 112 accidental release prevention: No products were found.

Clean Air Act (CAA) 112 regulated flammable substances: No products were found.

Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

State regulations : Pennsylvania RTK: Acetic Acid : (environmental hazard, generic environmental hazard)
Massachusetts RTK: Acetic Acid
New Jersey: Acetic Acid

Canada

WHMIS (Canada) : Class B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F).
Class E: Corrosive material

CEPA DSL/CEPA NDSL : CEPA DSL: Acetic Acid

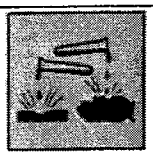
This product has been classified according to the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

EU regulations

Continued on Next Page

Section 15. Regulatory Information

Hazard symbol/symbols :



Risk phrases : R10- Flammable.
R35- Causes severe burns.

Safety phrases : S1/2- Keep locked up and out of the reach of children.
S23- Do not breathe [***].
S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

International regulations

International lists : Australia (NICNAS): Acetic Acid

China: Acetic Acid

Germany water class: Acetic Acid

Japan (METI): Acetic Acid

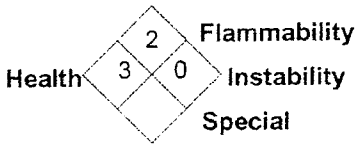
Korea (TCCL): Acetic Acid

Philippines (RA6969): Acetic Acid

Section 16. Other Information

Label requirements : DANGER!
POISON!
MAY BE FATAL IF SWALLOWED.
CAUSES EYE AND SKIN BURNS.
HARMFUL IF INHALED.
CAUSES RESPIRATORY TRACT IRRITATION.
CAUSES DAMAGE TO THE FOLLOWING ORGANS: RESPIRATORY TRACT, SKIN, EYE, LENS OR CORNEA, TEETH.
FLAMMABLE LIQUID AND VAPOR.
VAPOR MAY CAUSE FLASH FIRE.

National Fire Protection Association (U.S.A.) :



Notice to reader

The statements contained herein are based upon technical data that EMD Chemicals Inc. believes to be reliable, are offered for information purposes only and as a guide to the appropriate precautionary and emergency handling of the material by a properly trained person having the necessary technical skills. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use, storage and disposal of these materials and the safety and health of employees and customers and the protection of the environment. EMD CHEMICALS INC. MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE, WITH RESPECT TO THE INFORMATION HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS.

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☒ REVISED 1 Page ____ of ____ 2

FACILITY ID# 3 0 0 3 5 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: Material Storage Area 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 MAP # 1 6 GRID # G2-G7 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: AC-130 PART A

WASTE ☐ Yes 8

TRADE SECRET ☒ Yes ☐ No 11 * If EPCRA see instructions

COMMON NAME: GLACIAL ACETIC ACID 9

An EHS Chemical ☐ Yes ☒ No 12 *If EHS is "Yes", all amounts must be LBS

CAS # 64-19-7 10

FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☒ a. PURE ☐ b. MIXTURE ☐ c. WASTE 14

RADIOACTIVE ☐ Yes ☒ No 15

CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17

FED HAZARD CATEGORIES ☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 18

AVERAGE DAILY AMOUNT: 10 19

MAXIMUM DAILY AMOUNT: 100 20

ANNUAL WASTE AMOUNT: NONE 21

STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET ☒ c. POUNDS ☐ d. TONS 23 *If EHS, amount must be in pounds.

DAYS ON SITE: 365 DAYS 24

LARGEST CONTAINER: 10 lb container 25

STORAGE CONTAINER (Check all that apply) 26

☐ a. ABOVEGROUND TANK	☐ e. PLASTIC DRUM	☐ i. VAT	☐ m CYLINDER	☐ q. TANK WAGON
☐ b. UNDERGROUND TANK	☐ f. NONMETALLIC DRUM	☐ l. FIBER DRUM	☒ n. GLASS CONTAINER	☐ r. RAIL CAR
☐ c. TANK INSIDE BLDG	☐ g. METAL CONTAINER	☐ l. BAG(S)	☒ o PLASTIC CONTAINER	☐ s. TOTE BIN
☐ d STEEL DRUM	☐ h. CARBOY	☐ l. BOX(S)	☐ p. IN MACH OR EQUIP	☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	29	30	☐ Yes ☐ No 31	32
2	29	30	☐ Yes ☐ No 31	32
3	29	30	☐ Yes ☐ No 31	32
4	29	30	☐ Yes ☐ No 31	32
5	29	30	☐ Yes ☐ No 31	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

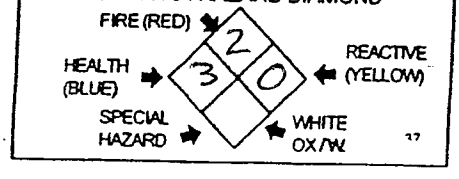
UNDOT # UN 2789 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS 8 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 37



MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Material Safety Data Sheet
AC-® 130 Part A

MSDS No: 11300-03
Effective: 01/26/09
Supercedes: 05/02/05

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

SIN # 834-100

Product ID: AC-130 Part A

Generic Description: Acetic Acid

Product Use: Adhesion Promoter

HAZARD RATINGS		
	HMIS	**NFPA**
Health	**3***	**3***
Fire	**2**	**2**
Reactivity	**0**	**0**
	*** = Chronic**	

For customer service/technical information, contact:
Advanced Chemistry & Technology, Inc.
7341 Anaconda Ave.
Garden Grove CA 92841 – 2921
714 – 373 – 2837

ChemTrec Emergency

1 – 800 – 424 – 9300

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMMON NAME	CAS #	Approximate % (w/w)
Glacial Acetic Acid	64-19-7	100
Non – hazardous and other ingredients below reportable levels	Proprietary	Balance

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: DANGER! FLAMMABLE AND CORROSIVE LIQUID AND VAPOR. MAY BE HARMFUL IF ABSORBED THROUGH THE SKIN. CORROSIVE. LACHRYMATOR. CAUSES SEVERE EYE AND SKIN BURNS. CAUSES SEVER DIGESTIVE AND RESPIRATORY TRACT BURNS. MAY CAUSE SKIN SENSITIZATION BY SKIN CONTACT. See sections 3, 5, & 6.

PRIMARY ROUTES OF EXPOSURE: Eye. Skin. Inhalation (breathing).

EYE CONTACT: Causes severe eye irritation. May cause corneal opacity (clouding of the eye surface). Contact with liquid or vapor causes severe burns and possible irreversible eye damage. Lachrymator.

SKIN CONTACT: Causes skin burns. May cause skin sensitization. May be harmful if absorbed through the skin. Contact with the skin may cause blackening and hyperkeratosis of the skin of the hands.

INHALATION (Breathing): Effects may be delayed. Causes chemical burns to the respiratory tract. Exposure may lead to bronchitis, pharyngitis, and dental erosion. May be absorbed through the lungs.

INGESTION (Swallowing): May cause severe and permanent damage to the digestive tract. Causes severe pain, nausea, vomiting, diarrhea, and shock. May cause polyuria, oliguria and anuria. Rapidly absorbed from the gastrointestinal tract.

TARGET ORGANS/CHRONIC EFFECTS: Lungs and respiratory system. Eyes. Skin.

CONDITIONS AGGRAVATED BY EXPOSURE: Lungs and respiratory system. Skin.

CARCINOGENICITY:

	ACGIH	IARC	NTP	OSHA
Glacial Acetic Acid	N	N	N	N

4. FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 30 minutes. Get medical attention immediately.

SKIN CONTACT: Immediately flush with water for 15 minutes. Remove contaminated clothing and shoes. Get medical attention immediately.Professionally wash clothing before re – use. Destroy contaminated shoes

INHALATION (Breathing): Get medical attention immediately. Remove to fresh air. If breathing is difficult, give oxygen. Do not give mouth-to-mouth respiration. If not breathing, give artificial respiration using oxygen or mechanical devises.

INGESTION (Swallowing): Seek medical attention. DO NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIANS: Treatment should be directed at preventing absorption, administering to symptoms (if they occur), and providing supportive therapy.

5. FIRE FIGHTING METHODS

Flash Point:	39°C (102.2°F)		Method:	Closed cup
Explosive Limits:	LEL(%)	4.0	UEL(%)	19.9
Autoignition:	426°C			

HAZARDOUS COMBUSTION AND DECOMPOSITION PRODUCTS: Smoke, soot, and toxic/irritating fumes (i.e., carbon dioxide, carbon monoxide, etc.).

FIRE AND EXPLOSION HAZARDS: High temperatures can cause sealed containers to rupture due to a build up of internal pressure. Cool with water. Vapors can travel to a source of ignition (flame, electric motor, hot surface, cigarette, etc.) and flash back. During a fire, irritating and highly toxic gases may be generated during combustion or decomposition.

EXTINGUISHING MEDIA: SMALL FIRES: Dry chemical, carbon dioxide, halon, water spray, or foam. LARGE FIRES: Water spray, fog, or alcohol foam.

FIRE FIGHTING PROCEDURES/EQUIPMENT: Fire fighters and others who may be exposed to the products of combustion should be equipped with NIOSH – approved positive pressure self – contained breathing apparatus (SCBA) and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

EVACUATION: Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Eliminate all sources of ignition.

CONTAINMENT: Safely stop discharge. Contain material, as necessary, with a dike or barrier. Stop material from contaminating soil, or from entering sewers or bodies of water.

CLEAN – UP/PERSONAL PROTECTION EQUIPMENT: Appropriate safety measures and protective equipment should be used. Use supplied air respirator or self – contained breathing apparatus in enclosed spaces or if airborne exposure limits can be exceeded. See Section 8.

COLLECTION AND DISPOSAL: Stop discharge, if safe to do so. Use proper protective equipment. Use non – sparking tools and/or explosion – proof equipment. Stop ignition sources. Use dry soda ash or calcium carbonate to cover material and place in closed chemical waste containers. Wash area with soap and water. Dispose of according to applicable local, state and federal regulations.

REPORTING: Spills of this material in excess of a component's RQ must be reported to the National Response Center (1 – 800 – 424 – 8802) and to the appropriate state and local emergency response organizations.

RQ= 5000 lbs.

7. HANDLING AND STORAGE

Storage Temperature: between 62° - 102°F/ 17° - 39°C

STORAGE CONDITIONS: Store in cool, dry, well-ventilated area away from heat, ignition sources, and direct sunlight. Keep containers tightly closed. WARNING: Hot organic chemical vapors or mists can suddenly and without warning combust when mixed with air. Ignition can occur at typical elevated temperature process conditions. Any use in such processes should be evaluated thoroughly to assure safe operating conditions.

TRANSFER: Containers should be supported and grounded before opening, dispensing, mixing, pouring, and emptying. Open with non – sparking tools. If container is warm, open bung slowly to release internal pressure.

PERSONAL HYGIENE: Wash thoroughly after handling, especially before eating, drinking, smoking, and using rest room facilities. Wash contaminated goggles face shield, and gloves. Professionally launder contaminated clothing before re – using.

EMPTY CONTAINER PRECAUTIONS: Attention! This container hazardous when empty. Follow label warnings even after container is emptied since empty containers may retain product residues. Do not use heat, sparks, open flames, torches, cigarettes on or near empty container. Do not reuse empty container without professional cleaning for food, clothing, or products for human or animal consumption or where skin contact can occur.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE GUIDELINES:

ACGIH – TLV		
Acetic acid	10	ppm.
ACGIH – STEL		
Acetic acid	15	ppm
OSHA – PEL		
Acetic acid	10	ppm
OSHA – TWA		
Acetic Acid	25	ppm

ENGINEERING CONTROLS/VENTILATION: Local exhaust ventilation is recommended when vapors, mists, or dusts can be released in excess of established airborne exposure limits (TLVs or PELs).

EYE PROTECTION: Wear chemical splash goggles. An eye wash facility should be readily available.

SKIN PROTECTION: Wear protective clothing and appropriate impervious gloves. Because a variety of protective gloves exist, consult glove manufacturer to determine the proper type for a specific operation.

RESPIRATORY PROTECTION: Avoid breathing vapor and/or mists. Wear NIOSH/MSHA – approved equipment. Determine the appropriate type by consulting the respirator manufacturer. High airborne concentrations may necessitate the use of self – contained breathing apparatus (SCBA) or a supplied air respirator. Respiratory protection programs must be in compliance with 29 CFR 1910.134.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Clear colorless	Odor	Pungent
Physical State	Liquid	Solubility	Complete
pH	2.4	VOC Material, g/l	1050
Specific Gravity	1.05	% Non – Vol(w/w)	0.1
Vapor Pressure	11.4 mm Hg	Vapor Density	2.11
Evaporation Rate	0.97 (butyl acetate = 1.0)		

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under normal conditions of use.

HAZARDOUS POLYMERIZATION: May occur.

CONDITIONS TO AVOID: High temperatures, and incompatible materials.

INCOMPATIBILITY WITH OTHER MATERIALS: Oxidizers. Bases both organic and inorganic.

11. TOXICITY INFORMATION

COMPONENTS:
Acetic Acid

LD/LC 50	Inhalation, Mouse, LC50	5620 ppm/1hour
	Oral, Rat, LD50	3310 mg/kg
	Skin, Rabbit, LD50	1060 mg/kg

12. ECOLOGICAL INFORMATION

No data are available on this product.

13. DISPOSAL CONSIDERATIONS

DISPOSAL: When a decision is made to discard this material as supplied, it meets RCRA's characteristic definition of ignitability.

GENERAL STATEMENTS: Federal regulations may apply to empty container. State and/or local regulations may be different.

GENERAL RECOMMENDATIONS: Of the methods of disposal currently available, it is recommended that an alternative be selected according to the following order of preference, based upon environmental acceptability: (1) recycle or rework, if feasible; (2) incinerate at an authorized facility; or (3) treat at an acceptable waste treatment facility.

SPECIAL INSTRUCTIONS: Be sure to contact the appropriate government environmental agencies if further guidance is required.

14. TRANSPORT INFORMATION

Weight (lb.)	Shipping Name	49 CFR	IATA	IMO
	Acetic Acid, Glacial	Y	Y	Y

DOT Label Acetic Acid, Glacial
Hazard Class 8

UN/NA Id Number UN2789
Packing Group II

15. REGULATORY INFORMATION

FEDERAL:

This product is considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

SARA Title III - Section 311/312 - Hazard Categories:
Y - Fire
N - Pressure
N - Reactivity
Y - Acute

Y - Chronic

Ozone - Depleting Chemicals - No regulated ingredients.

SARA Section 302 Extremely Hazardous Mat - No regulated ingredients.

SARA Section 313 Toxic Chemicals-None

TSCA Section 12(b) Export Notification-None

TSCA Section 8(d) Data Reporting Rule-None

CHEMICAL LISTING - Listed on the following Country's Chemical Inventories:

United States	Toxic Substance Control Act
Europe	EINECS
Canada	DSL/NDSL

Chemical component(s) in this product are on the section 8(b) Chemical Substance Inventory List (40 CFR 710).

STATE RIGHT - TO - KNOW:

Pennsylvania - New Jersey R - T - K

COMMON NAME	CAS #	Approximate % (w/w)
Acetic Acid, Glacial	64-19-7	100
Non - hazardous and other ingredients below reportable levels	Proprietary	Balance

California - California Proposition 65 - No regulated ingredients.

CONEG - No data available.

CANADA:
This is a "controlled product" under the Canadian Workplace Hazardous Materials Information System (WHMIS).
Class B Division 3 Class E Class D Division 2 Sub - division A

CEPA - NPRI

16. OTHER INFORMATION

USER RESPONSIBILITY: A bulletin such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions - in addition to those described herein - are required. Any health hazard and safety information herein should be passed on to your customers or employees, as the case may be.

DISCLAIMER OF LIABILITY: The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of suitability of the chemical is the sole responsibility of the user. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or any other nature are made thereunder with respect to the information contained herein or the chemical to which the information refers. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.

End of Material Safety Data Sheet

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☒ REVISED 1 Page ____ of ____ 2

FACILITY ID# 3 0 0 3 5 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: Material Storage Area 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # G-2-G7 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: AC-131 Part A | WASTE ☐ Yes 8 | TRADE SECRET ☒ Yes ☐ No 11 (* If EPCRA see instructions)

COMMON NAME: Same 9 | An EHS Chemical ☐ Yes ☒ No 12 (*If EHS is "Yes", all amounts must be LBS)

CAS # 64-19-7 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☒ a. PURE ☐ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☑ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE 18 ☑ d. ACUTE HEALTH ☑ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT 10 19 | MAXIMUM DAILY AMOUNT 100 20 | ANNUAL WASTE AMOUNT Home 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET 23 ☒ c. POUNDS ☐ d. TONS (If EHS, amount must be in pounds.) | DAYS ON SITE 365 DAYS 24 | LARGEST CONTAINER 10 lb Container 25

STORAGE CONTAINER (Check all that apply) 26

☐ a. ABOVEGROUND TANK	☐ e. PLASTIC DRUM	☐ i. VAT	☐ m CYLINDER	☐ q. TANK WAGON
☐ b. UNDERGROUND TANK	☐ f. NONMETALLIC DRUM	☐ I. FIBER DRUM	☒ n. GLASS CONTAINER	☐ r. RAIL CAR
☐ c. TANK INSIDE BLDG	☒ g. METAL CONTAINER	☐ I. BAG(S)	☐ o PLASTIC CONTAINER	☐ s. TOTE BIN
☐ d STEEL DRUM	☐ h. CARBOY	☐ I. BOX(S)	☐ p. IN MACH OR EQUIP	☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	100 29	Glacial Acid Acid 30	☐ Yes ☒ No 31	64-19-7 32
2	29	30	☐ Yes ☐ No 31	32
3	29	30	☐ Yes ☐ No 31	32
4	29	30	☐ Yes ☐ No 31	32
5	29	30	☐ Yes ☐ No 31	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

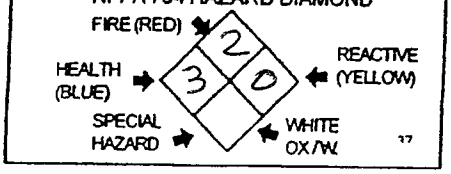
UNDOT # UN 2789 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS 8 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 37



MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Material Safety Data Sheet
AC-® 131 Part A (4-Part Kit)

MSDS No: 11310-02
Effective: 01/26/09
Supercedes: 11/18/05

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

SIN # 834-100

Product ID: AC-131 Part A

Generic Description: Acetic Acid

Product Use: Paint Surface Preparation

For customer service/technical information, contact:
Advanced Chemistry & Technology, Inc.
7341 Anaconda Ave.
Garden Grove CA 92841 – 2921
714 – 373 – 2837

ChemTrec Emergency

1 – 800 – 424 – 9300

HAZARD RATINGS		
	HMIS	NFPA
Health	3*	3*
Fire	2	2
Reactivity	0	0
	* = Chronic	

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMMON NAME	CAS #	Approximate % (w/w)
Glacial Acetic Acid	64-19-7	100
Non – hazardous and other ingredients below reportable levels	Proprietary	Balance

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: DANGER! FLAMMABLE LIQUID AND VAPOR. MAY BE HARMFUL IF ABSORBED THROUGH THE SKIN. CORROSIVE. LACHRYMATOR. MUTAGEN. CAUSES SEVERE EYE AND SKIN BURNS. CAUSES SEVER DIGESTIVE AND RESPIRATORY TRACT BURNS. MAY CAUSE REPRODUCTIVE AND FETAL EFFECTS. MAY CAUSE SKIN SENSITIZATION BY SKIN CONTACT. See sections 3, 5, & 6.

PRIMARY ROUTES OF EXPOSURE: Eye. Skin. Inhalation (breathing).

EYE CONTACT: Causes severe eye irritation. May cause corneal opacity (clouding of the eye surface). Contact with liquid or vapor causes severe burns and possible irreversible eye damage. Lachrymator.

SKIN CONTACT: Causes skin burns. May cause skin sensitization. May be harmful if absorbed through the skin. Contact with the skin may cause blackening and hyperkeratosis of the skin of the hands.

INHALATION (Breathing): Effects may be delayed. Causes chemical burns to the respiratory tract. Exposure may lead to bronchitis, pharyngitis, and dental erosion. May be absorbed through the lungs.

INGESTION (Swallowing): May cause severe and permanent damage to the digestive tract. Causes severe pain, nausea, vomiting, diarrhea, and shock. May cause polyuria, oliguria and anuria. Rapidly absorbed from the gastrointestinal trackt.

TARGET ORGANS/CHRONIC EFFECTS: Lungs and respiratory system. Eyes. Skin.

CONDITIONS AGGRAVATED BY EXPOSURE: Lungs and respiratory system. Skin.

CARCINOGENICITY:

	ACGIH	IARC	NTP	OSHA
Glacial Acetic Acid	N	N	N	N

4. FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 30 minutes. Get medical attention immediately.

SKIN CONTACT: Immediately flush with water for 15 minutes. Remove contaminated clothing and shoes. Get medical attention immediately.Professionally wash clothing before re – use. Destroy contaminated shoes

INHALATION (Breathing): Get medical attention immediately. Remove to fresh air. If breathing is difficult, give oxygen. Do not give mouth-to-mouth respiration. If not breathing, give artificial respiration using oxygen or mechanical devises.

