WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF AIR QUALITY
601 57th Street, SE
Charleston, WV 25304
Phone: (304) 926-0475
www.dep.wv.gov/daq

PERMIT DETERMINATION FORM (PDF)

FOR AGENCY USE ONLY: PLANT I.D. # _____

PDF # _____ PERMIT WRITER: _____

1. NAME OF APPLICANT (AS REGISTERED WITH THE WV SECRETARY OF STATE'S OFFICE):
SAL Chemical Company Inc.

2. NAME OF FACILITY (IF DIFFERENT FROM ABOVE):
SAL Chemical

3. NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM (**NAICS**) CODE:
4 2 4 6 9 0

4A. MAILING ADDRESS:
3036 Birch Drive
Weirton, WV 26062

4B. PHYSICAL ADDRESS:
3036 Birch Drive
Half Moon Industrial Park
Weirton, WV 26062

5A. DIRECTIONS TO FACILITY (PLEASE PROVIDE **MAP** AS **ATTACHMENT A**):

- **From Charleston, Clarksburg, Fairmont, WV:** Take Interstate 79 North to Interstate 70 West to Washington, PA. Take State Route 18 West to US Highway 22 West to Weirton, WV. Take the State Route 2/Main Street/Weirton Exit. At the signal make a left, then go to signal light and make a right into Halfmoon Industrial Park, follow signs to SAL Chemical.
- **From Huntington, Parkersburg, Wheeling, WV:** Take Ohio State Route 7 North to US Highway 22 East to Weirton, WV. Take the State Route 2/Main Street/Weirton Exit. At the signal make a left, then go to the signal light and make a right into Halfmoon Industrial Park, follow the signs to SAL Chemical.

5B. NEAREST ROAD:
West Virginia State Route 2

5C. NEAREST CITY OR TOWN:
Weirton

5D. COUNTY:
Brooke

5E. UTM NORTHING (KM):
4471.52

5F. UTM EASTING (KM):
531.81

5G. UTM ZONE:
17

6A. INDIVIDUAL TO CONTACT IF MORE INFORMATION IS REQUIRED:
Jason Mattern

6B. TITLE:
Quality & Regulatory Compliance Manager

6C. TELEPHONE:
(304) 748-8214

6D. FAX:
(304) 797-8751

6E. E-MAIL:
jmattern@salchem.com

7A. DAQ PLANT I.D. NO. (FOR AN EXISTING FACILITY ONLY):
0 0 9 - 0 0 0 4 5

7B. PLEASE LIST ALL CURRENT 45CSR13, 45CSR14, 45CSR19 AND/OR TITLE V (45CSR30) PERMIT NUMBERS ASSOCIATED WITH **THIS** PROCESS (FOR AN EXISTING FACILITY ONLY):
45CSR13-5.4

7C. IS THIS PDF BEING SUBMITTED AS THE RESULT OF AN ENFORCEMENT ACTION? IF YES, PLEASE LIST:
Yes, result of an audit.

8A. TYPE OF EMISSION SOURCE (CHECK ONE):
☒ **NEW SOURCE** ☐ **ADMINISTRATIVE UPDATE**
☐ **MODIFICATION** ☐ **OTHER** (PLEASE EXPLAIN IN 11B)

8B. IF ADMINISTRATIVE UPDATE, DOES DAQ HAVE THE APPLICANT'S CONSENT TO UPDATE THE EXISTING PERMIT WITH THE INFORMATION CONTAINED HEREIN?
☐ **YES** ☐ **NO**

9. IS *DEMOLITION* OR PHYSICAL *RENOVATION* AT AN EXISTING FACILITY INVOLVED? ☐ **YES** ☒ **NO**

10A. DATE OF ANTICIPATED INSTALLATION OR CHANGE:
6/1/2017 .

10B. DATE OF ANTICIPATED START-UP:
_____/_____/20____.

11A. PLEASE PROVIDE A **DETAILED PROCESS FLOW DIAGRAM** SHOWING EACH PROPOSED OR MODIFIED PROCESS EMISSION POINT AS **ATTACHMENT B.**

11B. PLEASE PROVIDE A **DETAILED PROCESS DESCRIPTION** AS **ATTACHMENT C.**

12. PLEASE PROVIDE **MATERIAL SAFETY DATA SHEETS (MSDS)** FOR ALL MATERIALS PROCESSED, USED OR PRODUCED AS **ATTACHMENT D.** FOR CHEMICAL PROCESSE, PLEASE PROVIDE A MSDS FOR EACH COMPOUND EMITTED TO AIR.

13A. **REGULATED AIR POLLUTANT EMISSIONS:**

⇒ **FOR A NEW FACILITY,** PLEASE PROVIDE PLANT WIDE EMISSIONS BASED ON THE POTENTIAL TO EMIT (PTE) FOR THE FOLLOWING AIR POLLUTANTS INCLUDING ALL PROCESSES.

⇒ **FOR AN EXISTING FACILITY,** PLEASE PROVIDE THE PROPOSED CHANGE IN EMISSIONS BASED ON THE PTE OF ALL PROCESS CHANGES FOR THE FOLLOWING AIR POLLUTANTS.

PTE FOR A GIVEN POLLUTANT IS TYPICALLY BEFORE AIR POLLUTION CONTROL DEVICES AND IS COLLECTED BASED ON THE MAXIMUM DESIGN CAPACITY OF PROCESS EQUIPMENT.