INGESTION (Swallowing): Seek medical attention. DO NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIANS: Treatment should be directed at preventing absorption, administering to symptoms (if they occur), and providing supportive therapy.

5. FIRE FIGHTING METHODS

Flash Point:	39°C (102.2°F)		Method:	Closed cup
Explosive Limits:	LEL(%)	4.0	UEL(%)	19.9
Autoignition:	426°C			

HAZARDOUS COMBUSTION AND DECOMPOSITION PRODUCTS: Smoke, soot, and toxic/irritating fumes (i.e., carbon dioxide, carbon monoxide, etc.).

FIRE AND EXPLOSION HAZARDS: High temperatures can cause sealed containers to rupture due to a build up of internal pressure. Cool with water. Vapors can travel to a source of ignition (flame, electric motor, hot surface, cigarette, etc.) and flash back. During a fire, irritating and highly toxic gases may be generated during combustion or decomposition.

EXTINGUISHING MEDIA: SMALL FIRES: Dry chemical, carbon dioxide, halon, water spray, or foam. LARGE FIRES: Water spray, fog, or alcohol foam.

FIRE FIGHTING PROCEDURES/EQUIPMENT: Fire fighters and others who may be exposed to the products of combustion should be equipped with NIOSH – approved positive pressure self – contained breathing apparatus (SCBA) and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

EVACUATION: Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Eliminate all sources of ignition.

CONTAINMENT: Safely stop discharge. Contain material, as necessary, with a dike or barrier. Stop material from contaminating soil, or from entering sewers or bodies of water.

CLEAN – UP/PERSONAL PROTECTION EQUIPMENT: Appropriate safety measures and protective equipment should be used. Use supplied air respirator or self – contained breathing apparatus in enclosed spaces or if airborne exposure limits can be exceeded. See Section 8.

COLLECTION AND DISPOSAL: Stop discharge, if safe to do so. Use proper protective equipment. Use non – sparking tools and/or explosion – proof equipment. Stop ignition sources. Use dry soda ash or calcium carbonate to cover material and place in closed chemical waste containers. Wash area with soap and water. Dispose of according to applicable local, state and federal regulations.

REPORTING: Spills of this material in excess of a component's RQ must be reported to the National Response Center (1 – 800 – 424 – 8802) and to the appropriate state and local emergency response organizations.
RQ= 5000 lbs.

7. HANDLING AND STORAGE

Storage Temperature: between 62° - 102°F/ 17° - 39°C

STORAGE CONDITIONS: Store in cool, dry, well-ventilated area away from heat, ignition sources, and direct sunlight. Keep containers tightly closed. WARNING: Hot organic chemical vapors or mists can suddenly and without warning combust when mixed with air. Ignition can occur at typical elevated temperature process conditions. Any use in such processes should be evaluated thoroughly to assure safe operating conditions.

TRANSFER: Containers should be supported and grounded before opening, dispensing, mixing, pouring, and emptying. Open with non – sparking tools. If container is warm, open bung slowly to release internal pressure.

PERSONAL HYGIENE: Wash thoroughly after handling, especially before eating, drinking, smoking, and using rest room facilities. Wash contaminated goggles face shield, and gloves. Professionally launder contaminated clothing before re – using.

EMPTY CONTAINER PRECAUTIONS: Attention! This container hazardous when empty. Follow label warnings even after container is emptied since empty containers may retain product residues. Do not use heat, sparks, open flames, torches, cigarettes on or near empty container. Do not reuse empty container without professional cleaning for food, clothing, or products for human or animal consumption or where skin contact can occur.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE GUIDELINES:

ACGIH – TLV		
Acetic acid	10	ppm.
ACGIH – STEL		
Acetic acid	15	ppm
OSHA – PEL		
Acetic acid	10	ppm
OSHA – TWA		
Acetic Acid	25	ppm

ENGINEERING CONTROLS/VENTILATION: Local exhaust ventilation is recommended when vapors, mists, or dusts can be released in excess of established airborne exposure limits (TLVs or PELs).

EYE PROTECTION: Wear chemical splash goggles. An eye wash facility should be readily available.

SKIN PROTECTION: Wear protective clothing and appropriate impervious gloves. Because a variety of protective gloves exist, consult glove manufacturer to determine the proper type for a specific operation.

RESPIRATORY PROTECTION: Avoid breathing vapor and/or mists. Wear NIOSH/MSHA – approved equipment. Determine the appropriate type by consulting the respirator manufacturer. High airborne concentrations may necessitate the use of self – contained breathing apparatus (SCBA) or a supplied air respirator. Respiratory protection programs must be in compliance with 29 CFR 1910.134.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Clear colorless	Odor	Pungent
Physical State	Liquid	Solubility	Complete
pH	2.4	VOC Material	1050
Specific Gravity	1.05	% Non – Vol(w/w)	0.1
Vapor Pressure	11.4 mm Hg	Vapor Density	2.11
Evaporation Rate	0.97 (butyl acetate = 1.0)		

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under normal conditions of use.

HAZARDOUS POLYMERIZATION: May occur.

CONDITIONS TO AVOID: High temperatures, and incompatible materials.

INCOMPATIBILITY WITH OTHER MATERIALS: Oxidizers. Bases both organic and inorganic.

11. TOXICITY INFORMATION

COMPONENTS:
Acetic Acid

LD/LC 50	Inhalation, Mouse, LC50	5620 ppm/1hour
	Oral, Rat, LD50	3310 mg/kg
	Skin, Rabbit, LD50	1060 mg/kg

12. ECOLOGICAL INFORMATION

No data are available on this product.

13. DISPOSAL CONSIDERATIONS

DISPOSAL: When a decision is made to discard this material as supplied, it meets RCRA's characteristic definition of ignitability.

GENERAL STATEMENTS: Federal regulations may apply to empty container. State and/or local regulations may be different.

GENERAL RECOMMENDATIONS: Of the methods of disposal currently available, it is recommended that an alternative be selected according to the following order of preference, based upon environmental acceptability: (1) recycle or rework, if feasible; (2) incinerate at an authorized facility; or (3) treat at an acceptable waste treatment facility.

SPECIAL INSTRUCTIONS: Be sure to contact the appropriate government environmental agencies if further guidance is required.

14. TRANSPORT INFORMATION

Weight (lb.)	Shipping Name	49 CFR	IATA	IMO
	Acetic Acid, Glacial	Y	Y	Y

DOT Label Acetic Acid, Glacial
Hazard Class 8

UN/NA Id Number UN2789
Packing Group II

15. REGULATORY INFORMATION

FEDERAL:

This product is considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

SARA Title III - Section 311/312 - Hazard Categories:
Y - Fire
N - Pressure
N - Reactivity

Y - Acute
Y - Chronic
Ozone - Depleting Chemicals - No regulated ingredients.

SARA Section 302 Extremely Hazardous Mat - No regulated ingredients.

SARA Section 313 Toxic Chemicals-None

TSCA Section 12(b) Export Notification-None

TSCA Section 8(d) Data Reporting Rule-None

CHEMICAL LISTING - Listed on the following Country's Chemical Inventories:

United States	Toxic Substance Control Act
Europe	EINECS
Canada	DSL/NDSL

Chemical component(s) in this product are on the section 8(b) Chemical Substance Inventory List (40 CFR 710).

STATE RIGHT - TO - KNOW:

Pennsylvania - New Jersey R - T - K

COMMON NAME	CAS #	Approximate % (w/w)
Acetic Acid, Glacial	64-19-7	100
Non - hazardous and other ingredients below reportable levels	Proprietary	Balance

California - California Proposition 65 - No regulated ingredients.

CONEG - No data available.

CANADA:
This is a "controlled product" under the Canadian Workplace Hazardous Materials Information System (WHMIS).
Class B Division 3 Class E Division 2 Sub - division A

CEPA - NPRI

16. OTHER INFORMATION

USER RESPONSIBILITY: A bulletin such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions - in addition to those described herein - are required. Any health hazard and safety information herein should be passed on to your customers or employees, as the case may be.

DISCLAIMER OF LIABILITY: The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of suitability of the chemical is the sole responsibility of the user. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or any other nature are made thereunder with respect to the information contained herein or the chemical to which the information refers. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.

End of Material Safety Data Sheet

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☒ REVISED 1 Page ____ of ____ 2

FACILITY ID# 30035 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: RAW MATERIAL STORAGE 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # J5 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: MANGANESE DIOXIDE, ACTIVATED | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☒ No 11 (* If EPCRA see instructions)

COMMON NAME: MANGANESE DIOXIDE 9 | An EHS Chemical ☐ Yes ☐ No 12 (*If EHS is "Yes", all amounts must be LBS)

CAS # 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☒ a. SOLID ☐ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☐ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE 18 ☒ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT: 1000 19 | MAXIMUM DAILY AMOUNT: 3000 20 | ANNUAL WASTE AMOUNT: NONE 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET 23 ☒ c. POUNDS ☐ d. TONS (*If EHS, amount must be in pounds.) | DAYS ON SITE: 365 DAYS 24 | LARGEST CONTAINER: 250 LB DRUM 25

STORAGE CONTAINER (Check all that apply) 26
☐ a. ABOVEGROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BLDG ☐ d STEEL DRUM ☐ e. PLASTIC DRUM ☐ f. NONMETALLIC DRUM ☐ g. METAL CONTAINER ☐ h. CARBOY ☐ i. VAT ☒ l. FIBER DRUM ☐ l. BAG(S) ☐ l. BOX(S) ☐ m CYLINDER ☐ n. GLASS CONTAINER ☐ o PLASTIC CONTAINER ☐ p. IN MACH OR EQUIP ☐ q. TANK WAGON ☐ r. RAIL CAR ☐ s. TOTE BIN ☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	>92 29	MANGANESE DIOXIDE 30	☐ Yes ☐ No 31	1313-13-9 32
2	<3 29	SODIUM HYDROXIDE 30	☐ Yes ☐ No 31	1310-73-2 32
3	3 29	WATER 30	☐ Yes ☐ No 31	7732-18-5 32
4	29	30	☐ Yes ☐ No 31	32
5	29	30	☐ Yes ☐ No 31	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

UNDOT # _____ 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS _____ 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____
If EPCRA, Please Sign Here 36

NFPA 704 HAZARD DIAMOND 37
FIRE (RED) 1
HEALTH (BLUE) 2
REACTIVE (YELLOW) 0
SPECIAL HAZARD WHITE OX/W

MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

MATERIAL SAFETY DATA SHEET

Shepherd

1. Product Name:

Manganese Dioxide, Activated High Moisture

Revision # 1

Date: 12-Jan-2000

Company: The Shepherd Color Company
4539 Dues Drive
Cincinnati, Ohio 45246
U.S.A.

Shepherd Color International
Nieuwstraat 28
3360 Korbeek-Lo
Belgium

Shepherd Color International
1st Floor, 479 Warrigal Rd
Moorabbin, Victoria 3189
Australia

Telephone: U.S.A. Office: 513-874-0714
Belgium Office: 011-32-1-646-8888

Emergency information: Telephone: U.S.A. 513-874-0714

2. Composition/Information on Ingredients

Ingredients:	CAS No:	EINECS	% Weight (Typical)
Manganese dioxide, activated	1313-13-9	215-202-6	>92
Sodium Hydroxide Flake	1310-73-2	215-185-5	<3
Water	7732-18-5		3

Synonyms: MN0000W - MANGANESE DIOXIDE * WET

As Regulated (Related Exposure Limits)	OSHA PEL (mg/m³)	ACGIH TLV (mg/m³)	%Metal (Typical)	Sara 313
Manganese compounds (as Mn)	5 Ceiling	0.2	58	Yes
Sodium hydroxide	2 Ceiling	2 Ceiling	<3	No

3. Hazards Identification

EEC Risk Phrases:	R 20/22 Harmful by inhalation and if swallowed. S(2-) 25
EEC Safety Phrases:	
Methods for Cleanup:	See Section XI for Toxicological Information.

4. First Aid Measures

If inhaled:	If inhaled, remove to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Call a physician.
On ingestion:	If swallowed, induce vomiting immediately by giving two glasses of water and sticking finger down throat. Never give anything by mouth to an unconscious person. Call a physician.
On contact with eyes:	On contact with eyes flush eyes with plenty of water for at least fifteen (15) minutes. Call a physician.
On skin contact:	On skin contact, wash thoroughly with soap and water.

5. Fire Fighting Measures

Suitable extinguishing media:	Foam, CO2, dry chemical fire extinguisher or water spray.
Unsuitable extinguishing media:	Not applicable
Emitted when burned:	Not applicable
Special protective equipment:	Use appropriate techniques for fighting surrounding fire.
Further information:	May spark, smolder and/or ignite when rubbed or heated with easily oxidized materials.

6. Accidental Release Measures

Personal precautions:	Maintain appropriate dust control.
Environmental precautions:	Prevent contamination of soils, drains and surface water.
Methods for cleanup:	Transfer material into closed container for re-use or disposal.

7. Handling and Storage

Handling:	Good housekeeping procedures should be followed to prevent dust during processing. Do not eat, drink or smoke in work areas. Wash thoroughly with soap and water after handling. Provide eye wash stations in areas of handling.
Storage:	Store material in a closed container. Normal warehousing.

8. Exposure Controls and Personal Protection

Engineering controls/measures:	Use mechanical ventilation to keep dust below regulatory standards (see Section II). Design criteria usually cannot be specified in an MSDS because of its complexity.
Personal Protective Equipment:	
Respiratory protection:	MSHA/NIOSH respirators approved for dusts TC-21C or NIOSH approved cartridges for Non-oil aerosols, N95, N99, N100 (42 CFR 84).
Hand protection:	Rubber, PVC coated gloves, impermeable.
Eye protection:	Safety Glasses with side shields, mono goggles.
Body protection:	No special precautions (see hand protection).
General safety and hygiene measures:	Good housekeeping procedures should be followed to prevent dust during processing.

9. Physical and Chemical Properties

Appearance:	Fine Black Powder
Odor:	No Odor
Melting point/melting range:	Not Applicable
Boiling point/boiling range:	Not Applicable
Flash point:	Not Applicable
Combustibility:	None:
Explosion limits:	
Lower Vol. %:	Not Applicable
Upper Vol. %:	Not Applicable
Ignition temperature:	Not Applicable
Self-ignition:	Not Applicable
Self-ignition temperature:	Not Applicable
Explosion hazard:	Not Applicable
Fire promoting properties:	Not Applicable
Vapor pressure:	Not Applicable
Specific gravity:	4.4 (6)
Bulk density:	No data available
Packing density:	No data available
Solubility in Water:	Negligible
Solubility in other solvents:	Negligible
pH value:	No data available
Octanol/water partition coefficient (log POW):	Not Applicable
Viscosity:	Not Applicable
Other information:	Not Applicable

10. Stability and Reactivity

Conditions to avoid:	None known
Materials to avoid:	Easily oxidized materials
Hazardous reactions:	None known
Hazardous decomposition products:	None known

11. Toxicological Information

Acute Toxicity

LD50/oral/rat:	14,900 mg/kg (5)
LD50/inhal/rat:	Not Tested
Sensitizing:	None expected
Primary skin irritation/rabbit:	No data available
Primary mucous membrane irritation/rabbit' eyes:	No data available

ADDITIONAL INFORMATION:

Causes irritation to the eyes and skin. Acute inhalation exposure to manganese dioxide may produce manganese pneumonitis. (Toxicology, Casarett and Doull's) Overexposure to manganese dioxide may produce manganese poisoning which is unlikely to the normal workplace setting.

Routes of Entry:

Eyes: No Skin: No Inhalation: Yes Ingestion: Yes

CARCINOGENICITY: NTP:	No	IARC Monographs:	No
OSHA Regulated:	No		

Signs and Symptoms of Exposure:	Irritation of the eyes, skin and respiratory conditions. Early symptoms of chronic manganese poisoning includes: langour, sleepiness and weakness in the legs. A stolid masklike appearance of the face, emotional disturbances such as uncontollable laughter and a spastic gait with tendency to fall in walking are findings in more advanced cases. (3)
Medical Conditions Generally Aggravated by Exposure:	Central nervous system, circulatory system, kidneys and respiratory system. (NIOSH)

12. Ecological Information

Mobility:	No data available
Degradability:	No data available
Accumulation:	No data available
Short and long term effects on:	
Ecotoxicity:	No data available
Other adverse effects:	No data available

13. Disposal Considerations

Substance:	Dispose of at an approved landfill in accordance with local, state, federal and national regulations.
Contaminated packaging:	Dispose of at an approved landfill in accordance with local, state, federal and national regulations.

14. Transportation information

INTERNATIONAL

Land transport:	ADR/RID/GGVS/GGVE:	Not Regulated
Sea transport:	IMDG/GGVSee UN-No.:	Not Regulated
Air transport:	ICAO/IATA UN/ID-No.:	Not Regulated

U.S.	D.O.T. Classification:	Not Regulated
CANADA	Transport of dangerous goods:	Not Regulated

15. Regulatory Information

Labeling according to EEC Directives: Xn Harmful
SARA
SARA 312:

Health:	Immediate (Acute):	Yes*	Fire:	None
	Delayed (Chronic):	Yes**	Reactivity:	None
			Sudden release of pressure:	None

* See Section 11

** See Section 11

SARA 313:

THIS PRODUCT CONTAINS A CHEMICAL OR CHEMICALS SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372. THIS INFORMATION MUST BE INCLUDED IN ALL MSDS THAT ARE COPIED AND DISTRIBUTED FOR THIS MATERIAL.
>92% Manganese Compound

Inventories

The ingredients of this product have been listed in the following inventories:

Australia AICS:	Listed	
Canada DSL:	Listed	
Europe EINECS:	Listed	215-202-6
Japan MITI:	Unknown	
U.S.A. TSCA:	Listed	
Philippine Draft:	Listed	
Korean:	Listed	1-702

HMIS Code: 200

16. Other Information

References:

1. Occupational Health Guidelines for Chemical Hazards, Vol. I., OSHA, Sept., 1978.
2. Occupational Diseases "A Guide to Their Recognition", U.S. DHEW (NIOSH), June 1977.
3. Documentation of the Threshold Limit Values, 6th Edition, ACGIH, 1991.
4. Pocket Guide to Chemical Hazards, NIOSH/OSHA, June, 1990.
5. Acute Oral Toxicity Tests for Manganese dioxide, The Shepherd Color Company Data, 6/12/76
6. Technical Data Sheet, The Shepherd Color Company.

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☐ REVISED 1 Page ____ of ____ 2

FACILITY ID# 30 035 38 | BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: RAW MATERIAL STORAGE 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # J5 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: TYPE 2 ACTIVATED MANGANESE DIOXIDE | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☒ No 11 (* If EPCRA see instructions)

COMMON NAME: MANGANESE DIOXIDE 9 | An EHS Chemical ☐ Yes ☐ No 12 (*If EHS is "Yes", all amounts must be LBS)

CAS # 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☒ a. SOLID ☐ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☐ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE 18 ☒ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT: 1000 19 | MAXIMUM DAILY AMOUNT: 2600 20 | ANNUAL WASTE AMOUNT: NONE 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET ☒ c. POUNDS ☐ d. TONS 23 (*If EHS, amount must be in pounds.) | DAYS ON SITE: 365 DAYS 24 | LARGEST CONTAINER: 220 LB DRUM 25

STORAGE CONTAINER (Check all that apply) 26:
☐ a. ABOVEGROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BLDG ☐ d STEEL DRUM ☐ e. PLASTIC DRUM ☐ f. NONMETALLIC DRUM ☐ g. METAL CONTAINER ☐ h. CARBOY ☒ i. FIBER DRUM ☐ l. BAG(S) ☐ l. BOX(S) ☐ m CYLINDER ☐ n. GLASS CONTAINER ☐ o PLASTIC CONTAINER ☐ p. IN MACH OR EQUIP ☐ q. TANK WAGON ☐ r. RAIL CAR ☐ s. TOTE BIN ☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)		EHS		CAS #	
1	65-100 29	MANGANESE DIOXIDE	30	☐ Yes ☐ No	31	1313-13-9	32
2	0-7 29	ALUMINUM OXIDE	30	☐ Yes ☐ No	31	1344-28-1	32
3	0-2 29	BARIUM OXIDE	30	☐ Yes ☐ No	31	1304-28-5	32
4	0-5 29	IRON OXIDE	30	☐ Yes ☐ No	31	1309-37-1	32
5	0-2 29	SODIUM HYDOXIDE	30	☐ Yes ☐ No	31	1310-73-2	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

UNDOT # _____ 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS _____ 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____
If EPCRA, Please Sign Here 36

NFPA 704 HAZARD DIAMOND 37
FIRE (RED) 0
HEALTH (BLUE) 2
REACTIVE (YELLOW) 0
SPECIAL HAZARD WHITE OX/W

MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

The Shepherd Color Company
We Brighten Lives

MATERIAL SAFETY DATA SHEET

1. Product Name: Type 2 Activated Manganese Dioxide

Revision # 7

Date: 13-Jun-2008

Company: The Shepherd Color Company
4539 Dues Drive
Cincinnati, Ohio 45246
U.S.A.