POLLUTANT	HOURLY PTE (LB/HR)	YEARLY PTE (TON/YR) (HOURLY PTE MULTIPLIED BY 8760 HR/YR) DIVIDED BY 2000 LB/TON
PM	0	0
PM_{10}	0	0
VOCs	376 PPH	0.19 TPY
CO	0	0
NO_x	0	0
SO_2	0	0
Pb	0	0
HAPs (AGGREGATE AMOUNT)	720 PPH	0.36 TPY
TAPs (INDIVIDUALLY)*	0	0
OTHER (INDIVIDUALLY)*	0	0

* ATTACH ADDITIONAL PAGES AS NEEDED

13B. PLEASE PROVIDE ALL **SUPPORTING CALCULATIONS** AS **ATTACHMENT E.**

CALCULATE AN HOURLY AND YEARLY PTE OF EACH PROCESS EMISSION POINT (SHOWN IN YOUR DETAILED PROCESS FLOW DIAGRAM) FOR ALL AIR POLLUTANTS LISTED ABOVE INCLUDING INDIVIDUAL HAP'S (LISTED IN SECTION 112[b] OF THE 1990 CAAA), TAP'S (LISTED IN 45CSR27), AND OTHER AIR POLLUTANTS (E.G. POLLUTANTS LISTED IN TABLE 45-13A OF 45CSR13, MINERAL ACIDS PER 45CSR7, ETC.).

14. **CERTIFICATION OF DATA**

I, JASON MATTERN (*TYPE NAME*) ATTEST THAT ALL THE REPRESENTATIONS CONTAINED IN THIS APPLICATION, OR APPENDED HERETO, ARE TRUE, ACCURATE, AND COMPLETE TO THE BEST OF MY KNOWLEDGE BASED ON INFORMATION AND BELIEF AFTER REASONABLE INQUIRY, AND THAT I AM A ***RESPONSIBLE OFFICIAL*** (*PRESIDENT, VICE PRESIDENT, SECRETARY OR TREASURER, GENERAL PARTNER OR SOLE PROPRIETOR*) OF THE APPLICANT.

SIGNATURE OF RESPONSIBLE OFFICIAL: Jason Mattern

TITLE: QUALITY & REGULATORY COMPLIANCE MANAGER DATE: MAY /22/2017.

THE DEFINITION OF THE PHRASE '*RESPONSIBLE OFFICIAL***' CAN BE FOUND AT 45CSR13, SECTION 2.23.

NOTE: PLEASE CHECK ENCLOSED ATTACHMENTS:

☒ **ATTACHMENT A** ☒ **ATTACHMENT B** ☒ **ATTACHMENT C** ☒ **ATTACHMENT D** ☐ **ATTACHMENT E**

RECORDS ON ALL CHANGES ARE REQUIRED TO BE KEPT AND MAINTAINED ON-SITE FOR TWO (2) YEARS.

THE PERMIT DETERMINATION FORM WITH THE INSTRUCTIONS CAN BE FOUND ON DAQ'S PERMITTING SECTION WEB SITE:

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KEY MAP OF COUNTIES

All routes are provided by West Virginia (WV) Department of Transportation. Urban Areas, corporation lines, and population data are from the U.S. Census Bureau for census years 2000 and 2010. Contributing sources include United States (U.S.) National Park Service, U.S. Forest Service, U.S. Geological Survey, WV Department of Environmental Protection, WV Division of Forestry, WV Division of Natural Resources, WV GIS Technical Center, WV Health Care Authority, WV Legislative Services, and WVU Natural Resource Analysis Center.

For further details please contact:

West Virginia Department of Transportation
Division of Highways
Planning Division
Geospatial Transportation Information Section
1900 Kanawha Blvd. East,
Building 5, Room A-459
Charleston, WV 25305
(304) 558-2118
Map sales: (304) 558-0898

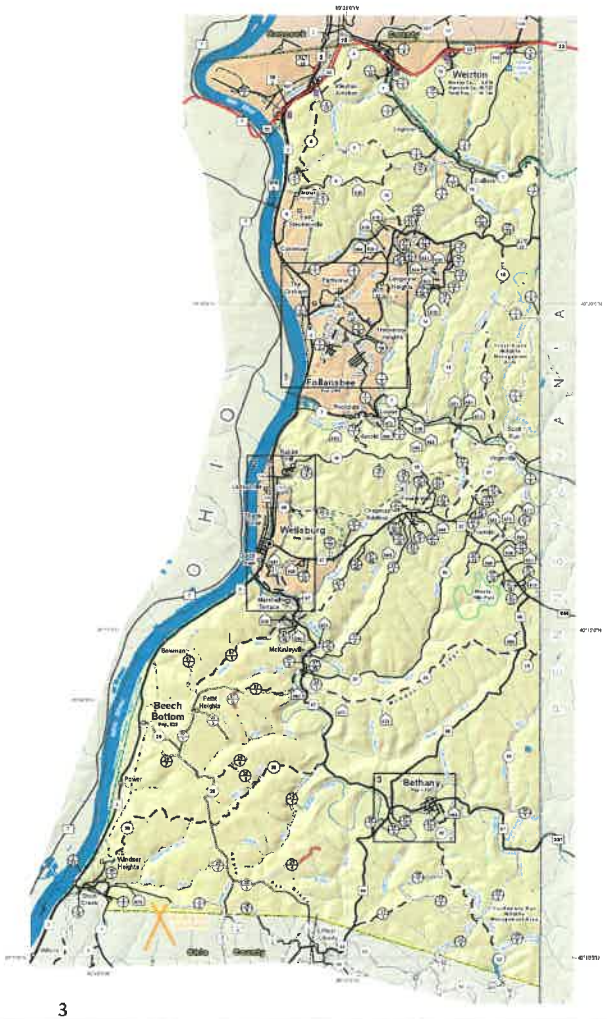
Coordinate System: North American Datum of 1983, Universal Transverse Mercator Zone 17N (NAD_1983_UTM_Zone_17N)

This map is an illustration and is not intended for use in direct measurement of real features on the surface of the earth or any other engineering design. The size of objects and distances between them are exaggerated for ease of use only. This map does not contain all or even most of the features found on the face of the earth in any given location. It only depicts those features found in the legend within its geographic area. The intended use of this map is for planning and simple location of features to within several hundred feet of their correct position on the face of the earth.

Last revision date: June 2016

SCALE OF INSETS

0 1,000 2,000 4,000 8,000
Feet



3

LEGEND

ROADS AND ROADWAY FEATURES
SURFACE TYPES
Paved Road
Brushwood Road - Low Type
Gravel or Stone Road
Graded and Drained Road
Soil Surface Road - Dirt
Trails Road
Unimproved Road

HIGHWAY SIGN SYSTEMS
Interstate Route
US Numbered Highway
WV Numbered Highway
WV County Route
WV Scenic Access Route (WASR)
Federal Aid Interstate (FAIS)
WV State Park and Forest Route
Key Routes
Interchange Exits

STRUCTURES
Tunnel

AIRPORTS AND RAILROADS
Airport Runway
Railroad

WVDOT FACILITIES
WV DOT County Headquarters
Park and Ride
Rest Area

DRAINAGE
Streams
Major Rivers
Lakes
Intermittent water

BOUNDARIES
County Boundary
State Line
Urban Areas
County Seat
Populated Places
Incorporated Places
Tax District

EDUCATIONAL AND PUBLIC SERVICE
Hospital
College and Educational Institution
County Courthouse

CONSERVATION AND RECREATION
National Wildlife Refuge
U.S. Fish and Wildlife Service
Wildlife Management Area
City or County Park
National Forests
State Park or Forest
Historic Place
Trails to Trails

2016 GENERAL HIGHWAY MAP
BROOKE COUNTY
WEST VIRGINIA

PREPARED BY
WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
PLANNING DIVISION
IN COOPERATION WITH
US DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

1 inch = 1 mile

SAL CHEMICAL
The Quality Leader in Chemical Distribution

Permit Determination 2017

SAL CHEMICAL COMPANY INC.

3036 Birch Drive
Weirton, WV 26062

SAL CHEMICAL COMPANY INC.

PERMIT DETERMINATION

SAL CHEMICAL
The Quality Leader in Chemical Distribution

RELEASED MAY, 2017 FOR

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF AIR QUALITY

601 57TH STREET, SE

CHARLESTON, WV 25304

SAL CHEMICAL
PERMIT DETERMINATION

TABLE OF CONTENTS

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2.0 ATTACHMENTS

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PM_{10}	0	0
VOCs	376 PPH	0.19 TPY
CO	0	0
NO_x	0	0
SO_2	0	0
Pb	0	0
HAPs (AGGREGATE AMOUNT)	720 PPH	0.36 TPY
TAPs (INDIVIDUALLY)*	0	0
OTHER (INDIVIDUALLY)*	0	0

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SIGNATURE OF RESPONSIBLE OFFICIAL: _____

TITLE: QUALITY & REGULATORY COMPLIANCE MANAGER DATE: MAY /22/2017.

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SAL CHEMICAL

PERMIT DETERMINATION

ATTACHMENT A

BROOKE COUNTY HIGHWAY MAP

SAL CHEMICAL
The Quality Leader in Chemical Distribution

SAL CHEMICAL

PERMIT DETERMINATION

ATTACHMENT B

DETAILED PROCESS FLOW DIAGRAM

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The Quality Leader in Chemical Distribution