Shepherd Color International
Serskampsteenweg 135A
B-9230 Wetteren, Belgium

Shepherd Color International
1st Floor, 479 Warrigal Rd
Moorabbin, Victoria 3189
Australia

Shepherd Color International
Shinjuku Dai-ichi Seimei Building 4-F
2-7-1, Nishi-Shinjuku
Shinjuku-ku
Tokyo, Japan 163-0704

Telephone: U.S.A. Office: 513-874-0714
Belgium Office: +32-9-366-1111
Australian Office: +61-3-9532-5260
Japanese Office: +813-3344-3010

Emergency information: Telephone: Domestic Shipments: CHEMTREC 800-424-9300
International Shipments: CHEMTREC (703) 527-3887

2. Hazards Identification

EEC Risk Phrases:	This document has been prepared in accordance with 91/155/EC. R 20/22, 36/38 Harmful by inhalation and if swallowed. Irritating to eyes and skin. S(2-) 25
EEC Safety Phrases:	Use suitable extinguishing media for fire fighting.
Methods for Cleanup:	See Section XI for Toxicological Information.

3. Composition/Information on Ingredients

Ingredients:	CAS No:	EINECS	% Weight (Typical)
Aluminum Oxide	1344-28-1		0-7
Barium Oxide	1304-28-5		0-2

Iron (III) Oxide	1309-37-1	215-168-2	0-5
Manganese dioxide, activated	1313-13-9	215-202-6	65-100
Silica Quartz	14808-60-7		1-5
Sodium Hydroxide Flake	1310-73-2	215-185-5	0-2
Water	7732-18-5		0-4

Synonyms: MN0002 - Type 2 Activated MnO2

4. First Aid Measures

If inhaled:	If inhaled, remove to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Call a physician.
On ingestion:	If conscious, drink large quantities of water. Do Not induce vomiting. Get immediate medical attention. NEVER give anything by mouth to an unconscious person.
On contact with eyes:	On contact with eyes flush eyes with plenty of water for at least fifteen (15) minutes. Call a physician.
On skin contact:	On skin contact, wash thoroughly with soap and water.

5. Fire Fighting Measures

Suitable extinguishing media:	Foam, CO2, dry chemical fire extinguisher or water spray.
Unsuitable extinguishing media:	Not applicable
Emitted when burned:	Not applicable
Special protective equipment:	Use appropriate techniques for fighting surrounding fire.
Further information:	May spark, smolder and/or ignite when rubbed or heated with easily oxidized materials.

6. Accidental Release Measures

Personal precautions:	Maintain appropriate dust control.
Environmental precautions:	Prevent contamination of soils, drains and surface water.
Methods for cleanup:	Transfer material into closed container for re-use or disposal.

7. Handling and Storage

Handling:	Good housekeeping procedures should be followed to prevent dust during processing. Do not eat, drink or smoke in work areas. Wash thoroughly with soap and water after handling. Provide eye wash stations in areas of handling.
Storage:	Store material in a closed container. Normal warehousing.

8. Exposure Controls and Personal Protection

Engineering controls/measures:	Use mechanical ventilation to keep dust below regulatory standards (see Section II). Design criteria usually cannot be specified in an MSDS because of its complexity.

Personal Protective Equipment:

Respiratory protection:	MSHA/NIOSH respirators approved for dusts TC-21C or NIOSH approved cartridges for Non-oil aerosols, N95, N99, N100 (42 CFR 84).
Hand protection:	Rubber, PVC coated gloves, impermeable.
Eye protection:	Safety Glasses with side shields, mono goggles.
Body protection:	No special precautions (see hand protection).
General safety and hygiene measures:	Good housekeeping procedures should be followed to prevent dust during processing.

As Regulated (Related Exposure Limits)	OSHA PEL (mg/m³)	ACGIH TLV (mg/m³)	%Metal (Typical)	Sara 313
Aluminum Oxide	5 Respirable 15 mg/m3 total	10	0-7	No
Barium insoluble compounds	Not established	Not established	0-2	Yes
Iron Oxide dust (as Fe) Total Particulate	None	10 Total	0-5	No
Manganese compounds (as Mn)	5 Ceiling	0.2	50-100	Yes
Silica -Quartz	10 /%SiO2 +2 (Respirable) 0r 30/%SiO2+2 (Total dust)	0.05 Respirable	1-5	No
Sodium hydroxide	2 Ceiling	2 Ceiling	0-2	No

9. Physical and Chemical Properties

Appearance:	Brownish-Black Powder
Odor:	No Odor
Melting point/melting range:	> 535 degrees C
Boiling point/boiling range:	Not applicable
Flash point:	Not applicable
Combustibility:	Not applicable
Explosion limits:	
Lower Vol. %:	Not applicable
Upper Vol. %:	Not applicable
Ignition temperature:	Not applicable
Self-ignition:	Not applicable
Self-ignition temperature:	Not applicable
Explosion hazard:	Not applicable
Fire promoting properties:	Not applicable
Vapor pressure:	Not applicable
Specific gravity:	3.5
Bulk density:	No data available
Packing density:	No data available
Solubility in Water:	Negligible
Solubility in other solvents:	Negligible
pH value:	9-11

Octanol/water partition coefficient (log POW):	Not applicable
Viscosity:	Not applicable
Other information:	Not applicable

10. Stability and Reactivity

Conditions to avoid:	Decomposition 535 degrees C. Oxygen will be released during the decomposition.
Materials to avoid:	Easily oxidized materials
Hazardous reactions:	None known
Hazardous decomposition products:	None known

11. Toxicological Information

Acute Toxicity

LD50/oral/rat:	14,900 mg/kg (5)
LD50/inhal/rat:	Not Tested
Sensitizing:	None expected
Primary skin irritation/rabbit:	No data available
Primary mucous membrane irritation/rabbit' eyes:	No data available

ADDITIONAL INFORMATION:

Causes irritation to the eyes and skin. Acute inhalation exposure to manganese dioxide may produce manganese pneumonitis. (Toxicology, Casarett and Doull's) Overexposure to manganese dioxide may produce manganese poisoning which is unlikely to the normal workplace setting.

Routes of Entry:

Eyes: No Skin: No Inhalation: Yes Ingestion: Yes

CARCINOGENICITY: NTP: Yes IARC Monographs: Yes

OSHA Regulated: No

Crystalline silica has been reviewed by IARC. IARC found limited evidence for carcinogenicity of crystalline silica in humans and sufficient evidence in experimental animals. Crystalline silica inhaled in the form of quartz or crystabolite from occupational sources is carcinogenic to humans (IARC Monograph, Volume 68). Silica, crystalline is known to be a human carcinogen (NTP 10th Edition) Warning: This product contains a chemical known to the State of California to cause cancer.

Signs and Symptoms of Exposure:	Irritation of the eyes, skin and respiratory conditions. Early symptoms of chronic manganese poisoning includes: languor, sleepiness and weakness in the legs. A stolid masklike appearance of the face, emotional disturbances such as uncontrollable laughter and a spastic gait with tendency to fall in walking are findings in more advanced cases. (3)
Medical Conditions Generally Aggravated by Exposure:	Central nervous system, circulatory system, kidneys and respiratory system. (NIOSH)

12. Ecological Information

Mobility:	No data available
Degradability:	No data available
Accumulation:	No data available
Short and long term effects on:	
Ecotoxicity:	No data available
Other adverse effects:	No data available

13. Disposal Considerations

Substance:	Dispose of at an approved landfill in accordance with local, state, federal and national regulations.
Contaminated packaging:	Dispose of at an approved landfill in accordance with local, state, federal and national regulations.

14. Transportation information

INTERNATIONAL

Land transport:	ADR/RID/GGVS/GGVE:	Not Regulated
Sea transport:	IMDG/GGVSee UN-No.:	Not Regulated
Air transport:	ICAO/IATA UN/ID-No.:	Not Regulated

U.S.	D.O.T. Classification:	Not Regulated
CANADA	Transport of dangerous goods:	Not Regulated

15. Regulatory Information

Labeling according to EEC Directives: Xn harmful
SARA
SARA 312:

Health:	Immediate (Acute):	Yes*	Fire:	None
	Delayed (Chronic):	Yes**	Reactivity:	None
			Sudden release of pressure:	None

* See Section 11
** See Section 11

SARA 313:

THIS PRODUCT CONTAINS A CHEMICAL OR CHEMICALS SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372. THIS INFORMATION MUST BE INCLUDED IN ALL MSDS THAT ARE COPIED AND DISTRIBUTED FOR THIS MATERIAL.

75-100% Manganese Compound

Inventories

The ingredients of this product have been listed in the following inventories:

Australia AICS:	Listed	
Canada DSL:	Listed	
Europe EINECS:	Listed	215-202-6
Japan MITI:	Unknown	
Korean:	Listed	1-702
Philippine Draft:	Listed	
U.S.A. TSCA:	Listed	

HMIS Code: 200

16. Other Information

References:

1. Occupational Health Guidelines for Chemical Hazards, Vol. I., OSHA, Sept., 1978.
2. Occupational Diseases "A Guide to Their Recognition", U.S. DHEW (NIOSH), June 1977.
3. Documentation of the Threshold Limit Values, 6th Edition, ACGIH, 1991.
4. Pocket Guide to Chemical Hazards, NIOSH/OSHA, June, 1997.
5. Acute Oral Toxicity Tests for Manganese dioxide, The Shepherd Color Company Data, 6/12/76
6. Technical Data Sheet, The Shepherd Color Company.

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☒ REVISED 1 Page ____ of ____ 2

FACILITY ID# 30 035 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: RAW MATERIAL STORAGE 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # J5 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: MANGANESE (IV) OXIDE | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☒ No 11 (* If EPCRA see instructions)

COMMON NAME: MANGANESE DIOXIDE 9 | An EHS Chemical ☐ Yes ☐ No 12 (*If EHS is "Yes", all amounts must be LBS)

CAS # 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☒ a. SOLID ☐ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☐ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE 18 ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT: 500 19 | MAXIMUM DAILY AMOUNT: 3000 20 | ANNUAL WASTE AMOUNT: NONE 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET 23 ☒ c. POUNDS ☐ d. TONS (*If EHS, amount must be in pounds.) | DAYS ON SITE: 365 DAYS 24 | LARGEST CONTAINER: 176 LB DRUM 25

STORAGE CONTAINER (Check all that apply) 26
☐ a. ABOVEGROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BLDG ☐ d STEEL DRUM ☐ e. PLASTIC DRUM ☐ f. NONMETALLIC DRUM ☐ g. METAL CONTAINER ☐ h. CARBOY ☐ i. VAT ☐ l. FIBER DRUM ☐ l. BAG(S) ☐ l. BOX(S) ☐ m CYLINDER ☐ n. GLASS CONTAINER ☐ o PLASTIC CONTAINER ☐ p. IN MACH OR EQUIP ☐ q. TANK WAGON ☐ r. RAIL CAR ☐ s. TOTE BIN ☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)		EHS		CAS #	
1	65-85 29	MANGANESE OXIDE	30	☐ Yes ☐ No	31	1313-13-9	32
2	1-2 29	SODIUM HYDROXIDE	30	☐ Yes ☐ No	31	1310-73-2	32
3	2-5 29	WATER	30	☐ Yes ☐ No	31	7732-18-5	32
4	balance 29	UNK.	30	☐ Yes ☐ No	31		32
5	29		30	☐ Yes ☐ No	31		32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

UNDOT # _____ 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS _____ 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____
If EPCRA, Please Sign Here 36

NFPA 704 HAZARD DIAMOND
FIRE (RED) 1
HEALTH (BLUE) 1
REACTIVE (YELLOW) 1
SPECIAL HAZARD WHITE OX/W 37

MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Honeywell

Material Safety Data Sheet

Manganese (IV) Oxide

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Manganese (IV) Oxide

OTHER/GENERIC NAMES: Manganese (IV) Oxide, PS-C, PS-H, FA-F

PRODUCT CODE: 13207, 13340, 13341, 13278

PRODUCT USE: Inorganic Chemical

MANUFACTURER: Riedel-de Haën, a subsidiary of Honeywell International Inc.
Specialty Chemicals
101 Columbia Road
Box 1139
Morristown, New Jersey 07962-1139

FOR MORE INFORMATION CALL:
(Monday-Friday, 9:00am-4:30pm)
800-322-2766

IN CASE OF EMERGENCY CALL:
(24 Hours/Day, 7 Days/Week)
Medical: 1-800-498-5701
Transportation: 800-424-9300 or 703-527-3887

2. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT NAME	CAS NUMBER	WEIGHT %
Manganese oxide	1313-13-9	65-85
Sodium hydroxide (extractable)	1310-73-2	<=1 - <=2
Sodium hydroxide (total)		
Water	7732-18-5	2-5
Unknown impurities	None	Balance

Trace impurities and additional material names not listed above may also appear in Section 15 towards the end of the MSDS. These materials may be listed for local "Right-To-Know" compliance and for other reasons.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: A black or brown odorless solid or powder which is harmful if inhaled or swallowed.

POTENTIAL HEALTH HAZARDS

SKIN: May cause skin irritation.
EYES: May cause eye irritation.

INHALATION: Can cause "metal fume fever", a flu-like illness lasting up to 24 hours, with chills, aching and fever. Chest congestion can also occur, with coughing, shortness of breath and other pneumonia-like effects.

INGESTION: Harmful if swallowed.

DELAYED EFFECTS: Can cause central nervous system damage, changes in the blood, and liver, kidney and lung damage.

Ingredients found on one of the OSHA designated carcinogen lists are listed below.

INGREDIENT NAME	NTP STATUS	IARC STATUS	OSHA LIST
No ingredients listed in this section.			

4. FIRST AID MEASURES

SKIN: Immediately remove contaminated clothing. Flush affected area with large amounts of water for at least 15 minutes. Use soap if available. Get medical attention.

EYES: Immediately flush eyes with large quantities of water for at least 15 minutes. Get medical attention.

INHALATION: Remove victim to fresh air. If breathing has stopped, apply artificial respiration. If breathing is difficult, give oxygen provided a qualified operator is available. Get immediate medical attention.

INGESTION: If person is conscious, rinse mouth with water. Do not induce vomiting unless directed to do so by a physician. Get immediate medical attention.

ADVICE TO PHYSICIAN: No specific advice. Treat according to symptoms present.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT: Not applicable.
FLASH POINT METHOD: Not applicable.
AUTOIGNITION TEMPERATURE: Not applicable.
UPPER FLAME LIMIT (volume % in air): Not applicable.
LOWER FLAME LIMIT (volume % in air): Not applicable.
FLAME PROPAGATION RATE (solids): Not applicable.
OSHA FLAMMABILITY CLASS: Not flammable.

EXTINGUISHING MEDIA:
Water spray, foam, carbon dioxide, or dry chemical.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
Emits toxic fumes under fire conditions.

SPECIAL FIRE FIGHTING PRECAUTIONS/INSTRUCTIONS:
Use self-contained breathing apparatus and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

IN CASE OF SPILL OR OTHER RELEASE: (Always wear recommended personal protective equipment.)
Use a vacuum or a wet method to reduce dust during clean-up. Do not dry sweep. Collect and place in an approved, labeled waste container. Do not allow to enter into sewers or waterways.

Spills and releases may have to be reported to Federal and/or local authorities. See Section 15 regarding reporting requirements.

7. HANDLING AND STORAGE

NORMAL HANDLING: (Always wear recommended personal protective equipment.)
Use with adequate ventilation. Do not inhale dust. Avoid contact with skin, eyes and clothing. Wash hands before breaks and after work. Do not eat, drink or smoke in the work area.

STORAGE RECOMMENDATIONS:
Store in a cool, dry area. Keep containers upright and tightly closed. Store away from heat, flammable materials, and oxidizers since violent reactions can occur. Protect containers from physical damage.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:
General mechanical ventilation is recommended. Use local ventilation at product handling or transfer points.

PERSONAL PROTECTIVE EQUIPMENT

SKIN PROTECTION:
Rubber gloves and clothing suitable to prevent skin contact.

EYE PROTECTION:
Safety glasses or goggles.

RESPIRATORY PROTECTION:
Not required for properly ventilated areas. If there is potential for the inhalation of dust, use an appropriate NIOSH approved respirator.

The respirator must be selected based on contamination levels and use conditions found in the workplace, must not exceed the working limits of the respirator and be approved by the National Institute for Occupational Safety and Health (NIOSH) and used in accordance with Occupational Safety and Health Administration
(OSHA) 29 CFR 1910.134.

ADDITIONAL RECOMMENDATIONS:
Safety showers and eyewash in close proximity to working area.

EXPOSURE GUIDELINES

INGREDIENT NAME	ACGIH TLV	OSHA PEL	OTHER LIMIT
Manganese oxide	5 mg/m³ TWA (as Mn dust) 1 mg/m³ TWA (as Mn fume) 3 mg/m³ STEL (as Mn fume)	3 mg/m³ STEL (as Mn fume)	None
Sodium hydroxide	2 mg/m³ Ceiling	2 mg/m³ Ceiling	None

* = Limit established by Honeywell International Inc.
** = Workplace Environmental Exposure Level (AIHA).
*** = Biological Exposure Index (ACGIH).

OTHER EXPOSURE LIMITS FOR POTENTIAL DECOMPOSITION PRODUCTS:
None.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Black or brown solid or powder.
PHYSICAL STATE: Solid or powder.
MOLECULAR WEIGHT: 86.94
CHEMICAL FORMULA: MnO_2
ODOR: Odorless.
SPECIFIC GRAVITY (water = 1.0): 3.9-5.0 gms/cm3 @ 68°F (20°C).
SOLUBILITY IN WATER (weight %): Insoluble.
pH: 10 - 11
BOILING POINT: Not applicable.
MELTING POINT: > 995°F (535°C) (decomposes)
VAPOR PRESSURE: Not applicable.
VAPOR DENSITY (air = 1.0): Not applicable.
EVAPORATION RATE: Not applicable. **COMPARED TO:** Not applicable.
% VOLATILES: Not applicable.
FLASH POINT: Not applicable.
(Flash point method and additional flammability data are found in Section 5.)

10. STABILITY AND REACTIVITY

NORMALLY STABLE? (CONDITIONS TO AVOID):
Stable under normal conditions.

INCOMPATIBILITIES:
Avoid contact with combustible materials and reducing agents.

HAZARDOUS DECOMPOSITION PRODUCTS:
Decomposition may generate oxides of manganese.

HAZARDOUS POLYMERIZATION:
Will not occur.

MATERIAL SAFETY DATA SHEET
Manganese (IV) Oxide

11. TOXICOLOGICAL INFORMATION

IMMEDIATE (ACUTE) EFFECTS:
LD_{50} (subcutaneous-mouse): 422 mg/kg
Reproductive effects have been reported in mice.

DELAYED (SUBCHRONIC AND CHRONIC) EFFECTS:
Manganese compounds can cause chronic poisoning. Can effect the central nervous system, lungs, blood and kidneys.

OTHER DATA:
None.

12. ECOLOGICAL INFORMATION
Data not available.

13. DISPOSAL CONSIDERATIONS

RCRA

Is the unused product a RCRA hazardous waste if discarded? Not listed.
If yes, the RCRA ID number is: Not applicable.

OTHER DISPOSAL CONSIDERATIONS: Dispose of in accordance with local, state and Federal regulations.

The information offered here is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.

14. TRANSPORT INFORMATION

US DOT HAZARD PROPER SHIPPING NAME: Not regulated
US DOT HAZARD CLASS: Not applicable

For additional information on shipping regulations affecting this material, contact the information number found in Section 1.

15. REGULATORY INFORMATION

TOXIC SUBSTANCES CONTROL ACT (TSCA)

TSCA INVENTORY STATUS: Material is on the TSCA Inventory.
OTHER TSCA ISSUES: None.

SARA TITLE III/CERCLA

"Reportable Quantities" (RQs) and/or "Threshold Planning Quantities" (TPQs) exist for the following ingredients.

INGREDIENT NAME	SARA/CERCLA RQ (lb)	SARA EHS TPQ (lb)
Sodium Hydroxide	1000	None.

Spills or releases resulting in the loss of any ingredient at or above its RQ requires immediate notification to the National Response Center [(800) 424-8802] and to your Local Emergency Planning Committee.

SECTION 311 HAZARD CLASS: Immediate. Delayed.

SARA 313 TOXIC CHEMICALS:
The following ingredients are SARA 313 "Toxic Chemicals". CAS numbers and weight percents are found in Section 2.

INGREDIENT NAME	COMMENT
Manganese oxide	Manganese compounds

STATE RIGHT-TO-KNOW

In addition to the ingredients found in Section 2, the following are listed for state right-to-know purposes.

INGREDIENT NAME	WEIGHT %	COMMENT
No ingredients listed in this section.		

ADDITIONAL REGULATORY INFORMATION:
None

WHMIS CLASSIFICATION (CANADA):
Not determined.

FOREIGN INVENTORY STATUS:
Manganese Dioxide is on the following inventories:
EINECS
Canadian DSL.
Australian.
Korean.
Japanese (ENCS).
Philippine (PICCS).