SAL CHEMICAL PERMIT DETERMINATION
ATTACHMENT B - DETAILED PROCESS FLOW DIAGRAM LIQUIDS

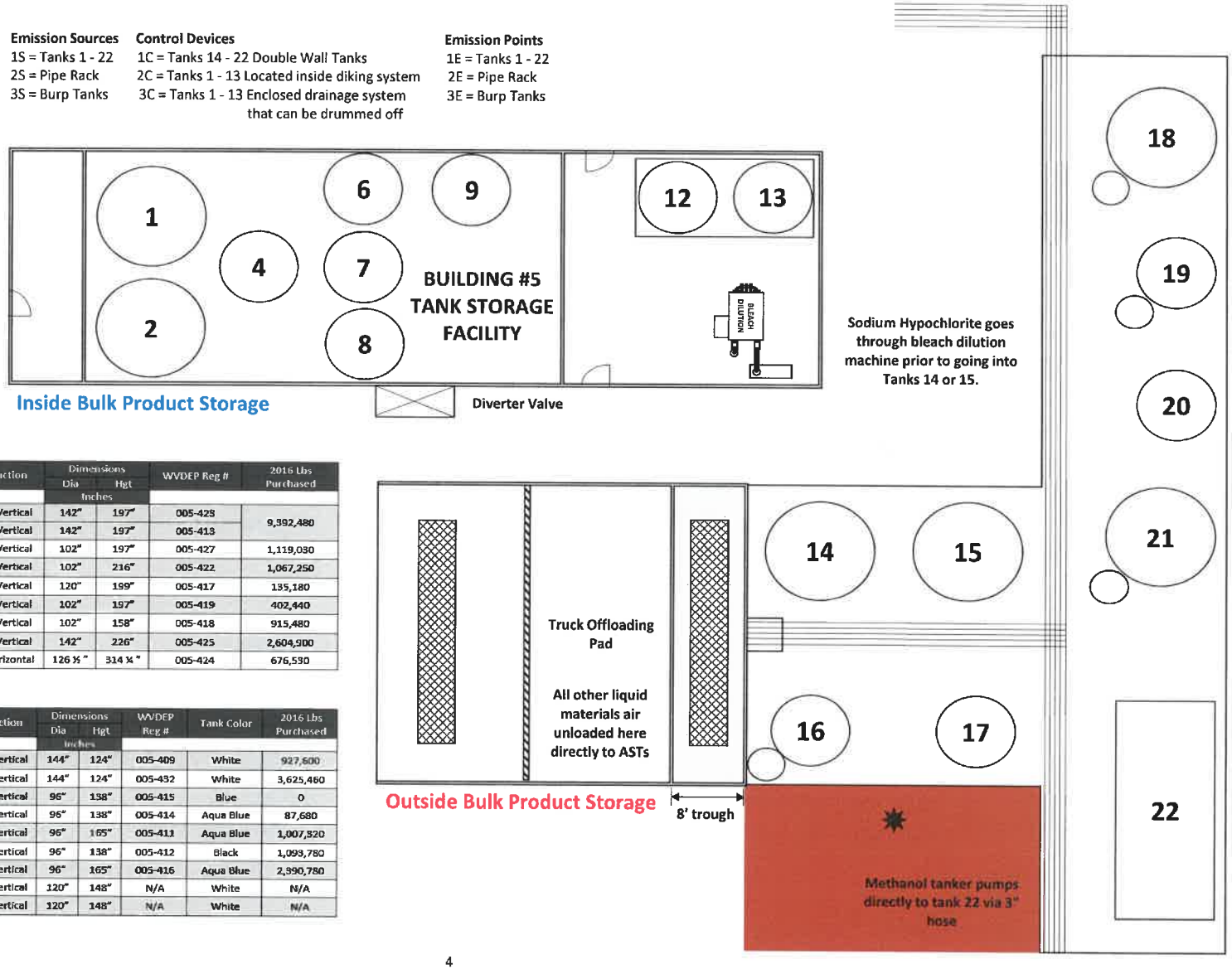
SAL CHEMICAL
The Quality Leader in Chemical Distribution

LEGEND
- Burp Tank
- Future Tank Area
- Drain
- Light Pole
- Pipe Rack

Emission Sources
1S = Tanks 1 - 22
2S = Pipe Rack
3S = Burp Tanks

Control Devices
1C = Tanks 14 - 22 Double Wall Tanks
2C = Tanks 1 - 13 Located inside diking system
3C = Tanks 1 - 13 Enclosed drainage system that can be drummed off

Emission Points
1E = Tanks 1 - 22
2E = Pipe Rack
3E = Burp Tanks



TANK #	Product	Capacity (Gal)	Install Yr	Construction	Dimensions Dia (Inches)	Dimensions Hgt (Inches)	WVDEP Reg #	2016 Lbs Purchased
Outside Bulk Product Storage								
14	Sodium Hypochlorite	8,700	2014	HDLPE, Vertical	142"	197"	005-428	9,392,480
15	Sodium Hypochlorite	8,700	2014	HDLPE, Vertical	142"	197"	005-413	
16	Ferric Chloride	4,500	2014	HDLPE, Vertical	102"	197"	005-427	1,119,030
17	Hydrofluosilicic Acid	5,000	2014	HDLPE, Vertical	102"	216"	005-422	1,067,250
18	Phosphoric Acid	6,500	2013	HDLPE, Vertical	120"	199"	005-417	135,180
19	Hydrofluoric Acid	4,500	2013	HDLPE, Vertical	102"	197"	005-419	402,440
20	Sulfuric Acid	3,500	2013	HDLPE, Vertical	102"	158"	005-418	915,480
21	Hydrochloric Acid	10,000	2013	HDLPE, Vertical	142"	226"	005-425	2,604,900
22	Methanol	15,000	2014	Steel, Horizontal	126 ½ "	314 ¼ "	005-424	676,530

* Containment – All tanks are double wall
* Discharge – All tanks discharge from the top
* Tank Color – All tanks are white in color