16. OTHER INFORMATION

CURRENT ISSUE DATE: August, 2006
PREVIOUS ISSUE DATE: February 21, 2000

CHANGES TO MSDS FROM PREVIOUS ISSUE DATE ARE DUE TO THE FOLLOWING:
Section 1: Updated contact information

Section 2: Modify composition information

OTHER INFORMATION: None.

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☐ REVISED 1 Page ____ of ____ 2

FACILITY ID# 3 0 0 3 5 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: RAW MATERIAL 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 6 | GRID # 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: IPS 1400 SERIES | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☒ No 11 * If EPCRA see instructions

COMMON NAME: TWO-COMPONENT WATER-BLOWN FOAM 9 | An EHS Chemical ☐ Yes ☐ No 12 *If EHS is "Yes", all amounts must be LBS

CAS # 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☐ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 18

AVERAGE DAILY AMOUNT 1000 19 | MAXIMUM DAILY AMOUNT 4000 20 | ANNUAL WASTE AMOUNT NONE 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET ☒ c. POUNDS ☐ d. TONS 23 *If EHS, amount must be in pounds. | DAYS ON SITE 365 DAYS 24 | LARGEST CONTAINER 50 GAL DRUM 25

STORAGE CONTAINER (Check all that apply) 26
☐ a. ABOVEGROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BLDG ☐ d STEEL DRUM ☐ e. PLASTIC DRUM ☒ f. NONMETALLIC DRUM ☒ g. METAL CONTAINER ☐ h. CARBOY ☐ i. VAT ☐ l. FIBER DRUM ☐ l. BAG(S) ☐ l. BOX(S) ☐ m CYLINDER ☐ n. GLASS CONTAINER ☐ o PLASTIC CONTAINER ☐ p. IN MACH OR EQUIP ☐ q. TANK WAGON ☐ r. RAIL CAR ☐ s. TOTE BIN ☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	30-50 29	4,4'-DIPHENYLMETHANE DIISOCYANATE 30	☐ Yes ☐ No 31	101-68-8 32
2	30-50 29	HIGHER OLIGOMERS OF MDI 30	☐ Yes ☐ No 31	9016-87-9 32
3	29	30	☐ Yes ☐ No 31	32
4	29	30	☐ Yes ☐ No 31	32
5	29	30	☐ Yes ☐ No 31	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

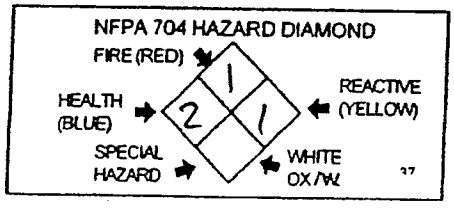
PLACARDING INFORMATION

UNDOT # _____ 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS _____ 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here



37

MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

050172

INNOVATIVE POLYMER SYSTEMS, INC.
8530 Milliken Avenue
Rancho Cucamonga, CA 91730
TEL 909-941-4999 FAX 909-941-4944
www.ipspolymer.com

Material Safety Data Sheet

Code: R "A"
Issue date: 3-1-96
Updated: Oct. 1, 06

I. Product Identification - "A" Component - Polymeric Isocyanate

Product Name: Two-Component Water-Blown Foam
Product Code: IPS 1400 Series, 1500 Series, 1600 Series, 2000 Series, 3000 Series, 8000 Series, 2000 Series, 2010, 2034, 2301, 2305, 2500, 2501, 2530, 2534, 2540, 2550, 2562, 2576, 2700, 3000 Series 3001, 3002, 3062, 3245, 3501, 3770 (including all designations such as -2.5, -60DS, -90D, etc. following product code)

Chemical Family:	Polymeric Isocyanate
Chemical Name:	Polymeric Diphenylmethane 4,4 Diisocyanate
Synonyms:	MDI, ISO, "A" Component
CAS Number:	See Below
TSCA Status:	On Inventory

II. Hazardous Ingredients*

Components:	Approx. %	Current TLV/PEL
4,4- Diphenylmethane Diisocyanate Cas# 101-68-8	30 - 50	.02 PPM, ceiling
Higher Oligomers of MDI Cas# 9016-87-9	30 - 50	Not Listed

* Ingredients not precisely identified are proprietary or not hazardous. Values are not product specifications.

II. Physical Data

Appearance:	Viscous Liquid
Color:	Light To Dark Brown
Odor:	Slightly Aromatic Or Musty
Molecular WT:	N/A
Melt Point / Freeze Point:	Below 60°F.
Boiling Point:	Decomposes At 646°F (341°C)
Vapor Pressure:	(mm Hg at 20°c : below 0.0001)
Vapor Density (Air = 1):	8.6
Specific Gravity:	1.2
Solubility In Water:	Reacts
Voc %:	0

IV. Fire & Explosion Data

Flash Point: 425°F. (218°C.) COC
Flammable Limits In Air By Volume -
Lower: N.E (Nonvolatile Fluid)
Upper: N.E (Nonvolatile Fluid)
Extinguishing Media: Dry chemical extinguishers such as Monoammonium Phosphate, Potassium Sulphate, Potassium Chloride. Additionally, Carbon Dioxide, high expansion (Protenic) chemical foam, water spray for large fires.
Special Fire Fighting Procedure: If water is used, use large amounts as the reaction between hot Isocyanates and water can be vigorous. Use self- contained breathing apparatus and body covering protective clothing.
Unusual Fire and Explosion Hazards: Water contamination will produce Carbon Dioxide. Do not re-seal contaminated containers as pressure buildup may rupture them.

V. Health Hazard Information

Animal Toxicity

Oral, LD50 (ingestion): >20 G/KG (Rats)
Dermal, LDS50 (skin contact): >15.8 G/KG (Rabbits)
Inhalation, LC50 (4 HR): Approx. 370 MG/L (Dapnea, Limnea Invertebrates and Zebra Fish)
Eyes: Liquids, aerosols, or vapors are irritating and can cause tearing, reddening, and swelling following contact.
Skin: Can cause skin irritation, which may include the following: reddening, swelling, rash, scaling, and blistering. Sensitization to isocyanates may result with prolonged contact.
Other: No conclusive evidence has been developed to indicate that MDI is carcinogenic, teratogenic, or that it causes reproductive effects in animals and humans.

Human Effects of Overexposure

Inhalation: May cause respiratory sensitization in susceptible individuals. At room temperature, vapors are minimal due to low vapor pressure. If heated or sprayed as an aerosol, excessive concentrations are attainable that could be hazardous on single exposure. Excessive exposure may cause irritation of the eyes, upper respiratory tract and lungs. Effects may be delayed. Decreased ventilatory capacity has been associated with exposure to similar Isocyanates; it is possible that exposure to MDI may cause impairment of lung function.
Skin: May cause allergic skin reaction in susceptible individuals. Prolonged or repeated contact may cause skin irritation and may stain the skin.
Ingestion: This is not considered a common occupation route of exposure, and single dose toxicity is low.
Threshold Limit Value (ACGIH): TLV is .005 PPM TWA
Permissible Exposure Limit (OSHA): PEL is .02 PPM

VI. Emergency & First Aid Procedures

Eye contact: Flush with clean, lukewarm water at low pressure for at least 15 minutes, occasionally lifting eyelids. Consult a physician immediately.
Skin Contact: Remove contaminated clothing. Wash exposed area with warm soapy water thoroughly. Contaminated clothing should be properly laundered before reusing.
Inhalation: Remove victim from area of exposure to safe area. If not breathing, give mouth to mouth resuscitation. If breathing is difficult, give oxygen. Consult a physician immediately.
Ingestion: No adverse effects anticipated by this route of exposure incidental to proper industrial handling.

Note to Physician: No specific antidote. Supportive care. Treatment based on judgement of physician in response to reaction of the patient. The manifestation of respiratory symptoms, including pulmonary edema, resulting from acute exposure, may be delayed. May cause respiratory sensitization.
Carcinogenicity: Neither MDI nor Polymeric MDI are listed by the NTP, IARC, or regulated by by Federal OSHA or Cal OSHA as carcinogens.
Medical conditions aggravated by exposure: Asthma, other respiratory disorders (bronchitis, emphysema, bronchial hyperreactivity), skin allergies, eczema.

VII. Employee Protection Recommendations

Eye Protection: Liquid chemical goggles or full face shield. No contact lenses should be worn.
Skin Protection: Chemical resistant gloves such as natural rubber, or polyvinyl alcohol. Cover as much as possible with appropriate clothing. If skin creams are used, keep the area covered by the cream to a minimum.
Respiratory Protection: This product has demonstrated no observable effects at room temperature, however, atmospheric levels should be maintained. In addition, in any spray application or situation where airborne particulates or aerosol are generated, a supplied air source must be provided.
Ventilation: Natural or mechanical. Local exhaust will keep the TLV below minimum in most cases. Spills or other emergencies may require more forceful ventilation means.
Other: Safety showers and eye wash stations should be provided in all work areas. All employees should be properly trained.

VIII. Reactivity Data

Stability: Stable under recommended storage conditions.

Polymerization: May occur with incompatible reactants, especially strong bases, water or temperature over 347°F (175°C.). Temperatures over 120°F (49°C) accelerate the reaction with water.

Incompatibility (materials to avoid): Water, acid, bases, metal compounds and surface active materials. Avoid water as it reacts to form heat, CO2 and insoluble urea. The combined effect of the CO2 and heat can produce enough presence of the above mentioned materials.

Hazardous Decomposition Products: Isocyanate vapor and mist, carbon dioxide, carbon monoxide, nitrogen oxides and traces of hydrogen cyanide.

IX. Spill Or Leak Procedure

Steps to be taken in case material is spilled or released:

Minor Spills: Contain the spilled material and then cover with a loose, absorbent material such as oildry, vermiculite, sawdust, or fuller's earth. Shovel waste material into proper waste containers. Do not make pressure tight. Transport to a well-ventilated area and treat with a neutralizing solution consisting of a mixture of water and concentrated ammonium Hydroxide or 5-10% sodium carbonate. Add about 10 parts of neutralizer per part of Isocyanate with mixing. Allow to stand 48 hours letting evolved CO2 escape.

Major Spills: Call Innovative Polymer Systems Inc. immediately at (909) 941-4999. If it is a transportation spill, transportation spill notify Chem.Tel at (800) 255-3924. Evacuate and ventilate spill area. Dike spills to prevent entry into the environment. Wear full protective equipment including respiratory protection during clean up.

If temporary control of Isocyanate vapor is required, a blanket of protein foam may be placed over the spill. Large quantities may be pumped into closed but not sealed containers for disposal.

Clean Up: Decontaminate area using water/ammonia solution with 1-2% added detergent, letting it stand over affected area for at least 10 minutes. Cover mops, brooms, etc used for this with plastic and dispose of properly (often by incineration).

Waste Disposal Methods: Waste material may be incinerated at proper facilities or disposed of under Local, State, and Federal regulations controlling environmental protection.

X. Special Precautions & Storage Data

Storage Temperature (Min/ Max): 65°F. (18°C.) to 75°F. (24°C.)

Average Shelf Life: 6 months from date of mfg.

Special Sensitivity (heat, light, moisture): This product is reactive with water. Containers should be tightly sealed to prevent moisture contamination. A nitrogen blanket should be used for bulk storage at a temperature of 65°F to 75°F. Protect from freezing.

Precautions in Handling and Storage: If contamination of the MDI is suspected, do not re-seal container because of possible rupture due to pressure buildup. Always slowly vent container when opening to relieve any pressure buildup.

XI. Shipping Data

Technical Shipping Name:	4,4 - Diphenylmethane Diisocyanate	
Freight Class Bulk:	4,4 - Diphenylmethane Diisocyanate	
Freight Class Package:	Chemicals, NOI (Isocyanate), NMFC 60000	
Product Label:	Product Label Established	
DOT (HM-181) (Domestic Surface)	Hazard Class or Division:	Non-regulated
IMO/IMDG Code (OCEAN)	Hazard Class or Division:	Non-regulated

For further information, contact Innovative Polymer Systems, Inc. at (909) 941-4999

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☐ REVISED 1 Page ____ of ____ 2

FACILITY ID# 3 0 0 3 5 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: CLASS 1 ROOM 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 MAP # 1 6 GRID # I 2 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: METHYLON 75108 WASTE ☐ Yes 8 TRADE SECRET ☐ Yes ☒ No 11 * If EPCRA see instructions

COMMON NAME: LIQUID PHENOLIC RESIN 9 An EHS Chemical ☐ Yes ☐ No 12 *If EHS is "Yes", all amounts must be LBS

CAS # 10 FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 RADIOACTIVE ☐ Yes ☒ No 15 CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 FED HAZARD CATEGORIES ☐ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 18

AVERAGE DAILY AMOUNT: 300 19 MAXIMUM DAILY AMOUNT: 600 20 ANNUAL WASTE AMOUNT: NONE 21 STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET ☒ c. POUNDS ☐ d. TONS 23 *If EHS, amount must be in pounds. DAYS ON SITE: 365 DAYS 24 LARGEST CONTAINER: 50 Gal Drum 25

STORAGE CONTAINER (Check all that apply) 26
☐ a. ABOVEGROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BLDG ☒ d. STEEL DRUM ☐ e. PLASTIC DRUM ☐ f. NONMETALLIC DRUM ☐ g. METAL CONTAINER ☐ h. CARBOY ☐ i. VAT ☐ l. FIBER DRUM ☐ l. BAG(S) ☐ l. BOX(S) ☐ m CYLINDER ☐ n. GLASS CONTAINER ☐ o PLASTIC CONTAINER ☐ p. IN MACH OR EQUIP ☐ q. TANK WAGON ☐ r. RAIL CAR ☐ s. TOTE BIN ☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	71-75 29	FORMALDEHYDE, POLYMER WITH 3-CHLORO 30	☐ Yes ☐ No 31	28470-78-2 32
2	14-15 29	BENZENETRIMETHANOL, ar-(2-PROPEN- 30	☐ Yes ☐ No 31	64051-40-7 32
3	9-10 29	BENZENETRIMETHANOL, ar-(2-PROPENYL 30	☐ Yes ☐ No 31	28655-63-2 32
4	1.4-2.1 29	BENZENEMETHANOL, (2-PROPENYLOXY) 30	☐ Yes ☐ No 31	28655-62-1 32
5	0.1-0.95 29	FORMALDEHYDE 30	☐ Yes ☐ No 31	50-00-0 32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

UNDOT # _____ 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS _____ 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 37
FIRE (RED) 1
HEALTH (BLUE) 1
REACTIVE (YELLOW) 2
SPECIAL HAZARD WHITE OX/W

MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Revised 2/02 -- haz-inven2.doc

MATERIAL SAFETY DATA SHEET

Durez Corporation

Durez Canada Company, LTD.

SumiDurez Canada GP

Date Issued: 04/17/2006
MSDS No: M23539
Date-Revised: 10/26/2007
Revision No: 3

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT DESCRIPTION: LIQUID PHENOLIC RESIN
PRODUCT CODE: METHYLON 75108

MANUFACTURER

Durez Corporation
46820 Magellan Drive
Suite C
Novi MI 48377
Service Number: 1-800-699-0169
Alternate Customer Service: www.durez.com

24 HR. EMERGENCY TELEPHONE NUMBERS

1-888-211-4441

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

PHYSICAL APPEARANCE: Product is an amber liquid.

IMMEDIATE CONCERNS: Liquid, vapors or mist may be irritating to eyes, skin and respiratory tract. Contains phenol which causes skin darkening, kidney, liver, CNS, and heart effects. Contains a skin and lung sensitizer. POTENTIAL CANCER HAZARD. May release formaldehyde. Risk of cancer depends on duration and level of exposure.

POTENTIAL HEALTH EFFECTS

EYES: Liquid or vapors may be irritating to the eyes.

SKIN: Liquid or vapors are irritating and may be harmful if absorbed through the skin. Prolonged and/or repeated contact with the skin may cause irritation or dermatitis.

INGESTION: Ingestion of a significant amount of hazardous ingredients from this product is unlikely. Weakly toxic by ingestion. Ingesting significant amounts may cause severe irritation of the mouth and throat, marked abdominal pain, vomiting and diarrhea.

INHALATION: The vapors of this product may be irritating to the respiratory tract.

SIGNS AND SYMPTOMS OF OVEREXPOSURE

CHRONIC EFFECTS: Prolonged or repeated contact may cause dermatitis, skin darkening, kidney, liver, neurological and heart effects. Prolonged or repeated exposure to formaldehyde may cause skin and pulmonary sensitization, carcinogenicity and mutagenic effects.

3. COMPOSITION / INFORMATION ON INGREDIENTS

MATERIAL SAFETY DATA SHEET

Durez Corporation
Durez Canada Company, LTD.
SumiDurez Canada GP

Date Issued: 04/17/2006
MSDS No: M23539
Date-Revised: 10/26/2007
Revision No: 3

Chemical Name	Wt.%	CAS	EINECS
Formaldehyde, polymer with 3-chloro-1-propene and phenol	71 - 75	028470-78-2	
Benzenetrimethanol, ar-(2-propenyloxy)-	14 - 15	064051-40-7	
Benzenedimethanol, ar-(2-propenyloxy)	9 - 10	028655-63-2	
Benzenemethanol, (2-propenyloxy)	1.4 - 2.1	028655-62-1	
Formaldehyde	0.1 - 0.95	000050-00-0	200-001-8

COMMENTS: General Product Information

This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).

Neither the Occupational Safety and Health Administration (OSHA) nor the American Conference of Governmental Industrial Hygienists (ACGIH) has developed exposure limits for this product. Exposure limits exist for the following individual ingredients.

Formaldehyde is a specifically regulated chemical. Consult OSHA 29 CFR 1910.1048 for specific regulations and the relevant sections of this MSDS for additional information.

4. FIRST AID MEASURES

EYES: IMMEDIATELY flush eyes with a directed stream of water for at least 15 minutes, while forcibly holding eyelids open to ensure complete irrigation of all eye and lid tissue. Washing eyes within several seconds of exposure is essential to achieve maximum effectiveness. IF IRRITATION OCCURS, SEEK MEDICAL ATTENTION IMMEDIATELY.

SKIN: For skin contact, wash immediately with soap and water. Wash contaminated clothing before reuse. IF IRRITATION OCCURS, SEEK MEDICAL ATTENTION IMMEDIATELY.

INGESTION: No specific intervention is indicated as compound is not likely to be hazardous by ingestion. However, if swallowed, DO NOT INDUCE VOMITING. Give the patient quantities of water or milk to minimize potential irritation. NEVER give anything by mouth to an unconscious person. SEEK MEDICAL ATTENTION IMMEDIATELY.

INHALATION: If inhaled, IMMEDIATELY remove the affected person to fresh air. If breathing is difficult, have qualified person administer oxygen. If the affected person is not breathing, apply artificial respiration. SEEK MEDICAL ATTENTION IMMEDIATELY.

5. FIRE FIGHTING MEASURES

FLASHPOINT AND METHOD: >212°F Method: TCC

FLAMMABLE LIMITS: Not Determined to Not Determined

AUTOIGNITION TEMPERATURE: Not Determined

FLAMMABLE CLASS: Class IIIB

GENERAL HAZARD: Electrostatic charge may build up during handling. Grounding of equipment is recommended.

MATERIAL SAFETY DATA SHEET

EXTINGUISHING MEDIA: Use water spray, dry chemical, carbon dioxide, Halon, or alcohol foam.

HAZARDOUS COMBUSTION PRODUCTS: Complete combustion yields carbon dioxide and water. Incomplete combustion yields carbon monoxide, olefinic acid and paraffinic compounds. Varying amounts of ketones, aldehydes, alcohols and aromatics may also be formed.

FIRE FIGHTING PROCEDURES: Keep unauthorized personnel upwind.

FIRE FIGHTING EQUIPMENT: Firefighters should wear NIOSH/MSHA approved positive pressure self-contained breathing apparatus and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

SMALL SPILL: Soak up with absorbent material and place in properly labeled containers for disposal.

LARGE SPILL: Dike and pump into properly labeled containers for reclamation or disposal.

GENERAL PROCEDURES: Keep unnecessary personnel away. Eliminate all sources of ignition. Wear personal protective equipment as described in Exposure Controls/personal Protection (Section 8) of the MSDS. Contain spill with dike to prevent entry into sewers or waterways. The unreacted resin contains phenol, which is subject to effluent limitations under the Clean Water Act.

7. HANDLING AND STORAGE

HANDLING: Guard against dust accumulation of this material. As with all chemicals, good industrial hygiene practices should be followed when handling this material. When the container(s) is empty it may retain product residue including vapors which could accumulate. Therefore, do not cut, drill, grind, or weld empty containers. Additionally, do not conduct such activity(ies) near full, or empty containers without appropriate workplace safety authorization(s) or permit(s).

STORAGE: Store in a cool (refrigerated) area to prevent pressure buildup in containers and resin advancement. Keep container tightly closed and properly labeled. Do not reuse the empty container. Toxic product residues may remain in container.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE GUIDELINES

OSHA HAZARDOUS COMPONENTS (29 CFR1910.1200)							
		EXPOSURE LIMITS					
		OSHA PEL		ACGIH TLV		SupplierOEL	
Chemical Name		ppm	mg/m³	ppm	mg/m³	ppm	mg/m³
Formaldehyde	TWA	0.75 ppm	NL	NL ppm	NL	NL	NL
	STEL	2 ppm	NL	C 0.3 ppm [1]	C 0.37 [1]	NL	NL
OSHA TABLE COMMENTS: 1. C = Ceiling							

MATERIAL SAFETY DATA SHEET

ENGINEERING CONTROLS: Ventilation should be sufficient to effectively remove and prevent buildup of any vapors, dusts, or fumes that may be generated during handling or thermal processing. In order to ensure appropriate electrical safety practices are followed, consult applicable standards. These may include guidelines such as the National Fire Protection Association [NFPA] 70, "The National Electrical Code" and NFPA 499, "Recommended Practice for the Classification of Combustible Dusts and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas". NOTE: since this material's vapors, dust or fumes can form explosive mixtures in air, ensure that any potential areas where explosions may occur are designed to minimize potential damage. For recommendations to prevent such explosions and associated damage, consult applicable guidelines such as National Fire Protection Association (NFPA) 69, "Standard on Explosion Prevention Systems" and/or NFPA 68, "Guide for Venting Deflagrations".

PERSONAL PROTECTIVE EQUIPMENT

EYES AND FACE: Wear chemical safety goggles plus full-face shield to protect against splashing when appropriate (ANSI Z87.1).

SKIN: Wear impervious gloves such as neoprene, butyl, or nitrile.

RESPIRATORY: Wear a NIOSH approved chemical cartridge respirator following manufacturer's recommendations where airborne contaiminants may reach levels above the listed component exposure limits. If exposure to formaldehyde above applicable exposure limits is likely, NIOSH approved respiratory protection is required. If the OSHA Action Level or STEL for formaldehyde is exceeded, use Table 1 of 29 CFR 1910.1048 (g) to determine the appropriate respiratory protection. A respiratory protection program that meets 29 CFR 1019.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant the use of a respirator.

OTHER USE PRECAUTIONS: Emergency shower and eyewash facility should be in close proximity (ANSI Z358.1) Clothing contaminated with formaldehyde must be cleaned and laundered before reuse. Containers and storage areas for formaldehyde contaminated clothing and equipment must have labels and signs. The laundry must be informed regarding potential harmful effects and procedures for safe handling (29 CFR 1910.1048).

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: Liquid

ODOR: Phenolic

APPEARANCE: Amber liquid

pH: 6 - 7 @ 100 g/L

PERCENT VOLATILE: 11 - 16%

VAPOR PRESSURE: Not Determined

VAPOR DENSITY: Not Determined

BOILING POINT: >100°C (212°F)

MELTING POINT: Not Applicable

FLASHPOINT AND METHOD: >212°F Method: TCC

SOLUBILITY IN WATER: Slightly soluble

MATERIAL SAFETY DATA SHEET

SPECIFIC GRAVITY: 1.16 - 1.18

(VOC): 2.000 to 5 %

10. STABILITY AND REACTIVITY

POLYMERIZATION: Resin will polymerize exothermically at temperatures in excess of 150°F. Hazardous polymerization will not occur under storage conditions recommended in Section 7.

CONDITIONS TO AVOID: Keep away from heat, sparks or open flame.

HAZARDOUS DECOMPOSITION PRODUCTS: Complete combustion yields carbon dioxide and water. Trace amounts of formaldehyde and phenol may be released during the curing process. The air concentration will be dictated by curing conditions, room ventilation and production rates. Airborne monitoring should be conducted to accurately determine the level of these substances in the air. For formaldehyde, symptoms of exposure including eye, nose, throat, and upper respiratory tract irritation, tearing and nose stuffiness usually are initially experienced at air concentrations in the range of 0.2 - 1.0 ppm and become more severe above 1 ppm. For exceptionally sensitive individuals, symptoms may appear at far lower concentrations. In laboratory tests, formaldehyde has been shown to be carcinogenic in rats. There is no conclusive evidence regarding the carcinogenicity of formaldehyde in man. Formaldehyde is listed by NTP as reasonably anticipated to be carcinogenic, and by IARC as a group 1 carcinogen. OSHA, in its formaldehyde Standard (29 CFR 1910.1048) considers formaldehyde to be a potential carcinogen. Phenol vapors are irritating to the eyes, skin, and respiratory tract. At airborne levels of up to at least 4 ppm, all phenol absorbed in the lung is excreted within 24 hours.

INCOMPATIBLE MATERIALS: Do not mix with strong acids.

11. TOXICOLOGICAL INFORMATION

ACUTE

Chemical Name	ORAL LD_{50} (rat)	DERMAL LD_{50} (rabbit)	INHALATION LC_{50} (rat)
Formaldehyde	100 mg/kg	270 µL/kg	454 mg/m3/4H Mouse

NOTES: Formaldehyde, polymer with ammonia and phenol is used in the manufacture of this product. The following acute toxicology data are based on tests done for one product from a family of products. This substance is practically non-toxic by the oral, dermal, and inhalation routes. It is slightly irritating to the eyes. It is non-irritating to the skin.

Formaldehyde may be absorbed through the skin. Formaldehyde may cause allergic skin sensitization reactions. Formaldehyde may irritate or burn the skin and eyes. Formaldehyde is a lung sensitizer, causing an asthma-like allergy. Future exposures may cause allergy attacks with shortness of breath, wheezing, cough and chest tightness. Repeated exposure may cause bronchitis.

CARCINOGENICITY

MATERIAL SAFETY DATA SHEET

Chemical Name	NTP Status	IARC Status	OSHA Status	Other
Formaldehyde	Reasonably Anticipated To Be A Carcinogen (Possible Select Carcinogen)	Monograph 62, 1995 (Group 2A (probably carcenogenic to humans))	0.75 ppm TWA; 2 ppm STEL; 0.5 ppm Action Level (Irritant and potential cancer hazard - see 29 CFR 1910.1048)	ACGIH: A2 - Suspected Human Carcinogen NIOSH: Potential occupational carcinogen

Notes: Contains a listed carcinogen. Formaldehyde is genotoxic in several in vitro test systems. Prolonged or repeated inhalation exposure may result in respiratory changes.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL DATA: There is no significant environmental fate and effects data available. This product may have trace levels of chemicals that have fate and effects properties of their own. Due caution should be exercised to avoid accidental releases of this product to aquatic or terrestrial environments.

GENERAL COMMENTS:

No ecotoxicity testing has been performed on this material. Ecotoxicity data for certain individual components are listed below.

Component Analysis - Ecotoxcity - Aquatic Toxicity

Formaldehyde (50-00-0)

Test & Species	Data	Conditions
96 Hr LC50 fathead minnow	24.1 mg/l	flow-through
96 Hr LC50 bluegill	0.10 mg/l	flow-through
5 min EC50 Photobacterium phosphoreum	9.0 mg/l	
15 min EC50 Photobacterium phosphoreum	7.26 mg/l	
25 min EC50 Photobacterium phosphoreum	6.81 mg/l	
96 Hr EC50 water flea	20 mg/l	

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Dispose of all waste and contaminated material in accordance with all applicable federal, state and local health and environmental regulations.

RCRA HAZARD CLASS: Component Waste Numbers
Formaldehyde (50-00-0) RCRA: waste number U122

MATERIAL SAFETY DATA SHEET

GENERAL COMMENTS: Waste product is not considered to be listed hazardous waste under 40 CFR Part 261. However, wastes should be tested using methods contained in 40 CFR Part 261 to determine if the waste meets applicable definitions of characteristic hazardous waste.

14. TRANSPORT INFORMATION

DOT (DEPARTMENT OF TRANSPORTATION)

OTHER SHIPPING INFORMATION: This product may be regulated by the DOT because it could contain a reportable quantity (RQ) of a Hazardous Substance. Please examine the quantity per package for the Hazardous Substance(s).

Contact (716) 286-0112 for classification assistance.

15. REGULATORY INFORMATION

UNITED STATES

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

FIRE: No **PRESSURE GENERATING:** No **REACTIVITY:** No **ACUTE:** Yes **CHRONIC:** Yes

EPCRA SECTION 313 SUPPLIER NOTIFICATION

Chemical Name	Wt.%	CAS
Formaldehyde	0.1 - 0.95	000050-00-0

TITLE III NOTES: Component Analysis

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4). SARA Section 313 requires a notice to be sent to customers that repackage or redistribute this product.

Formaldehyde (50-00-0)
SARA 302: 500 lb TPQ
SARA 313: 0.1% de minimis concentration
CERCLA: 100 lb final RQ; 45.4 kg final TQ

CERCLA (COMPREHENSIVE RESPONSE, COMPENSATION, AND LIABILITY ACT)

Chemical Name	Wt.%	CERCLA RQ
Formaldehyde	0.1 - 0.95	100 lbs.

TSCA (TOXIC SUBSTANCE CONTROL ACT)

Chemical Name	CAS
Benzenetrimethanol, ar-(2-propenyloxy)-	064051-40-7
Benzenedimethanol, ar-(2-propenyloxy)	028655-63-2
Benzenemethanol, (2-propenyloxy)	028655-62-1
Formaldehyde	000050-00-0

MATERIAL SAFETY DATA SHEET

TSCA STATUS: All ingredients in this mixture are in compliance with TSCA.

REGULATIONS

STATE REGULATIONS

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA	RI
Formaldehyde	50-00-0	Yes	Yes	Yes	Yes	Yes	Yes

CALIFORNIA PROPOSITION 65

Chemical Name	Wt.%	Listed
Formaldehyde	0.1 - 0.95	• Cancer

CANADA

WHMIS (WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM):

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Component	CAS#	Minimum Concentration
Formaldehyde	50-00-0	0.1%; English Item 781; French Item 918

WHMIS CLASS: D1A, D2A, D2B

GENERAL COMMENTS: Component Analysis - Inventory

Component	CAS #	TSCA	DSL	EINECS
Formaldehyde, polymer with 3-chloro-1-propene and phneol	28470-78-2	Yes	Yes	No
Benzenetrimethanol, ar-(2-propenyloxy)-	64051-40-7	Yes	No	Yes
Benzenedimethanol, ar-(2-propenyloxy)-	28655-63-2	Yes	No	Yes
Benzenemethanol, (2-propenyloxy)	28655-62-1	Yes	Yes	Yes
Formaldehyde	50-00-0	Yes	Yes	Yes

NOTE: Polymers composed entirely of EINECS listed monomers are exempt from notification on the EINECS list (67/548/EEC).

16. OTHER INFORMATION

REVISION SUMMARY: Revision #: 3 This MSDS replaces the August 10, 2006 MSDS. Any changes in information are as follows: In Section 10 Stability

MATERIAL SAFETY DATA SHEET

Durez Corporation

Durez Canada Company, LTD.

SumiDurez Canada GP

Date Issued: 04/17/2006
MSDS No: M23539
Date-Revised: 10/26/2007
Revision No: 3

HMIS RATING

HEALTH:	*	1
FLAMMABILITY:		1
PHYSICAL HAZARD:		2
PERSONAL PROTECTION:		

ADDITIONAL MSDS INFORMATION:

Reasonable care has been taken in the preparation of this information, but the manufacturer makes no warranty of merchantability or any other warranty, expressed or implied, with respect to this information. The manufacturer makes no representations and assumes no liability for any direct, incidental or consequential damages resulting from its use.

The exact composition of this material is a Trade Secret. The components are listed in the TSCA Chemical Substance Inventory. In case of a medical emergency, the specific chemical identity of the material will be provided to the treating physician or nurse when the information is needed for proper emergency or first aid treatment. A written statement of confidentiality agreement will be required as soon as circumstances permit as provided by 20CFR 1910.1200.

For additional non-emergency health, safety or environmental information:
Telephone: (716) 286-0112

Write to:
Durez Corporation
Technical Information
5000 Packard Road
Niagara Falls, NY 14304

COMMENTS: FOR INDUSTRIAL USE ONLY.

MANUFACTURER DISCLAIMER: *Please Note: HMIS ratings involve interpretations of data that may vary from company to company. HMIS ratings are intended for rapid, general identification of the magnitude of the specific hazard. To deal adequately with the safe handling of this material, all the information contained in this MSDS must be assessed.*

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☐ REVISED 1 Page ____ of ____ 2

FACILITY ID# 3 0 0 3 5 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: RAW MATERIAL STORAGE 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # J5 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: DER 331 EPOXY RESIN | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☒ No 11 * If EPCRA see instructions

COMMON NAME: EPOXY RESIN 9 | An EHS Chemical ☐ Yes ☐ No 12 *If EHS is "Yes", all amounts must be LBS

CAS # 25085-99-8 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☒ a. PURE ☐ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☐ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 18

AVERAGE DAILY AMOUNT: 100 19 | MAXIMUM DAILY AMOUNT: 600 20 | ANNUAL WASTE AMOUNT: NONE 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET 23 ☒ c. POUNDS ☐ d. TONS *If EHS, amount must be in pounds. | DAYS ON SITE: 365 DAYS 24 | LARGEST CONTAINER: 50 Gal Drum 25

STORAGE CONTAINER (Check all that apply) 26

☐ a. ABOVEGROUND TANK	☐ e. PLASTIC DRUM	☐ i. VAT	☐ m CYLINDER	☐ q. TANK WAGON
☐ b. UNDERGROUND TANK	☐ f. NONMETALLIC DRUM	☐ j. FIBER DRUM	☐ n. GLASS CONTAINER	☐ r. RAIL CAR
☐ c. TANK INSIDE BLDG	☐ g. METAL CONTAINER	☐ k. BAG(S)	☐ o PLASTIC CONTAINER	☐ s. TOTE BIN
☒ d STEEL DRUM	☐ h. CARBOY	☐ l. BOX(S)	☐ p. IN MACH OR EQUIP	☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	100% 29	Bisphenol A 30	☐ Yes ☒ No 31	25085-99-8 32
2	29	30	☐ Yes ☐ No 31	32
3	29	30	☐ Yes ☐ No 31	32
4	29	30	☐ Yes ☐ No 31	32
5	29	30	☐ Yes ☐ No 31	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

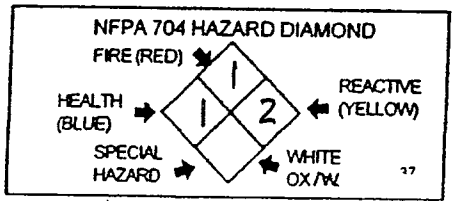
UNDOT # _____ 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS _____ 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 37



MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Material Safety Data Sheet
The Dow Chemical Company

Product Name D E R * 331 EPOXY RESIN

Issue Date 08/29/2006
Print Date 30 Aug 2006

The Dow Chemical Company encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions

1. Product and Company Identification

Product Name
D E R * 331 EPOXY RESIN

COMPANY IDENTIFICATION
The Dow Chemical Company
2030 Willard H Dow Center
Midland, MI 48674
USA

Customer Information Number 800-258-2436

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact. 989-636-4400
Local Emergency Contact 989-636-4400

2. Hazards Identification

Emergency Overview
Color: White to yellow
Physical State Liquid
Odor Mild
Hazards of product

WARNING! May cause allergic skin reaction May cause eye irritation May cause skin irritation

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910 1200

Potential Health Effects
Eye Contact May cause eye irritation Corneal injury is unlikely
Skin Contact Prolonged or repeated contact may cause skin irritation
Skin Absorption: Prolonged skin contact is unlikely to result in absorption of harmful amounts
Skin Sensitization: Has caused allergic skin reactions in humans
Inhalation: Vapors are unlikely due to physical properties

Ingestion Very low toxicity if swallowed Harmful effects not anticipated from swallowing small amounts
Cancer Information Many studies have been conducted to assess the potential carcinogenicity of diglycidyl ether of bisphenol A (DGEBPA) Indeed, the most recent review of the available data by the International Agency for Research on Cancer (IARC) has concluded that DGEBPA is not classified as a carcinogen Although some weak evidence of carcinogenicity has been reported in animals, when all of the data are considered, the weight of evidence does not show that DGEBPA is carcinogenic

3. Composition Information

Component	CAS #	Amount
Reaction product Bisphenol A-(epichlorohydrin), epoxy resin (number average molecular weight <= 700)	25085-99-8	100 0 %

See also section 15 of this SDS

4. First-aid measures

Eye Contact Flush eyes thoroughly with water for several minutes Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes If effects occur, consult a physician, preferably an ophthalmologist
Skin Contact Remove material from skin immediately by washing with soap and plenty of water Remove contaminated clothing and shoes while washing Seek medical attention if irritation persists Wash clothing before reuse Discard items which cannot be decontaminated, including leather articles such as shoes, belts and watchbands
Inhalation: Move person to fresh air, if effects occur, consult a physician
Ingestion No emergency medical treatment necessary
Notes to Physician: No specific antidote Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient

5. Fire Fighting Measures

Extinguishing Media Water fog or fine spray Dry chemical fire extinguishers Carbon dioxide fire extinguishers Foam Do not use direct water stream May spread fire Alcohol resistant foams (ATC type) are preferred General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective Water fog, applied gently may be used as a blanket for fire extinguishment
Fire Fighting Procedures: Keep people away Isolate fire and deny unnecessary entry Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed Fight fire from protected location or safe distance Consider the use of unmanned hose holders or monitor nozzles Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container Do not use direct water stream May spread fire Move container from fire area if this is possible without hazard Burning liquids may be moved by flushing with water to protect personnel and minimize property damage Water fog, applied gently may be used as a blanket for fire extinguishment Contain fire water run-off if possible Fire water run-off, if not contained, may cause environmental damage Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS
Special Protective Equipment for Firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves) If protective equipment is not available or not used, fight fire from a protected location or safe distance
Unusual Fire and Explosion Hazards Container may rupture from gas generation in a fire situation Violent steam generation or eruption may occur upon application of direct water stream to hot liquids Dense smoke is emitted when burned without sufficient oxygen

Hazardous Combustion Products During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating Combustion products may include and are not limited to Phenolics Carbon monoxide Carbon dioxide

6. Accidental Release Measures

Steps to be Taken if Material is Released or Spilled: Contain spilled material if possible Absorb with materials such as Sand Polypropylene fiber products Polyethylene fiber products Remove residual with soap and hot water Collect in suitable and properly labeled containers Residual can be removed with solvent Solvents are not recommended for clean-up unless the recommended exposure guidelines and safe handling practices for the specific solvent are followed Consult appropriate solvent Safety Data Sheet for handling information and exposure guidelines See Section 13, Disposal Considerations, for additional information

Personal Precautions Isolate area Keep unnecessary and unprotected personnel from entering the area Use appropriate safety equipment For additional information, refer to Section 8, Exposure Controls and Personal Protection Refer to Section 7, Handling, for additional precautionary measures

Environmental Precautions Prevent from entering into soil, ditches, sewers, waterways and/or groundwater See Section 12, Ecological Information

7. Handling and Storage

Handling

General Handling Avoid prolonged or repeated contact with skin Avoid contact with eyes Avoid contact with skin and clothing Wash thoroughly after handling Avoid use of electric band heaters Failures of electric band heaters have been reported to cause drums of liquid epoxy resin to explode and catch fire Application of a direct flame to a container of liquid epoxy resin can also cause explosion and/or fire

Storage

Recommended pumping and storage temperature for bulk shipments is 60°C (140°F) Additional storage and handling information on this product may be obtained by calling your Dow sales or customer service contact Ask for a product brochure

Shelf life: Use within	Storage temperature
24 Months	2 - 43 °C

8. Exposure Controls / Personal Protection

Exposure Limits

None established

Personal Protection

Eye/Face Protection: Use safety glasses

Skin Protection Use protective clothing chemically resistant to this material Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse or dispose of properly Items which cannot be decontaminated, such as shoes, belts and watchbands, should be removed and disposed of properly

Hand protection: Use gloves chemically resistant to this material Examples of preferred glove barrier materials include Butyl rubber Ethyl vinyl alcohol laminate ("EVAL") Nitrile Neoprene Polyvinyl chloride ("PVC" or "vinyl") NOTICE The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body

reactions to glove materials, as well as the instructions/specifications provided by the glove supplier

Respiratory Protection: No respiratory protection should be needed

Ingestion. Use good personal hygiene Do not consume or store food in the work area Wash hands before smoking or eating

Engineering Controls

Ventilation Good general ventilation should be sufficient for most conditions

9. Physical and Chemical Properties

Physical State	Liquid
Color	White to yellow
Odor	Mild
Flash Point - Closed Cup	252 °C (486 °F) *PMCC, ASTM D93*
Flammable Limits In Air	**Lower** Not applicable
	Upper Not applicable
Autoignition Temperature	Not applicable
Vapor Pressure	Not applicable
Boiling Point (760 mmHg)	Not applicable
Vapor Density (air = 1)	Not applicable
Specific Gravity (H2O = 1)	1 16 *Literature*
Liquid Density	1 156 - 1 166 g/cm3 @ 25 °C *ASTM D4052*
Freezing Point	Not Determined
Melting Point	Not Determined
Solubility in Water (by weight)	Insoluble
pH	Not Determined
Dynamic Viscosity	11,000 - 13,500 mPa s @ 25 °C *ASTM D445*

10. Stability and Reactivity

Stability/Instability

Stable under recommended storage conditions See Storage, Section 7

Conditions to Avoid Avoid temperatures above 300°C (572°F) Potentially violent decomposition can occur above 350°C (662°F) Generation of gas during decomposition can cause pressure in closed systems Pressure build-up can be rapid

Incompatible Materials Avoid contact with oxidizing materials Avoid contact with Acids Bases Avoid unintended contact with amines

Hazardous Polymerization

Will not occur by itself Masses of more than one pound (0 5 kg) of product plus an aliphatic amine will cause irreversible polymerization with considerable heat build-up

Thermal Decomposition

Decomposition products depend upon temperature, air supply and the presence of other materials Gases are released during decomposition Uncontrolled exothermic reaction of epoxy resins release phenolics, carbon monoxide, and water

11. Toxicological Information

Acute Toxicity

Ingestion

LD50, Rat > 5,000 mg/kg

Skin Absorption

LD50, Rabbit 20,000 mg/kg

Sensitization

Skin

Has caused allergic skin reactions in humans Did not cause allergic skin reactions when tested in mice

Repeated Dose Toxicity

Except for skin sensitization, repeated exposures to low molecular weight epoxy resins of this type are not anticipated to cause any significant adverse effects

Chronic Toxicity and Carcinogenicity

Many studies have been conducted to assess the potential carcinogenicity of diglycidyl ether of bisphenol A (DGEBPA) Indeed, the most recent review of the available data by the International Agency for Research on Cancer (IARC) has concluded that DGEBPA is not classified as a carcinogen Although some weak evidence of carcinogenicity has been reported in animals, when all of the data are considered, the weight of evidence does not show that DGEBPA is carcinogenic

Developmental Toxicity

Resins based on the diglycidyl ether of bisphenol A (DGEBPA) did not cause birth defects or other adverse effects on the fetus when pregnant rabbits were exposed by skin contact, the most likely route of exposure, or when pregnant rats or rabbits were exposed orally

Reproductive Toxicity

In animal studies, did not interfere with reproduction

Genetic Toxicology

In vitro genetic toxicity studies were negative in some cases and positive in other cases Animal genetic toxicity studies were negative

12. Ecological Information

CHEMICAL FATE

Movement & Partitioning

Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5)
Potential for mobility in soil is low (Koc between 500 and 2000)
Henry's Law Constant (H): < 6 94E-09 atm*m3/mole, 25 °C Estimated
Partition coefficient, soil organic carbon/water (Koc) 1,800 - 4,400 Estimated1,800 - 4,400 Estimated

Persistence and Degradability

Biodegradation under aerobic laboratory conditions is below detectable limits (BOD20 or BOD28/ThOD < 2 5%)

Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
6 69E-11 cm3/s	1 92 h	Estimated

OECD Biodegradation Tests.