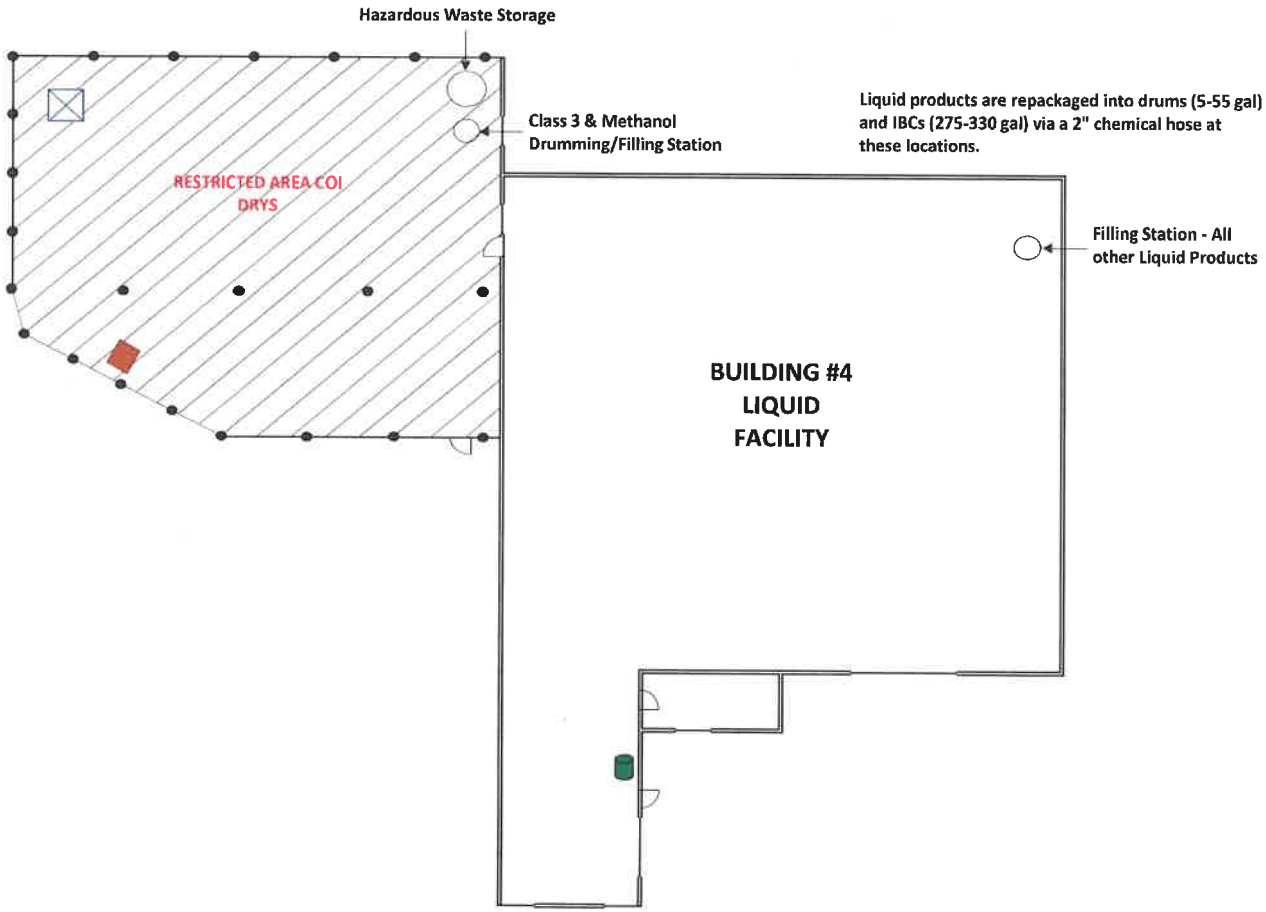
TANK #	Product	Capacity (Gal)	Install Yr	Construction	Dimensions Dia (Inches)	Dimensions Hgt (Inches)	WVDEP Reg #	Tank Color	2016 Lbs Purchased
Inside Bulk Product Storage									
1	Caustic Soda	6,000	2006	HDLPE, Vertical	144"	124"	005-409	White	927,600
2	Caustic Soda	6,000	2006	HDLPE, Vertical	144"	124"	005-432	White	3,625,460
4	Ferrous Chloride	5,000	1999	HDLPE, Vertical	96"	138"	005-415	Blue	0
6	Hyper Ion 1090	5,000	1999	HDLPE, Vertical	96"	138"	005-414	Aqua Blue	87,680
7	Aluminum Sulfate	6,000	1996	HDLPE, Vertical	96"	165"	005-411	Aqua Blue	1,007,520
8	PAX XL8	5,000	1992	HDLPE, Vertical	96"	138"	005-412	Black	1,093,780
9	Sodium Bisulfite	6,000	1997	HDLPE, Vertical	96"	165"	005-416	Aqua Blue	2,390,780
12	Water-Hypo Blending	6,000	2003	HDLPE, Vertical	120"	148"	N/A	White	N/A
13	Water-Hypo Blending	6,000	2006	HDLPE, Vertical	120"	148"	N/A	White	N/A

* Containment – All tanks are located in a dike
* Discharge – All tanks discharge from the bottom

SAL CHEMICAL PERMIT DETERMINATION
ATTACHMENT B - DETAILED PROCESS FLOW DIAGRAM CLASS 3 LIQUIDS

SAL CHEMICAL
The Quality Leader in Chemical Distribution

LEGEND
- ASTs
- Floor Drain
- Restricted Area
- Spill Kit
- Sump



Building #4 Liquid Facility	
Class 3 Liquids	2016 Pounds
Alcohol Isopropyl	48,360
Ethylene Glycol	292,780
Methyl Ethyl Ketone	38,540
Methyl Isobutyl Ketone	50,560
M/S Stoddard	47,440
PM Acetate	109,140
Solvent 100	25,020
Xylene	38,300

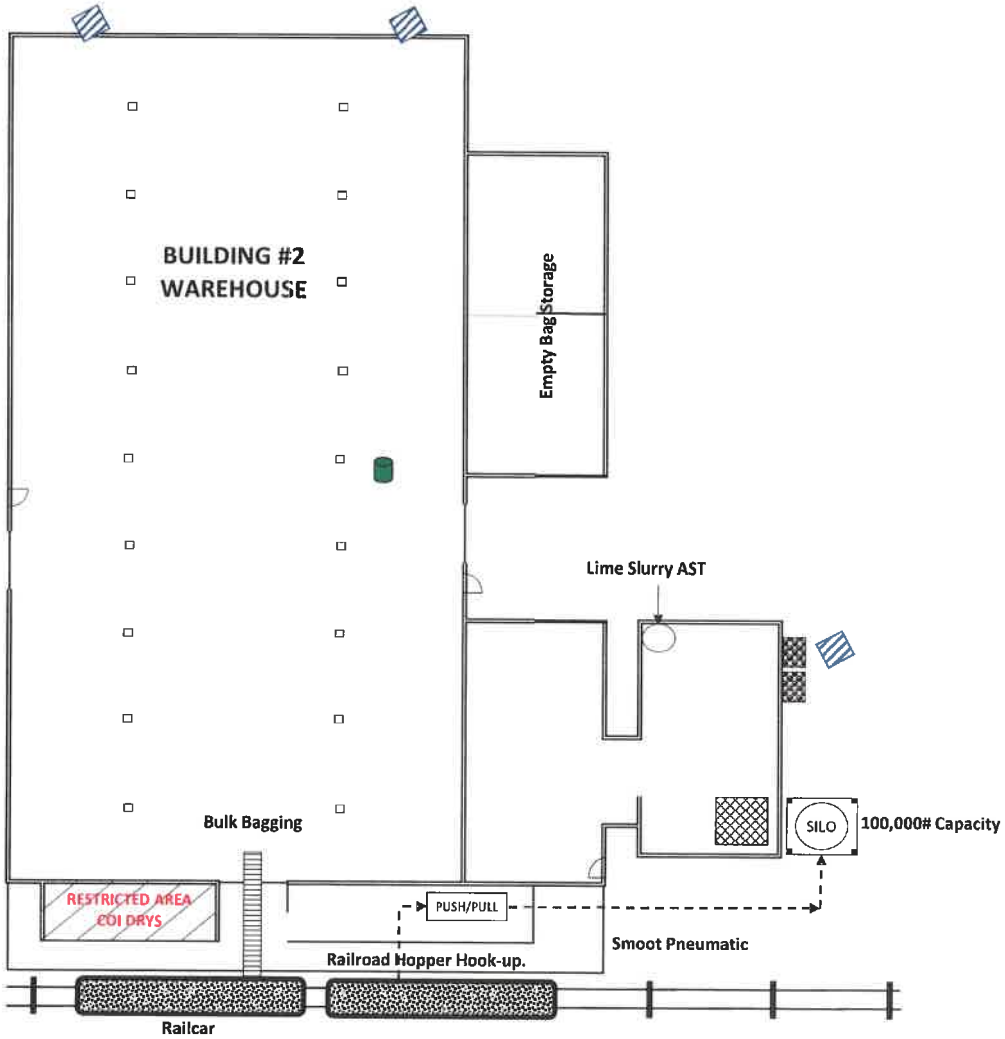
SAL CHEMICAL PERMIT DETERMINATION
ATTACHMENT B - DETAILED PROCESS FLOW DIAGRAM DRY MATERIALS

SAL CHEMICAL
The Quality Leader in Chemical Distribution

LEGEND
- Briquette Machine
- Propane Storage
- Railroad Track
- Restricted Area
- Spill Kit
- Stormwater Catch Basin
- Transloader Belt

BUILDING #2 WAREHOUSE			
Product	Bagging Room Pounds	SuperSack or Briquette Pounds	2016 Total Pounds
Calcium Chloride Flake (Dowflake)	4,350,300	3,406,000[1]	7,756,300
Calcium Chloride Pellet (Peladow)	2,667,200	0	2,667,200
Potassium Chloride			1,429,760
Salt	0	2,585,100[1]	11,077,570
Soda Ash Dense	950,150	1,226,600[2]	2,176,750
Soda Ash Light	2,585,100	0	2,585,100

SuperSack[1] Briquette[2]



SAL CHEMICAL PERMIT DETERMINATION
ATTACHMENT B - DETAILED PROCESS FLOW DIAGRAM DRY MATERIALS

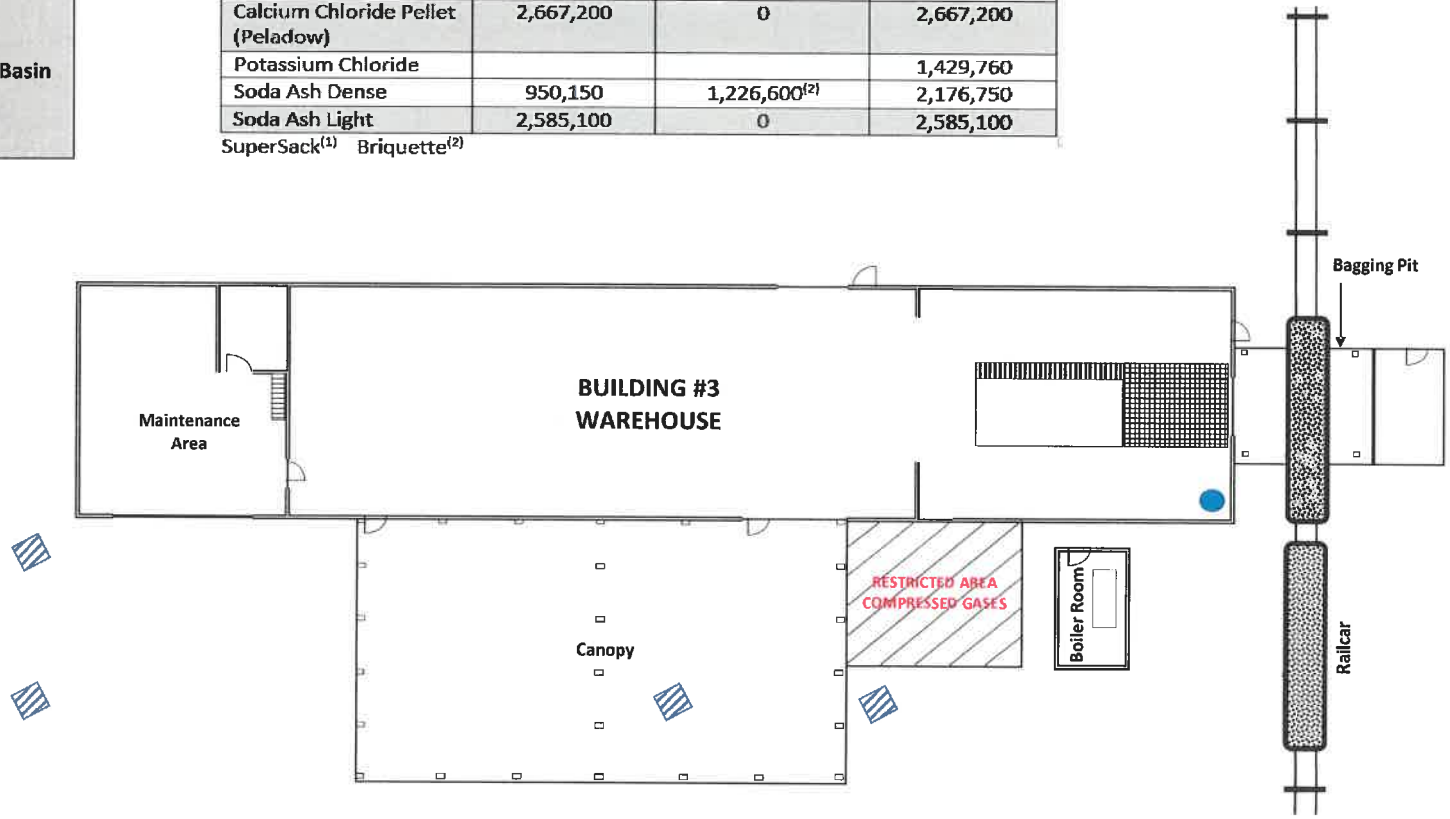
SAL CHEMICAL
The Quality Leader in Chemical Distribution