Biodegradation	Exposure Time	Method
12 %	28 d	OECD 302B Test

Biological oxygen demand (BOD)

BOD 5	BOD 10	BOD 20	BOD 28
		< 2 5 %	

***Theoretical* Oxygen Demand:** 2 35 *mg/mg*

ECOTOXICITY

Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in most sensitive species tested) Toxicity to aquatic species occurs at concentrations above material's water solubility

Fish Acute & Prolonged Toxicity

LC50, fathead minnow (Pimephales promelas), 96 h 3 1 mg/l

Aquatic Invertebrate Acute Toxicity

EC50, water flea Daphnia magna, 48 h, immobilization 1 4 - 1 7 mg/l

Toxicity to Micro-organisms

IC50, bacteria, Growth inhibition, 18 h > 42 6 mg/l

Aquatic Invertebrates Chronic Toxicity Value ChV Value mg/l	Species	Test Type	Endpoint	Exposure Time
0 55 mg/l	water flea Daphnia magna		number of offspring	21 d

13. Disposal Considerations

DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations Regulations may vary in different locations Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator DOW HAS NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION Composition Information FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted Incinerator or other thermal destruction device As a service to its customers, Dow can provide names of information resources to help identify waste management companies and other facilities which recycle, reprocess or manage chemicals or plastics, and that manage used drums Telephone Dow's Customer Information Group at 1-800-258-2436 or 1-989-832-1556 (U S), or 1-800-331-6451 (Canada) for further details

14. Transport Information

DOT Non-Bulk
NOT REGULATED

DOT Bulk
NOT REGULATED

IMDG
NOT REGULATED

ICAO/IATA
NOT REGULATED

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product Additional transportation system information can be obtained through an authorized sales or customer service representative It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material

15. Regulatory Information

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910 1200

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Immediate (Acute) Health Hazard	Yes
Delayed (Chronic) Health Hazard	No
Fire Hazard	No
Reactive Hazard	No
Sudden Release of Pressure Hazard	No

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute

Pennsylvania (Worker and Community Right-To-Know Act) Pennsylvania Special Hazardous Substances List:
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute

European Inventory of Existing Commercial Chemical Substances (EINECS)
Components of this product are not listed on EINECS because they are polymers or "no-longer polymers" marketed before the enforcement of the 7th Amendment to Directive 67/548/EEC
US. Toxic Substances Control Act
All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720 30
CEPA - Domestic Substances List (DSL)
All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed

Reaction product Bisphenol A-(epichlorohydrin), epoxy resin (number average molecular weight <= 700) can also be described by the CAS# 025068-38-6

16. Other Information

Product Literature
Additional information on this product may be obtained by calling your Dow Chemical Company sales or customer service contact Ask for a product brochure

Hazard Rating System

NFPA	Health	Fire	Reactivity
	1	1	2

Recommended Uses and Restrictions
Used in applications such as Adhesive Casting Tooling Civil engineering Composites Automotive coatings Can coatings Coil coatings Marine and protective coatings Photocure industrial coating Potting and encapsulation

Revision
Identification Number 79630 / 1001 / Issue Date 08/29/2006 / Version 2 0

Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document

Legend

N/A	Not available
W/W	Weight/Weight
OEL	Occupational Exposure Limit
STEL	Short Term Exposure Limit
TWA	Time Weighted Average
ACGIH	American Conference of Governmental Industrial Hygienists, Inc
DOW IHG	Dow Industrial Hygiene Guideline
WEEL	Workplace Environmental Exposure Level
HAZ_DES	Hazard Designation

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☐ REVISED 1 Page ____ of ____ 2

FACILITY ID# 3 0 0 3 5 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: LAB 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 MAP # 6 GRID # J7 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: IPS 1000 SERIES WASTE ☐ Yes 8 TRADE SECRET ☐ Yes ☒ No 11 * If EPCRA see instructions

COMMON NAME: POLYETHER POLYOL 9 An EHS Chemical ☐ Yes ☐ No 12 *If EHS is "Yes", all amounts must be LBS

CAS # 10 FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 RADIOACTIVE ☐ Yes ☒ No 15 CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 FED HAZARD CATEGORIES ☐ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 18

AVERAGE DAILY AMOUNT: 1 19 MAXIMUM DAILY AMOUNT: 1 20 ANNUAL WASTE AMOUNT: NONE 21 STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET 23 ☒ c. POUNDS ☐ d. TONS *If EHS, amount must be in pounds. DAYS ON SITE: 365 DAYS 24 LARGEST CONTAINER: PT CAN 25

STORAGE CONTAINER (Check all that apply) 26

☐ a. ABOVEGROUND TANK	☐ e. PLASTIC DRUM	☐ i. VAT	☐ m CYLINDER	☐ q. TANK WAGON
☐ b. UNDERGROUND TANK	☐ f. NONMETALLIC DRUM	☐ j. FIBER DRUM	☒ n. GLASS CONTAINER	☐ r. RAIL CAR
☐ c. TANK INSIDE BLDG	☐ g. METAL CONTAINER	☐ k. BAG(S)	☐ o PLASTIC CONTAINER	☐ s. TOTE BIN
☐ d STEEL DRUM	☐ h. CARBOY	☐ l. BOX(S)	☐ p. IN MACH OR EQUIP	☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	96 29	HYDROXYL TERMINATED POLYOL 30	☐ Yes ☐ No 31	9082-00-2 32
2	<2 29	TERTIARY AMINE 30	☐ Yes ☐ No 31	N.E. 32
3	29	30	☐ Yes ☐ No 31	32
4	29	30	☐ Yes ☐ No 31	32
5	29	30	☐ Yes ☐ No 31	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

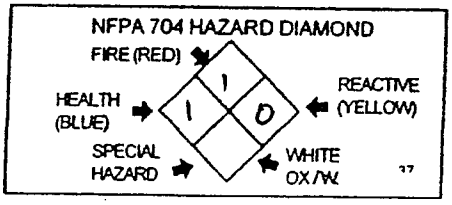
UNDOT # _____ 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS _____ 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 37



MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

651072

INNOVATIVE POLYMER SYSTEMS, INC.
8530 Milliken Avenue
Rancho Cucamonga, CA 91730
TEL 909-941-4999 FAX 909-941-4944
www.ipspolymer.com

Material Safety Data Sheet

Code: R "B"
Issue date: 3-1-96
Updated: 8/3/07

I. Product Identification - Rigid "B" Component

Product Name:	Two-Component Water-Blown Foam
Product Code:	IPS 1000 Series, 1500 Series, 1600 Series, 2000, 2010, 2034, 2305, 2501, 3000, 3001, 3002, 3245, 3770, 8000, and 8001 (Including all designations such as -2.5, -4, -10, etc. following product code)
Chemical Family:	Polyether Polyol
Chemical Name:	Polyether Polyol
Synonyms:	Polyol, Urethane Resin, "B" Component
CAS Number:	N/A
TSCA Status:	On Inventory

II. Hazardous Ingredients*

Components:	Approx. %	Current TLV/PEL
Hydroxyl Terminated Poly (Oxyalkylene) Polyether Cas# 9082-00-2	96	N.E.
Tertiary Amine Bearing Compounds Cas# N.E.	<2	N.E.

* Ingredients not precisely identified are proprietary or not hazardous. Values are not product specifications.

III. Physical Data

Appearance:	Viscous Liquid
Color:	Clear Amber
Odor:	Slight Ammonia
Molecular WT:	N/A
Melt Point / Freeze Point:	<32°F. (<0°C.)
Boiling Point:	Decomposes
Vapor Pressure:	Nil
Vapor Density (Air = 1):	> 1.0
Specific Gravity:	1.07
Solubility In Water:	Slightly Soluble
Voc %:	0

IV. Fire & Explosion Data

Flash Point: 325°F. (163°C.) PMCC

Flammable Limits In Air By Volume -
Lower: N.E (Nonvolatile Fluid)
Upper: N.E (Nonvolatile Fluid)

Extinguishing Media: Dry chemical extinguishers such as Monoammonium Phosphate, Potassium Sulphate, Potassium Chloride. Additionally, Carbon Dioxide, high expansion (Protenic) chemical foam, water spray for large fires.

Special Fire Fighting Procedure: Do not direct solid water stream or foam into hot, burning pools; this may cause frothing and increase fire intensity. Use self-contained breathing apparatus and body covering protective clothing; burning can produce oxides of carbon and nitrogen.

V. Health Hazard Information

Animal Toxicity

Oral, LD50 (ingestion):	>5000 MG/KG (Rats)
Dermal, LDS50 (skin contact):	>5000 MG/KG (Rabbits)
Inhalation, LC50 (4 HR):	N.E.
Eyes:	N.E.
Skin:	N.E.
Aquatic, LC50 (24 HR):	N.E.

Human Effects of Overexposure

Inhalation: May cause irritation to the throat and respiratory passages but at room temperature, vapor inhalation is not considered hazardous.

Skin: This product contains amine catalyst and will cause irritation to the skin after prolonged exposure. Some individuals may be more sensitive to exposure.

Ingestion: This is not considered a common occupation route of exposure, and no observable effects have been demonstrated.

Threshold Limit Value (ACGIH):	No TLV has been established for this product as a system.
Permissible Exposure Limit (OSHA):	Same as above.
Suspected Carcinogenic:	
Federal OSHA:	Not regulated.
CAL OSHA:	Not regulated.
NTP:	Not listed.
IARC:	Not listed.
Medical conditions aggravated by exposure:	No data available.

VI. Emergency & First Aid Procedures

Eye contact: Flush with clean, lukewarm water at low pressure for at least 15 minutes, occasionally lifting eyelids. Consult a physician immediately.

Skin Contact: Remove contaminated clothing. Wash exposed area with warm water thoroughly. Contaminated clothing should be properly laundered before reusing.

Inhalation: Not considered hazardous in an industrial situation.

Ingestion: Induce vomiting. Never give anything to drink to an unconscious person or induce vomiting in an unconscious person.

Note to Physician: Basically, treatment is symptomatic.

VII. Employee Protection Recommendations

Eye Protection: Liquid chemical goggles or full face shield. No contact lenses should be worn.

Skin Protection: Chemical resistant gloves such as natural rubber, or polyvinyl alcohol. Cover as much as possible with appropriate clothing. If skin creams are used, keep the area covered by the cream to a minimum.

Respiratory Protection: This product has demonstrated no observable effects at room temperature, however, it is highly recommended that an air purifying respirator with organic filter cartridges be worn. In addition, in any spray application, a supplied air source must be provided.

Ventilation: Natural or mechanical. Local exhaust will keep the TLV below minimum in most cases. Spills or other emergencies may require more forceful ventilation means.

Other: Safety showers and eye wash stations should be provided in all work areas. All employees should be properly trained.

VIII. Reactivity Data

Stability:	Stable.
Polymerization:	Will not occur.
Incompatibility (materials to avoid):	Avoid contact with isocyanates and other substances that react with hydroxyl groups.
Hazardous Decomposition Products:	Aliphatic fragments, CO, NH3, CO2.

IX. Spill Or Leak Procedures

Steps to be taken in case material is spilled or released:

Contain the spilled material and then cover with a loose, absorbent material such as oildry, vermiculite, sawdust, or fuller's earth. Shovel waste material into proper waste containers. Wash the contaminated areas with hot soapy water thoroughly. Ventilate area to remove vapors.

Waste Disposal Methods: Waste material may be incinerated or disposed of under local, state and federal regulations controlling environmental protection.

X. Special Precautions & Storage Data

Storage Temperature (Min/ Max):	65°F. (18°C.) to 75°F. (24°C.)
Average Shelf Life:	6 months from date of mfg.
Special Sensitivity (heat, light, moisture):	This product is hygroscopic. Containers should be tightly sealed to prevent moisture contamination. Do not expose to high temperatures for any length of time as aldehydes may be formed.
Precautions in Handling and Storage:	If contamination with isocyanates is suspected, do not re-seal container because of possible rupture due to pressure buildup. Always slowly vent container when opening to relieve any pressure buildup.

XI. Shipping Data

Technical Shipping Name:	Polyether Polyol Blend
Dot Hazard Classification:	Non-regulated
Freight Class Bulk:	Polypropylene Glycol
Freight Class Package:	Polypropylene Glycol
Product Label:	"B" Component Polyol
Place Cards Required:	None
HMIS:	F-1, H-1, R-0

For further information, contact Innovative Polymer Systems, Inc. at (909) 941-4999

This information is furnished without warranty, expressed or implied, except that it is accurate to the best knowledge of Innovative Polymer Systems, Inc. The data on these sheets relates only to the specific material designated herein. Innovative Polymer Systems, Inc. assumes no legal responsibility for use or reliance upon this data.

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☐ REVISED 1 Page ____ of ____ 2

FACILITY ID# 30 035 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: LAB 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # J7 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: JB 1110 B EPOXY HARDENER | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☐ No 11 * If EPCRA see instructions

COMMON NAME: EPOXY HARDENER 9 | An EHS Chemical ☐ Yes ☐ No 12 *If EHS is "Yes", all amounts must be LBS

CAS # 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☐ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 18

AVERAGE DAILY AMOUNT 1 19 | MAXIMUM DAILY AMOUNT 1 20 | ANNUAL WASTE AMOUNT NONE 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET 23 ☒ c. POUNDS ☐ d. TONS *If EHS, amount must be in pounds. | DAYS ON SITE 365 DAYS 24 | LARGEST CONTAINER Qt Can 25

STORAGE CONTAINER (Check all that apply) 26
☐ a. ABOVEGROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BLDG ☐ d STEEL DRUM ☐ e. PLASTIC DRUM ☐ f. NONMETALLIC DRUM ☐ g. METAL CONTAINER ☐ h. CARBOY ☐ i. VAT ☐ l. FIBER DRUM ☐ l. BAG(S) ☐ l. BOX(S) ☐ m CYLINDER ☒ n. GLASS CONTAINER ☐ o PLASTIC CONTAINER ☐ p. IN MACH OR EQUIP ☐ q. TANK WAGON ☐ r. RAIL CAR ☐ s. TOTE BIN ☐ t. OTHER____

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	>75 29	MERCAPTAN/AMINE BLEND 30	☐ Yes ☐ No 31	N.A. 32
2	<25 29	2-OXEPANONE 30	☐ Yes ☐ No 31	502-44-3 32
3	29	30	☐ Yes ☐ No 31	32
4	29	30	☐ Yes ☐ No 31	32
5	29	30	☐ Yes ☐ No 31	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

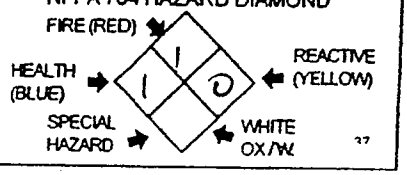
UNDOT # UN1760 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS 8 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____ 36
If EPCRA, Please Sign Here

NFPA 704 HAZARD DIAMOND 37



MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

MATERIAL SAFETY DATA SHEET

Est. HMIS:
Health: 3
Fire: 1
React: 1

I. PRODUCT NAME JB1110B EPOXY HARDNER

SECTION I: GENERAL

Manufacturer:	Advanced Adhesive Systems 681 North Mountain Rd Newington, CT 06111
Emergency Phone Numbers:	**800 255 3924** CHEM-TEL 24 HR
Chemical Family:	Polyamide/amine-Mercaptan Blend

SECTION II: COMPOSITION

CHEMICAL NAME	CAS #	PERCENT	EXPOSURE LIMITS
Mercaptan/Amine Blend	Not available	>75%	Not Established
2-oxepanone	502-44-3	<25%	Not Established

SARA Title III-Section 313: This product does not contain a toxic chemical in excess of 1% of the mixture (.1% if a listed carcinogen)

SECTION III: HAZARDS IDENTIFICATION

Appearance and odor:	Slightly combustible liquid, amber color, strong mercaptan odor
Inhalation:	Considered slightly toxic by inhalation. Can cause irritation of respiratory tract and nausea. Overexposure may cause delayed lung injury and chemical pneumonia
Eye Contact:	May cause sever eye irritation and permanent damage
Skin Contact:	May produce severe skin irritation and burns. May cause skin sensitizationIngestion: Moderately toxic. Loss of consciousness may occur. Nausea, vomiting, dizziness, and drowsiness may occur
Special Health Effects:	No additional medical information found
Chronic Health Effects:	No chronic hazards have been observed (long term)

This product is NOT listed under: National Toxicology Program (NTP), Annual Report on Carcinogens, and International Agency for Research on Cancer (IARC) Monographs
California Proposition 65: This product contains no chemicals known to the state of California to cause birth defects, or reproductive toxicity

SECTION IV –FIRST AID MEASURES

Inhalation:	Remove to fresh air. If breathing is difficult give oxygen. Seek immediate medical attention
Eye Contact:	Rinse with clean water for 15-30 minutes. Seek immediate medical attention

Skin Contact:	Remove contaminated clothing as needed. Wash skin thoroughly with mild soap/water. Flush with lukewarm water for 15 minutes. Seek immediate medical attention
Ingestion:	Immediately drink a large quantity of milk or water. Seek immediate medical attention

SECTION V: FIRE FIGHTING MEASURES

Flash Point:	> 200°F
Extinguishing Media:	Use water fog, 'alcohol foam', dry chemical or carbon dioxide (CO2) to extinguish flames.
Fire Fighting:	Material will not burn unless preheated. Clear fire area of all non-emergency personnel. Do not enter confined fire space without full bunker gear (helmet with face shield, bunker coats, gloves and rubber boots), including a positive pressure, NIOSH approved, self-contained breathing apparatus. Cool surrounding equipment, fire-exposed containers and structures with water. Container areas exposed to direct flame contact should be cooled with large quantities of water (500 gallons water per minute flame impingement exposure) to prevent weakening of container structure

SECTION VI: ACCIDENTAL RELEASE MEASURES

May burn although not readily ignitable.

Protective Measures:	Wear appropriate personal protective equipment (refer to Section 8) when responding to spills.
Spill Management:	Use cautious judgment when cleaning up large spills. Shut off source of leak if safe to do so. Dike and contain spill. Remove with vacuum trucks or pump to storage/salvage vessels. Soak up residue with an absorbent such as clay, sand or other suitable material and dispose of properly. Contain run-off from residue flush and dispose of properly. Place in container for proper disposal. Prevent entry into waterways, sewer, basements or confined areas. For small spills: Soak up residue with an absorbent such as clay, sand or other suitable material. Place in non-leaking container and seal tightly for proper disposal
Disposal:	Proper disposal should be evaluated based on regulatory status of this material (refer to Section 13), potential contamination from subsequent use and spillage, and regulations governing disposal in the local area

Reporting: Notify authorities if any exposure to the general public or environment occurs or is likely to occur.

SECTION VII: HANDLING AND STORAGE

Avoid contact with eyes, skin and clothing. Avoid prolonged or repeated contact with eyes, skin and clothing. Wash thoroughly after handling.

Handling:	Some curing agents, e.g., aliphatic polyamines, can produce exothermic reactions that in large masses can cause runaway polymerization and charring of the reactants. Fumes and vapors from these thermal and chemical decompositions vary widely in composition and toxicity. Surfaces that are

sufficiently hot may ignite liquid material. This hardener may be handled, shipped and stored at ambient temperature in bulk. Keep away from heat, sparks and flame. Extinguish pilot lights, cigarettes and turn off other sources of ignition prior to use and until all vapors have dissipated. Use explosion-proof ventilation to prevent vapor accumulation while in use. Wash with soap and water before eating, drinking, smoking, applying cosmetics, or using toilet facilities. Launder contaminated clothing before reuse. Contaminated leather articles including shoes cannot be decontaminated and should be destroyed to prevent reuse. Keep containers closed when not in use. Store in a cool, dry place with adequate ventilation. Keep away from open flames and high temperatures

Storage: Keep containers closed when not in use. Do not pressurize drum containers to empty. Avoid contact with hot liquid to prevent thermal burns. Containers, even those that have been emptied, can contain hazardous residues

SECTION VIII: EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Controls. The level of protection and types of controls necessary will vary depending upon potential exposure conditions.

Appropriate measures include: Adequate ventilation to control airborne concentrations. Eye washes and showers for emergency use. Personal Protective Equipment: Personal protective equipment (PPE) selections vary based on potential exposure conditions such as handling practices, concentration and ventilation. Information on the selection of eye, skin and respiratory protection for use with this material is provided below.

Eye Protection: **Chemical goggles or Safety glasses with side shields**

Skin Protection: Use protective clothing that is chemical resistant to this material. Selection of protective clothing depends on potential exposure conditions and may include gloves, boots, suits and other items. The selection(s) should take into account such factors as job task, type of exposure and durability requirements.

Respiratory If engineering controls do not maintain airborne concentrations to a level that is adequate to protect worker health, an approved respirator must be worn. Respirator selection, use and maintenance should be in accordance with the requirements of the OSHA Respiratory Protection Standard, 29 CFR 1910.134.

Types of respirator(s) to be considered in the selection process include:
Air-Purifying Respirator for Organic Vapors, Supplied-Air Respirator

SECTION IX: PHYSICAL AND CHEMICAL PROPERTIES

Appearance & Odor:	Light yellow liquid with mercaptan strong odor
Flash Point:	> 200 °F
Solubility (in Water):	Slight
Specific Gravity: 1.13	
Stability:	Stable
Vapor Density:	(Air=1) > 1 Vapor Pressure < 1
% Voc's	Not determined

Vapor pressure	low
Boiling point	Not determined

SECTION X: REACTIVITY AND STABILITY

Stability:	Material is stable under normal conditions.
Hazardous polymerization	will not occur
Conditions to Avoid:	Avoid high temperatures. Avoid heat and open flames.
Materials to Avoid:	Can react vigorously with strong oxidizing agents. Reaction with large volumes of resins may produce considerable heat and possible violent decomposition.

SECTION XI: TOXICOLOGICAL INFORMATION

Acute Toxicity:	ND	Oral toxicity >3.0 gram/kg
Mutagenicity:	ND	Skin irritation 6.62 scale 0-8

SECTION XII: ENVIRONMENTAL FATE AND EFFECTS

This section will be updated as ecological reviews are completed.

SECTION XIII: DISPOSAL CONSIDERATIONS

General:	If this material becomes a waste, it may be incinerated in accordance with applicable laws. Place in an appropriate disposal facility in compliance with local regulations. Use registered transporters.

SECTION XIV: TRANSPORT INFORMATION

US Department of Transportation Classification:
This material is listed under DOT regulations under 49 CFR Parts 171-180
DOT HAZARDOUS MATERIAL: CORROSIVE Liquid, NOS: (ZAM00100) MERCAPTAN AMINE BLEND

HAZARD CLASS: 8 UN ID: UN 1760 PACKAGING GROUP III

IATA: CARGO AIRCRAFT, <60 LITERS, PASSENGER <5 LITERS

DISCLAIMER OF LIABILITY

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☐ REVISED 1 Page ____ of ____ 2

FACILITY ID# 3 0 0 3 5 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: RAW MATERIAL STORAGE 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # J5 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: NUOSPERSE FA-192 | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☒ No 11 * If EPCRA see instructions

COMMON NAME: DISPERSING AGENT 9 | An EHS Chemical ☐ Yes ☐ No 12 *If EHS is "Yes", all amounts must be LBS

CAS # 69412-53-3 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☒ a. PURE ☐ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☐ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 18

AVERAGE DAILY AMOUNT: 250 19 | MAXIMUM DAILY AMOUNT: 500 20 | ANNUAL WASTE AMOUNT: NONE 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET ☒ c. POUNDS ☐ d. TONS 23 *If EHS, amount must be in pounds. | DAYS ON SITE: 365 DAYS 24 | LARGEST CONTAINER: 50 GAL DRUM 25

STORAGE CONTAINER (Check all that apply) 26

☐ a. ABOVEGROUND TANK	☐ e. PLASTIC DRUM	☐ i. VAT	☐ m CYLINDER	☐ q. TANK WAGON
☐ b. UNDERGROUND TANK	☐ f. NONMETALLIC DRUM	☐ I. FIBER DRUM	☐ n. GLASS CONTAINER	☐ r. RAIL CAR
☐ c. TANK INSIDE BLDG	☒ g. METAL CONTAINER	☐ I. BAG(S)	☐ o PLASTIC CONTAINER	☐ s. TOTE BIN
☐ d STEEL DRUM	☐ h. CARBOY	☐ I. BOX(S)	☐ p. IN MACH OR EQUIP	☐ t. OTHER____

STORAGE PRESSURE: ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE: ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	29	nonylphenol, branched ethoxylated 30	☐ Yes ☐ No 31	6941253-3 32
2	29	30	☐ Yes ☐ No 31	32
3	29	30	☐ Yes ☐ No 31	32
4	29	30	☐ Yes ☐ No 31	32
5	29	30	☐ Yes ☐ No 31	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

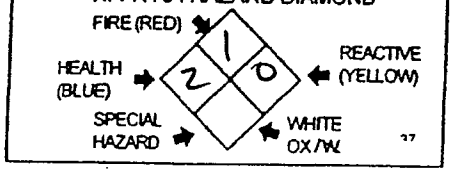
UNDOT # _____ 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS _____ 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____
If EPCRA, Please Sign Here 36

NFPA 704 HAZARD DIAMOND 37



MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Sasol Servo BV

NUOSPERSE FA 192

Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date: 02/06/2003 Reviewed on: 07/15/2002

1 Identification of substance

- Product details

- Trade name: NUOSPERSE FA 192
- Application of the substance / the preparation
  Emulsifier
  Dispersing agent, Dispersant

- Manufacturer/Supplier:
  Sasol Servo BV
  Langestraat 167 7491 AE
  P.O.Box 1 7490 AA
  DELDEN - The Netherlands
  tel: +31/74/3775000
  fax: +31/74/3775075

- Information department:
  QA/S&E
  Contact: Mr. Postma
  Tel: +31/74/3775303 or /3775307
  Fax: +31/74/3775085

2 Composition/Data on components

- Chemical characterization:

CAS No.	Description:
69412-53-3	nonylphenol, branched, ethoxylated, phosphated

- Identification number(s):
- EINECS Number: Polymer

3 Hazards identification

- Hazard description: Xi Irritant
- Information pertaining to particular dangers for man and environment
  R 38 Irritating to skin.
  R 41 Risk of serious damage to eyes.
  R 52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment
- Classification system
- NFPA-Ratings for USA
  Health = 0
  Fire = 1
  Reactivity = 0

4 First aid measures

- After inhalation Seek medical treatment in case of complaints.
- After skin contact
  Immediately wash with water and soap and rinse thoroughly.
  If skin irritation continues, consult a doctor.
- After eye contact
  Rinse opened eye for several minutes under running water. Then consult a doctor.
- After swallowing If symptoms persist consult doctor.

5 Fire fighting measures

- Suitable extinguishing agents
  Water spray, CO2, extinguishing powder, foam.
- Protective equipment: Wear fully protective suit.

USA

Sasol Servo BV

NUOSPERSE FA 192

Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date: 02/06/2003 Reviewed on: 07/15/2002

Trade name: NUOSPERSE FA 192

6 Accidental release measures

· **Person-related safety precautions:**
Wear protective equipment. Keep unprotected persons away.
· **Measures for environmental protection:**
Inform respective authorities in case of seepage into water course or sewage system.
Do not allow to enter sewers/ surface or ground water.
· **Measures for cleaning/collecting:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Dispose of the collected material according to regulations.
Use neutralizing agent.

7 Handling and storage

· **Handling**
· **Information for safe handling:**
No special precautions are necessary if used correctly.
· **Information about protection against explosions and fires:**
No special measures required.

· **Storage**
· **Requirements to be met by storerooms and receptacles:**
Unsuitable material for receptacle: carbon steel.
Suitable material for receptacles: stainless steel and plastics.
· **Information about storage in one common storage facility:** Not required.
· **Further information about storage conditions:**
Keep receptacle tightly sealed.

8 Exposure controls and personal protection

Components with limit values that require monitoring at the workplace:
Not required.

· **Additional information:**
The lists that were valid during the creation were used as basis.

· **Personal protective equipment**
· **General protective and hygienic measures**
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.
· **Breathing equipment:** Not required.
· **Protection of hands:** Protective gloves.
· **Material of gloves**
PVC
Neoprene
· **Penetration time of glove material**
The determined penetration times according to EN 374 part III are not performed under practical conditions. Therefore a maximum wearing time, which corresponds to 50% of the penetration time, is recommended.
· **Eye protection:** Face protection
· **Body protection:** Protective work clothing.

9 Physical and chemical properties

· General Information

(Contd. on page 3)

Sasol Servo BV

NUOSPERSE FA 192

Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date: 02/06/2003 Reviewed on: 07/15/2002

Trade name: NUOSPERSE FA 192

(Contd. of page 2)

- Form: Fluid
- Color: Clear
- Odor: Nearly odorless

			Value/Range	Unit	Method
· Change in condition					
· Melting point/Melting range:			-5	° C	DGF-C-IV-3A
· Boiling point/Boiling range:			> 250	° C	
· Flash point:			> 200	° C	ASTM D92
· Ignition temperature:			> 400	° C	
· Decomposition temperature:			> 150	° C	
· Danger of explosion: Product does not present an explosion hazard.					
· Density:	at	20 ° C	~ 1.1	g/cm3	DIN 53217/3
· Solubility in / Miscibility with					
· Water:			Fully miscible		
· Organic solvents:			Soluble in many organic solvents		
· pH-value: (10 g/l)	at	20 ° C	< 3		ASTM D1172
· Viscosity:					
· Dynamic:	at	25 ° C	< 4000	mPas	DIN 53015

10 Stability and reactivity

- Thermal decomposition / conditions to be avoided:
  No decomposition if used according to specifications.
- Dangerous reactions No dangerous reactions known
- Dangerous products of decomposition:
  No dangerous decomposition products known

11 Toxicological information

- Acute toxicity:

LD/LC50 values that are relevant for classification:
- LD50 Product: oral: > 5000 mg/kg (rat).

- Primary irritant effect:
- on the skin: Irritant to skin and mucous membranes.
- on the eye: Strong irritant with the danger of severe eye injury.
- Sensitization: No sensitizing effects known.

12 Ecological information

- Information about elimination (persistence and degradability):
  Biodegradability: < 80%.

Aquatic toxicity:
- fish toxicity: LC50: 15-25 mg/l (Brachydanio rerio, 96 hr., analogy)

(Contd. on page 4)

Sasol Servo BV

NUOSPERSE FA 192

Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date: 02/06/2003 Reviewed on: 07/15/2002

Trade name: NUOSPERSE FA 192

(contd. of page 3)

Behavior in sewage processing plants:
In case of judicious use the product does not cause disturbances in water purification plants, according to experiences made so far.

- General notes:
Water hazard class 1 (German Regulation) (Assessment by list): slightly hazardous for water.
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

13 Disposal considerations

- Product:
- Recommendation
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

- Uncleaned packagings:
- Recommendation:
With due observance of local regulations, for instance transport to refuse incinerator.
- Recommended cleansing agent: water, if necessary with cleansing agents.

14 Transport information

- Transport/Additional information:
Not dangerous according to the ADR/RID, IMDG and DOT specifications.

15 Regulations

- Product related hazard informations:
The product has been classified and marked in accordance with directives on hazardous materials.

- Hazard symbols: Xi Irritant

- Risk phrases:
38 Irritating to skin.
41 Risk of serious damage to eyes.
52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment

- Safety phrases:
26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
37/39 Wear suitable gloves and eye/face protection.
61 Avoid release to the environment. Refer to special instructions/Safety data sheets

- National regulations

- Water hazard class:
Water hazard class 1 (Assessment by list): slightly hazardous for water.

16 Other information

Disclaimer of liability: the information in this MSDS was obtained from sources which we believe are reliable. However, the information is

(Contd. on page 5)

Sasol Servo BV

NUOSPERSE FA 192

Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date: 02/06/2003 Reviewed on: 07/15/2002

Trade name: NUOSPERSE FA 192

(Contd. of page 4)

provided without any warranty, express or implied, regarding its correctness. The conditions or methods of handling, storage, use or disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. This MSDS was prepared and is to be used only for this product.
If the product is used as a component in another product, this MSDS information may not be applicable.
* Data compared to the previous version altered.

USA

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☐ REVISED 1 Page ____ of ____ 2

FACILITY ID# 30035 38 | BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: Raw Material Storage 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # J5 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: ANTAROX BL-240 | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☒ No 11 (* If EPCRA see instructions)

COMMON NAME: ETHOXYLATED ALCOHOL 9 | An EHS Chemical ☐ Yes ☐ No 12 (*If EHS is "Yes", all amounts must be LBS)

CAS # 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☐ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 18

AVERAGE DAILY AMOUNT: 2 19 | MAXIMUM DAILY AMOUNT: 4 20 | ANNUAL WASTE AMOUNT: NONE 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET ☒ c. POUNDS ☐ d. TONS 23 (*If EHS, amount must be in pounds.) | DAYS ON SITE: 365 DAYS 24 | LARGEST CONTAINER: 1 GAL CAN 25

STORAGE CONTAINER (Check all that apply) 26

☐ a. ABOVEGROUND TANK	☐ e. PLASTIC DRUM	☐ i. VAT	☐ m CYLINDER	☐ q. TANK WAGON
☐ b. UNDERGROUND TANK	☐ f. NONMETALLIC DRUM	☐ I. FIBER DRUM	☒ n. GLASS CONTAINER	☐ r. RAIL CAR
☐ c. TANK INSIDE BLDG	☐ g. METAL CONTAINER	☐ I. BAG(S)	☐ o PLASTIC CONTAINER	☐ s. TOTE BIN
☐ d STEEL DRUM	☐ h. CARBOY	☐ I. BOX(S)	☐ p. IN MACH OR EQUIP	☐ t. OTHER____

STORAGE PRESSURE: ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE: ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	99.5 29	ETHOXYLATED, PROPOXYLATED ALCOHOLS 30	☐ Yes ☐ No 31	68603-25-8 32
2	0.5 29	WATER 30	☐ Yes ☐ No 31	7732-18-5 32
3	29	30	☐ Yes ☐ No 31	32
4	29	30	☐ Yes ☐ No 31	32
5	29	30	☐ Yes ☐ No 31	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

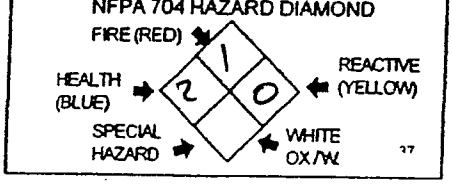
UNDOT # _____ 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS _____ 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____
If EPCRA, Please Sign Here 36

NFPA 704 HAZARD DIAMOND 37



MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

Rhodia

Material Safety Data Sheet

ANTAROX BL-240

Date Prepared: 12/27/05 **Supersedes Date: 11/22/02**

1. PRODUCT AND COMPANY DESCRIPTION

RHODIA INC.
RHODIA NOVECARE
CN 7500
8 Cedar Brook Drive
Cranbury NJ 08512-7500

Emergency Phone Numbers:
FOR EMERGENCIES INVOLVING A SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT CONTACT: CHEMTREC (800-424-9300 within the United States or 703-527-3887 for international collect calls) or Rhodia CAERS (Communication and Emergency Response System) at 800-916-3232.

For Product Information:
(800) 973-7873

Chemical Name or Synonym:
ETHOXYLATED PROPOXYLATED C8-10 ALCOHOLS

Molecular Formula:
$CH_3(CH_2)_{6-8}CH_2(C_2H_4O)_m(C_3H_6O)_nOH$

2. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS Reg Number	OSHA Hazard	Percentage
ETHOXYLATED PROPOXYLATED ALCOHOLS	68603-25-8	Y	> 99.5
WATER	7732-18-5	N	< 0.5

3. HAZARDS IDENTIFICATION

A. EMERGENCY OVERVIEW:

Physical Appearance and Odor:
clear to hazy viscous liquid, slight odor.

Warning Statements:
WARNING!! SEVERE EYE IRRITANT.

B. POTENTIAL HEALTH EFFECTS:

Acute Eye:
Irritant. Can cause redness, irritation.

Acute Skin:
Low acute dermal toxicity. Slightly irritating. May cause redness, irritation.

Acute Inhalation:
Inhalation not likely. Mists may cause upper respiratory tract irritation.

Acute Ingestion:
Practically non-toxic. Can cause nausea, diarrhea, abdominal cramps.

Chronic Effects:
This product does not contain any ingredient designated by IARC, NTP, ACGIH or OSHA as probable or suspected human carcinogens.

4. FIRST AID MEASURES

FIRST AID MEASURES FOR ACCIDENTAL:

Eye Exposure:
Hold eyelids open and flush with a steady, gentle stream of water for at least 15 minutes. Seek medical attention.

Skin Exposure:
In case of contact, immediately wash with plenty of soap and water for at least 5 minutes. Seek medical attention if irritation developes or persists. Remove contaminated clothing and shoes. Clean contaminated clothing and shoes before re-use.

Inhalation:
Inhalation is not an expected route of exposure. If respiratory irritation or distress occurs remove victim to fresh air. Seek medical attention if respiratory irritation or distress continues.

Ingestion:
If victim is conscious and alert, give 1-2 glasses of water to drink. Do not give anything by mouth to an unconscious person. Seek medical attention. Do not leave victim unattended.

MEDICAL CONDITIONS POSSIBLY AGGRAVATED BY EXPOSURE:
Skin contact may aggravate existing skin disease.

NOTES TO PHYSICIAN:
All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

Treat symptomatically. No specific antidote available.

5. FIRE FIGHTING MEASURES

FIRE HAZARD DATA:

Flash Point:
> 123 C (254 F). Flammability Class: WILL BURN.

Method Used:
Cleveland Open Cup

Flammability Limits (vol/vol%):	**Lower:**	**Upper:**
	No Data	No Data

Extinguishing Media:
Recommended (small fires): dry chemical, carbon dioxide, Recommended (large fire): alcohol foam, universal foam, water spray, Not recommended: water jet (frothing possible).

Special Fire Fighting Procedures:
Firefighters should wear NIOSH/MSHA approved self-contained breathing apparatus and full protective clothing.

Unusual Fire and Explosion Hazards:
Product will burn under fire conditions.

Hazardous Decomposition Materials (Under Fire Conditions):
oxides of carbon

6. ACCIDENTAL RELEASE MEASURES

Evacuation Procedures and Safety:
Wear appropriate protective gear for the situation. See Personal Protection information in Section 8.

Containment of Spill:
Follow procedure described below under Cleanup and Disposal of Spill.

Cleanup and Disposal of Spill:
Absorb with an inert absorbent. Sweep up and place in an appropriate closed container (see Section 7: Handling and Storage). Clean up residual material by washing area with water. Collect washings for disposal.

Environmental and Regulatory Reporting:
Do not flush to drain. Spills may be reportable to the National Response Center (800-424-8802) and to state and/or local agencies.

7. HANDLING AND STORAGE

Minimum/Maximum Storage Temperatures:
9 to 49 C (48 to 120 F)

Handling:
Avoid breathing vapors and mists. Avoid direct or prolonged contact with skin and eyes. Use nonsparking tools and grounded/bonded equipment and containers when transferring.

Ethylene oxide may collect in container head space. Although concentrations are expected to remain below established exposure limits, provide adequate ventilation when accessing or working with open containers and tanks.