LEGEND

- Bagging Machine
- Railroad Track
- Restricted Area
- Stormwater Catch Basin
- Waste Water Tank

BUILDING #3 WAREHOUSE			
Product	Bagging Room Pounds	SuperSack or Briquette Pounds	2016 Total Pounds
Calcium Chloride Flake (Dowflake)	4,350,300	3,406,000[1]	7,756,300
Calcium Chloride Pellet (Peladow)	2,667,200	0	2,667,200
Potassium Chloride			1,429,760
Soda Ash Dense	950,150	1,226,600[2]	2,176,750
Soda Ash Light	2,585,100	0	2,585,100

SuperSack[1] Briquette[2]



SAL CHEMICAL

PERMIT DETERMINATION

ATTACHMENT C

DETAILED PROCESS DESCRIPTION

SAL CHEMICAL
The Quality Leader in Chemical Distribution

SAL CHEMICAL PERMIT DETERMINATION
ATTACHMENT C – DETAILED PROCESS DESCRIPTION

Detailed Process Flow Description for Liquid Materials

LIQUID MATERIALS
Aluminum Sulfate
Caustic Soda (Sodium Hydroxide)
Ferric Chloride 38%
Ferrous Chloride
Hyper-Ion 1090
Hydrochloric Acid 20° 31%[1]
Hydrofluoric Acid 49%[1]
Hydrofluosilicic Acid 23%
Methanol[1][2]
PAX-XL 8
Phosphoric Acid 75%
Sodium Bisulfite
Sodium Hypochlorite 15%
Sulfuric Acid 66° 93%

[1] Hazardous Air Pollutants (HAPs)
[2] Volatile Organic Compounds (VOCs)

- Bulk tanker trucks back into the offloading pad adjacent to Building #5 and unload product pneumatically into dedicated two inch (2") lines which transfer the product into dedicated Aboveground Storage Tanks (ASTs). Offloading connections at this point are either 2" to 4 bolt flange or 2" to PVC quick connects.
- **Methanol** – Bulk tanker trucks back into the offloading pad adjacent to Building #5 and unload via pump into a dedicated Aboveground Storage Tank (AST) via a dedicated three inch (3") quick connect.
- **Sodium Hypochlorite** – Bulk tanker trucks back into the offloading pad adjacent to Building #5 and unload 16% strength product pneumatically through a two inch (2") quick connect fitting through a dedicated dilution machine. Once the product is diluted to 12.5 to 13.5%, the material flows into one (1) of two (2) dedicated Hypo Aboveground Storage Tanks (ASTs).
- **From ASTs** – All material is gravity fed to a filling station in Building #4 (Liquid Building). At the filling station, various containers (i.e., 5, 15, 30, & 55 gallon drums and 275/330 gallon IBCs) are filled via a two inch (2") chemical hose. Once filled, the containers are sealed and prepped for DOT shipment. There are two (2) filling stations, one (1) for Methanol and one (1) for all other products.

Detailed Process Flow Description for Class 3 Liquid Materials

CLASS 3 LIQUID MATERIALS
Diesel Fuel
Ethylene Glycol Ether EB[1][2]
Isopropyl Alcohol
Methyl Ethyl Ketone[1][2]
Methyl Isobutyl Ketone[1][2]
Mineral Spirits Stoddard
PM Acetate
Solvent 100
Xylene[1][2]

[1] Hazardous Air Pollutants (HAPs)
[2] Volatile Organic Compounds (VOCs)

- All Class 3 liquid materials are drummed directly from a supplier dropped tanker. No Aboveground Storage Tanks (ASTs) are utilized for any of these products. Supplier dropped tanker is positioned on the offloading pad adjacent to Building #5 and hooked to a dedicated solvent line via a two inch (2") quick connect.
- From the supplier dropped tanker, the Class 3 liquids are gravity fed to the solvent drumming area located under Building #4's canopy area where the material is drummed into various containers (i.e., 5, & 55 gallon drums or 330 gallon IBCs) via a two inch (2") hose.
- **Diesel Fuel** – Diesel Fuel supplier (J.Allen Fuel or Riley Petroleum) will fill through a three inch (3") quick connect. SAL Chemical drivers will fuel up their power units through a standard fuel pump nozzle. This product is NOT repackaged at SAL Chemical.