Storage:
Store in tightly closed containers. Store in an area that is dry, well-ventilated, away from ignition sources, away from incompatible materials (see Section 10. Stability and Reactivity).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Introductory Remarks:
These recommendations provide general guidance for handling this product. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. While developing safe handling procedures, do not overlook the need to clean equipment and piping systems for maintenance and repairs. Waste resulting from these procedures should be handled in accordance with Section 13: Disposal Considerations.

Assistance with selection, use and maintenance of worker protection equipment is generally available from equipment manufacturers.

Exposure Guidelines:
No exposure limits were found for this product or any of its ingredients.

Engineering Controls:
Where engineering controls are indicated by use conditions or a potential for excessive exposure exists, the following traditional exposure control techniques may be used to effectively minimize employee exposures: general area dilution/exhaust ventilation.

Respiratory Protection:
When respirators are required, select NIOSH/MSHA approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or industrial recommendations.

For reasonably foreseeable industrial end uses of this material, respiratory protection should not be necessary.

Eye/Face Protection:
Eye and face protection requirements will vary dependent upon work environment conditions and material handling practices. Appropriate ANSI Z87 approved equipment should be selected for the particular use intended for this material.

Eye contact should be prevented through use of chemical safety glasses with side shields or splash proof goggles. An emergency eye wash must be readily accessible to the work area.

Skin Protection:
Skin contact should be minimized through use of gloves and suitable long-sleeved clothing (i.e., shirts and pants). Consideration must be given both to durability as well as permeation resistance.

Work Practice Controls:
Personal hygiene is an important work practice exposure control measure and the following general measures should be taken when working with or handling this material:

(1) Do not store, use, and/or consume foods, beverages, tobacco products, or cosmetics in areas where this material is stored.
(2) Wash hands and face carefully before eating, drinking, using tobacco, applying cosmetics, or using the toilet.
(3) Wash exposed skin promptly to remove accidental splashes or contact with this material.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical properties here represent typical properties of this product. Contact the business area using the Product Information phone number in Section 1 for its exact specifications.

Physical Appearance:
clear to hazy viscous liquid.

Odor:
slight odor.

pH:
6 to 8 at 10 wt/wt%.

Specific Gravity:
0.987 at 25 C (77 F).

Water Solubility:
soluble

Melting Point Range:
Not Available

Boiling Point Range:
Not Available

Vapor Pressure:
< 0.01 mmHg at 25 C (77 F)

Vapor Density:
Not Available

Percent Volatiles by Volume:
< 0.5

10. STABILITY AND REACTIVITY

Chemical Stability:
This material is stable under normal handling and storage conditions described in Section 7.

Conditions To Be Avoided:
heat
open flame
spark

Materials/Chemicals To Be Avoided:
strong oxidizing agents
strong reducing agents

The Following Hazardous Decomposition Products Might Be Expected:

Decomposition Type: thermal
oxides of carbon

Hazardous Polymerization Will Not Occur.

Avoid The Following To Inhibit Hazardous Polymerization:
not applicable

11. TOXICOLOGICAL INFORMATION

Acute Eye Irritation:
Toxicological Information and Interpretation:
eye - eye irritation, rabbit. Moderately irritating.

Acute Skin Irritation:
Toxicological Information and Interpretation:
skin - skin irritation, rabbit. Slightly irritating.

Acute Dermal Toxicity:
No test data found for product.

Acute Respiratory Irritation:
No test data found for product.

Acute Inhalation Toxicity:
No test data found for product.

Acute Oral Toxicity:
Toxicological Information and Interpretation:
LD50 - lethal dose 50% of test species, 2.4 ml/kg, rat.

Chronic Toxicity:
This product does not contain any substances that are considered by OSHA, NTP, IARC or ACGIH to be "probable" or "suspected" human carcinogens.

No additional test data found for product.

12. ECOLOGICAL INFORMATION

Ecotoxicological Information:
No data found for product.

Chemical Fate Information:
Not readily biodegradable.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method:
Chemical additions, processing or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate or otherwise inappropriate. Please be advised that state and local requirements for waste disposal may be more restrictive or otherwise different from federal laws and regulations. Consult state and local regulations regarding the proper disposal of this material.

Container Handling and Disposal:
Any containers or equipment used should be decontaminated immediately after use.

EPA Hazardous Waste - NO

14. TRANSPORTATION INFORMATION

Transportation Status: IMPORTANT! Statements below provide additional data on listed DOT classification.
The listed Transportation Classification does not address regulatory variations due to changes in package size, mode of shipment or other regulatory descriptors.

US Department of Transportation
Shipping Name:
NOT REGULATED

15. REGULATORY INFORMATION

Inventory Status

Inventory	Status
UNITED STATES (TSCA)	Y
CANADA (DSL)	Y
EUROPE (EINECS/ELINCS)	P
AUSTRALIA (AICS)	Y
JAPAN (MITI)	Y
SOUTH KOREA (KECL)	Y

Y = All ingredients are on the inventory.
E = All ingredients are on the inventory or exempt from listing.
P = One or more ingredients fall under the polymer exemption or are on the no longer polymer list. All other ingredients are on the inventory or exempt from listing.
N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing.

FEDERAL REGULATIONS

Inventory Issues:
All functional components of this product are listed on the TSCA Inventory.

SARA Title III Hazard Classes:

Fire Hazard	- NO
Reactive Hazard	- NO
Release of Pressure	- NO
Acute Health Hazard	- YES
Chronic Health Hazard	- NO

STATE REGULATIONS:
This product contains the following components that are regulated under California Proposition 65:

Ingredient Name	Cancer List	Reprod. List	No Sign. Risk Lvl (ug/day) California	RPI
DIOXANE	Y	N	30	ND
ETHYLENE OXIDE	Y	Y	2	ND
PROPYLENE OXIDE	Y	N	2	ND

16. OTHER INFORMATION

National Fire Protection Association Hazard Ratings--NFPA(R):

2	Health Hazard Rating--Moderate
1	Flammability Rating--Slight
0	Instability Rating--Minimal

National Paint & Coating Hazardous Materials Identification System--HMIS(R):

2	Health Hazard Rating--Moderate
1	Flammability Rating--Slight
0	Reactivity Rating--Minimal

Reason for Revisions:
Change and/or addition made to Section 12, Regulatory Review and Update.

Key Legend Information:
ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
TLV - Threshold Limit Value
PEL - Permissable Exposure Limit
TWA - Time Weighted Average
STEL - Short Term Exposure Limit
NTP - National Toxicology Program
IARC - International Agency for Research on Cancer
ND - Not determined
RHODIA - Rhodia Established Exposure Limits

Disclaimer:

The information herein is given in good faith but no warranty, expressed or implied, is made.

**** End of MSDS Document ****

HAZARDOUS MATERIALS INVENTORY FORM

FORM 3

☐ ADD ☐ DELETE ☐ REVISED 1 Page _____ of _____ 2

FACILITY ID# 3 0 0 3 5 38 BUSINESS NAME ADVANCED CHEMISTRY & TECHNOLOGY, INC. 3

I. FACILITY INFORMATION

CHEMICAL LOCATION: RAW MATERIAL STORAGE 4

CONFIDENTIAL LOCATION EPCRA ☐ Yes ☒ No 5 | MAP # 1 6 | GRID # J 5 7

II. CHEMICAL INFORMATION

CHEMICAL NAME: SURFYNOL 465 SURFACTANT | WASTE ☐ Yes 8 | TRADE SECRET ☐ Yes ☐ No 11 * If EPCRA see instructions

COMMON NAME: SURFACTANT 9 | An EHS Chemical ☐ Yes ☐ No 12 *If EHS is "Yes", all amounts must be LBS

CAS # 9014-85-1 10 | FIRE CODE HAZARD CLASSES (supplied by GGFD) 13

TYPE (Check one item only) ☒ a. PURE ☐ b. MIXTURE ☐ c. WASTE 14 | RADIOACTIVE ☐ Yes ☒ No 15 | CURIES 16

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 17 | FED HAZARD CATEGORIES ☐ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 18

AVERAGE DAILY AMOUNT: 10 19 | MAXIMUM DAILY AMOUNT: 5 20 | ANNUAL WASTE AMOUNT: NONE 21 | STATE WASTE CODE 22

UNITS ☐ a. GALLONS ☐ b. CUBIC FEET ☒ c. POUNDS ☐ d. TONS 23 *If EHS, amount must be in pounds. | DAYS ON SITE: 365 DAYS 24 | LARGEST CONTAINER: 1 GAL CAN 25

STORAGE CONTAINER (Check all that apply) 26

☐ a. ABOVEGROUND TANK	☐ e. PLASTIC DRUM	☐ i. VAT	☐ m CYLINDER	☐ q. TANK WAGON
☐ b. UNDERGROUND TANK	☐ f. NONMETALLIC DRUM	☐ I. FIBER DRUM	☐ n. GLASS CONTAINER	☐ r. RAIL CAR
☐ c. TANK INSIDE BLDG	☒ g. METAL CONTAINER	☐ I. BAG(S)	☐ o PLASTIC CONTAINER	☐ s. TOTE BIN
☐ d STEEL DRUM	☐ h. CARBOY	☐ I. BOX(S)	☐ p. IN MACH OR EQUIP	☐ t. OTHER_____

STORAGE PRESSURE: ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 27

STORAGE TEMPERATURE: ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 28

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	100 29	Ethoxylated 2,4,7,9-tetramethyl 5 decyn 4,7 diol 30	☐ Yes ☒ No 31	9014-85-1 32
2	29	30	☐ Yes ☐ No 31	32
3	29	30	☐ Yes ☐ No 31	32
4	29	30	☐ Yes ☐ No 31	32
5	29	30	☐ Yes ☐ No 31	32

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

PLACARDING INFORMATION

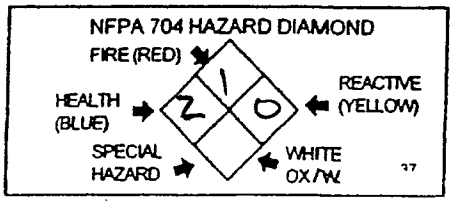
UNDOT # _____ 33
Refer to shipping papers or MSDS

DOT HAZARD CLASS _____ 34
Refer to shipping papers or MSDS

EPCRA ☐ YES ☐ NO 35

X _____
If EPCRA, Please Sign Here 36

NFPA 704 HAZARD DIAMOND 37



MAKE AS MANY COPIES OF CHEMICAL INVENTORY FORM AS NEEDED

AIR PRODUCTS

Material Safety Data Sheet

Version 1.14
Revision Date 11/06/2005

MSDS Number 300000004762
Print Date 09/24/2007

1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	SURFYNOL ® 465 SURFACTANT
Product Use Description	:	Surfactant
Company	:	Air Products and Chemicals,Inc 7201 Hamilton Blvd. Allentown, PA 18195-1501
Telephone	:	1-800-345-3148 Chemicals 1-800-752-1597 Gases and Electronic Chemicals
Emergency telephone number	:	800-523-9374 USA 01-610-481-7711 International

2. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS Number	Concentration (Weight)
Ethoxylated 2,4,7,9-tetramethyl 5 decyn-4,7-diol	9014-85-1	100%

Ethoxylated Acetylenic Diols.

3. HAZARDS IDENTIFICATION

Emergency Overview

Mild skin irritant.
Severe eye irritant.

Potential Health Effects

Inhalation	:	Very toxic by inhalation of spray mist and/or aerosols Industrial chemicals such as this material with acute aerosol toxicity values as shown in Section 11 would not be classified as toxic by inhalation according to US domestic and international transport regulations.
Eye contact	:	Severe eye irritation.
Skin contact	:	Mild skin irritation.
Chronic Health Hazard	:	This product contains no listed carcinogens according to IARC, ACGIH, NTP and/or OSHA in concentrations of 0.1 percent or greater. Component has caused the following reproductive effects in laboratory animals however, the effects are not sufficient to characterize the material as a reproductive toxin: Fertility. Subchronic exposure of this material or component in test animals has caused abnormalities in the following organ(s): Liver

Exposure Guidelines

Target Organs : Eyes.

Aggravated Medical Condition

Eye disease

4. FIRST AID MEASURES

General advice : Seek medical advice. If breathing has stopped or is labored, give assisted respirations. Supplemental oxygen may be indicated. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation immediately.

Eye contact : Rinse immediately with plenty of water also under the eyelids for at least 20 minutes. Remove contact lenses.

Skin contact : Wash off immediately with plenty of water for at least 20 minutes. Wash off with soap and water. Immediately remove contaminated clothing, and any extraneous chemical, if possible to do so without delay.

Ingestion : Never give anything by mouth to an unconscious person. Prevent aspiration of vomit. Turn victim's head to the side.

Inhalation : Move to fresh air.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : Alcohol-resistant foam.
Carbon dioxide (CO_2).
Dry chemical.
Dry sand.
Limestone powder.

Specific hazards : Incomplete combustion may form carbon monoxide. Downwind personnel must be evacuated. Burning produces obnoxious and toxic fumes.

Special protective equipment for fire-fighters : Use personal protective equipment. Wear self contained breathing apparatus for fire fighting if necessary.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Use self-contained breathing apparatus and chemically protective clothing. Wear suitable protective clothing, gloves and eye/face protect on. Evacuate personnel to safe areas.

Environmental precautions : Construct a dike to prevent spreading.

Methods for cleaning up : Approach suspected leak areas with caution. Contact Air Products' Emergency Response Center for advice. Place in appropriate chemical waste container.

Additional advice : Evacuate area and do not approach spilled product. If possible, stop flow of

product.

7. HANDLING AND STORAGE

Handling

Emergency showers and eye wash stations should be readily accessible. Adhere to work practice rules established by government regulations. Avoid contact with eyes. Use personal protective equipment. When using, do not eat, drink or smoke.

Storage

Keep containers tightly closed in a dry, cool and well-ventilated place.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering measures

Provide readily accessible eye wash stations and safety showers.
Provide natural or explosion-proof ventilation adequate to ensure concentrations are kept below exposure limits.

Personal protective equipment

Respiratory protection	:	Not required for properly ventilated areas.
Hand protection	:	Neoprene gloves. Nitrile rubber. The breakthrough time of the selected glove(s) must be greater than the intended use period.
Eye protection	:	Chemical resistant goggles must be worn.
Skin and body protection	:	Long sleeve shirts and trousers without cuffs.
Environmental exposure controls	:	Construct a dike to prevent spreading.
Special instructions for protection and hygiene	:	Provide readily accessible eye wash stations and safety showers. Wash at the end of each workshift and before eating, smoking or using the toilet.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color	:	Light yellow.
Odor	:	Mild.
Vapor pressure	:	0.14 mmHg at 21 °C
Density	:	64.925 lb/ft3 (1.04 g/cm3) at 70 °F (21 °C)

pH	: 7
Boiling point/range	: 784 °F (418 °C)
Flash point	: > 110 °C

10. STABILITY AND REACTIVITY

Stability	: Stable under normal conditions.
Materials to avoid	: Dehydrating Agents. Reactive metals (e.g. sodium, calcium, zinc etc.). Materials reactive with hydroxyl compounds. Oxidizing agents.
Hazardous decomposition products	: Heating above 65C in the presence of strong base can liberate acetylene and Methyl Isobutyl Ketone. Carbon monoxide. Carbon dioxide (CO2). Aldehydes. Flammable hydrocarbon fragments (e.g., acetylene).

11. TOXICOLOGICAL INFORMATION

Acute Health Hazard

Ingestion	: LD50 : 6,300 mg/kg Species : (Rat)
Inhalation	: LC50 (1 h) : > 2 mg/l Species : (Rat)
Skin.	: LD50 : > 2,000 mg/kg Species : Rabbit. Method : Estimated.
Eye irritation/corrosion	: *Severe eye irritation.*
Acute dermal irritation/corrosion	: Mild skin irritation.

Chronic Health Hazard

Adult rats were orally administered this material or a component in the diet at the following concentrations 0, 500, 1000, and 2000 mg/kg/day. The offspring were then treated at the same dose levels as their parents for 91 days. Litter size at birth and mean weanling weights were decreased in the 2000 mg/kg/day group. After 91 day on test, a significant increase in liver weights with accompanying microscopic changes was observed in both sexes in the high-dose group. The oral NOEL was 1000 mg/kg/day for both the reproduction and repeated dose phases of this experiment. Rats were orally administered this material or a component in the diet for 28 days at concentrations of 0,

750, 1500, 3000, and 6000 ppm. No adverse effects were seen at any of the dose levels. The oral No-Observed Effect-Level (NOEL) was 6000 ppm. This material or a component was administered orally to dogs in gelatin capsules at dose levels of 0, 200, 400, and 600 mg/kg/day for 91 days. All dogs survived for the duration of this study with few clinical signs. The only adverse effect observed was an increase in liver weights at 400 and 600 mg/kg/day.

12. ECOLOGICAL INFORMATION

Ecotoxicity effects

Aquatic toxicity	: EC50 (72 h) : 93 mg/l Species : Skeletonema costatum.
Toxicity to other organisms	: No data available.

Persistence and degradability

Mobility	: No data available.
Bioaccumulation	: No data s available on the product itself.

13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products	: Contact supplier if guidance is required.
Contaminated packaging	: Dispose of container and unused contents in accordance with federal, state, and local requirements.

14. TRANSPORT INFORMATION

CFR

not regulated

IATA

not regulated

IMDG

not regulated

CTC

not regulated

Further Information
Not dangerous goods

15. REGULATORY INFORMATION

OSHA Hazard Communication Standard (29 CFR 1910.1200) Hazard Class(es)
Irritant.

Country	Regulatory list	Notification
USA	TSCA	Included on inventory.
EU	EINECS	Included on EINECS inventory or polymer substance, monomers included on EINECS inventory or no longer polymer.
Canada	DSL	Included on inventory.
Australia	AICS	Included on inventory.
Japan	ENCS	Included on inventory.
South Korea	ECL	Included on inventory.
China	SEPA	Included on inventory.
Philippines	PICCS	Included on inventory.

EPA SARA Title III Section 312 (40 CFR 370) Hazard Classification:
Acute Health Hazard

EPA SARA Title III Section 313 (40 CFR 372) Component(s) above 'de minimus' level:
None.

US. California Safe Drinking Water & Toxic Enforcement Act (Proposition 65)
This product does not contain any chemicals known to State of California to cause cancer, birth defects or any other harm.

WHMIS Hazard Classification
Toxic Material Causing Other Toxic Effects

16. OTHER INFORMATION

HMIS Rating

Health	: 2
Flammability	: 1
Physical hazard	: 0

Prepared by : Air Products and Chemicals, Inc. Global EH&S Product Safety Department

For additional information, please visit our Product Stewardship web site at
http://www.airproducts.com/productstewardship/

750, 1500, 3000, and 6000 ppm. No adverse effects were seen at any of the dose levels. The oral No-Observed Effect-Level (NOEL) was 6000 ppm. This material or a component was administered orally to dogs in gelatin capsules at dose levels of 0, 200, 400, and 600 mg/kg/day for 91 days. All dogs survived for the duration of this study with few clinical signs. The only adverse effect observed was an increase in liver weights at 400 and 600 mg/kg/day.

12. ECOLOGICAL INFORMATION

Ecotoxicity effects

Aquatic toxicity	: EC50 (72 h) : 93 mg/l Species : Skeletonema costatum.
Toxicity to other organisms	: No data available.

Persistence and degradability

Mobility	: No data available
Bioaccumulation	: No data is available on the product itself.

13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products	: Contact supplier if guidance is required.
Contaminated packaging	: Dispose of container and unused contents in accordance with federal, state, and local requirements.

14. TRANSPORT INFORMATION

CFR

not regulated

IATA

not regulated

IMDG

not regulated

CTC

not regulated

Further Information
Not dangerous goods

15. REGULATORY INFORMATION

OSHA Hazard Communication Standard (29 CFR 1910.1200) Hazard Class(es)
Irritant.

Country	Regulatory list	Notification
USA	TSCA	Included on Inventory.
EU	EINECS	Included on EINECS inventory or polymer substance, monomers included on EINECS inventory or no longer polymer.
Canada	DSL	Included on Inventory.
Australia	AICS	Included on Inventory.
Japan	ENCS	Included on Inventory.
South Korea	ECL	Included on Inventory.
China	SEPA	Included on Inventory.
Philippines	PICCS	Included on Inventory.

EPA SARA Title III Section 312 (40 CFR 370) Hazard Classification:
Acute Health Hazard

EPA SARA Title III Section 313 (40 CFR 372) Component(s) above 'de minimus' level:
None.

US. California Safe Drinking Water & Toxic Enforcement Act (Proposition 65)
This product does not contain any chemicals known to State of California to cause cancer, birth defects or any other harm.

WHMIS Hazard Classification
Toxic Material Causing Other Toxic Effects

16. OTHER INFORMATION

HMIS Rating

Health	: 2
Flammability	: 1
Physical hazard	: 0

Prepared by : Air Products and Chemicals, Inc. Global EH&S Product Safety Department

For additional information, please visit our Product Stewardship web site at
http://www.airproducts.com/productstewardship/