Detailed Process Flow Description for Dry Materials

DRY MATERIALS
Calcium Chloride Flake – Dowflake
Calcium Chloride Pellet – Peladow
Potassium Chloride
Salt
Soda Ash Dense
Soda Ash Light

- **Bagging Operations (all products except Salt)** – Railcars are positioned over the bagging pit in Building #3. The railcar bottom hopper, normally around 28"x32", is opened and material gravity feeds into a 5'x10' receiving hopper. From this hopper, product is packaged into 50 pound (50Lb) bags via a four inch (4") spout.
- **Bulk Bagging Operations (Soda Ash Light, Salt, Calcium Chloride Flake)** – Railcar or bulk-pneumatic truck will bottom drop material onto a trans-loader. The trans-loader belt transfers the material a short distance where the material is bulk-bagged into 48"x48"x52" supersacs.
- **Briquetting Operations (Soda Ash Dense)** – The railcar bottom hopper is sealed to a pull/push smoot pneumatic conveying system and blown into a 100,000 pound (100,000Lb) capacity silo. Once in the silo, this material will be fed into our briquetting manufacturing process via a closed helix transfer system.

SAL CHEMICAL

PERMIT DETERMINATION

ATTACHMENT D

SAFETY DATA SHEETS (SDSs)

SAL CHEMICAL
The Quality Leader in
Chemical Distribution

SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: EXXONMOBIL™ IPA
Product Description: Oxygenated Hydrocarbon

Intended Use: Solvent

Distributed by:
SAL Chemical
3036 Birch Drive,
Weirton, WV 26062
304.748.8200 - Phone
304.797.8751 - Fax

COMPANY IDENTIFICATION

Supplier: EXXONMOBIL CHEMICAL COMPANY
Chemicals PS&RA – SDSs
Mail Code: N1.1A.505
P.O. BOX 3272
HOUSTON, TX. 77253-3272 USA

24 Hour Health Emergency	(800) 726-2015
Transportation Emergency Phone	(800) 424-9300 or (703) 527-3887 CHEMTREC
Product Technical Information	(832) 624-8500
Supplier General Contact	(832) 624-8500

SECTION 2 HAZARDS IDENTIFICATION

This material is hazardous according to regulatory guidelines (see (M)SDS Section 15).

CLASSIFICATION:

Flammable liquid: Category 2.
Eye irritation: Category 2A. Specific target organ toxicant (central nervous system): Category 3.

LABEL:
Pictogram:

Signal Word: Danger

Hazard Statements:
H225: Highly flammable liquid and vapor. H319: Causes serious eye irritation. H336: May cause drowsiness or

dizziness.

Precautionary Statements:
P210: Keep away from heat/sparks/open flames/hot surfaces. -- No smoking. P233: Keep container tightly closed. P240: Ground / bond container and receiving equipment. P241: Use explosion-proof electrical, ventilating, and lighting equipment. P242: Use only non-sparking tools. P243: Take precautionary measures against static discharge. P261: Avoid breathing mist / vapours. P264: Wash skin thoroughly after handling. P271: Use only outdoors or in a well-ventilated area. P280: Wear protective gloves and eye / face protection.P303 + P361 + P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. P304 + P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing. P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P312: Call a POISON CENTER or doctor/physician if you feel unwell. P337 + P313: If eye irritation persists: Get medical advice/attention. P370 + P378: In case of fire: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish.P403 + P235: Store in a well-ventilated place. Keep cool. P405: Store locked up.P501: Dispose of contents and container in accordance with local regulations.

Contains: ISOPROPYL ALCOHOL

Other hazard information:

HAZARD NOT OTHERWISE CLASSIFIED (HNOC): None as defined under 29 CFR 1910.1200.

PHYSICAL / CHEMICAL HAZARDS
Material can release vapors that readily form flammable mixtures. Vapor accumulation could flash and/or explode if ignited.

HEALTH HAZARDS
May be irritating to the skin, nose, throat, and lungs. May cause central nervous system depression. If swallowed, may be aspirated and cause lung damage.

ENVIRONMENTAL HAZARDS
No significant hazards.

NFPA Hazard ID:	Health:	2	Flammability:	3	Reactivity:	0
HMIS Hazard ID:	Health:	2*	Flammability:	3	Reactivity:	0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

This material is defined as a substance.

Hazardous Substance(s) or Complex Substance(s) required for disclosure

Name	CAS#	Concentration*	GHS Hazard Codes
ISOPROPYL ALCOHOL	67-63-0	100 %	H225, H305, H336, H319(2A)

* All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.

As per paragraph (i) of 29 CFR 1910.1200, formulation is considered a trade secret and specific chemical identity and exact percentage (concentration) of composition may have been withheld. Specific chemical identity and exact percentage composition will be provided to health professionals, employees, or designated representatives in accordance with applicable provisions of paragraph (i).

SECTION 4 FIRST AID MEASURES

INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

SKIN CONTACT

Wash contact areas with soap and water. Remove contaminated clothing. Launder contaminated clothing before reuse.

EYE CONTACT

Flush thoroughly with water for at least 15 minutes. Get medical assistance.

INGESTION

Seek immediate medical attention. Do not induce vomiting.

NOTE TO PHYSICIAN

If ingested, material may be aspirated into the lungs and cause chemical pneumonitis. Treat appropriately.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

Inappropriate Extinguishing Media: Straight Streams of Water

FIRE FIGHTING

Fire Fighting Instructions: Evacuate area. If a leak or spill has not ignited, use water spray to disperse the vapors and to protect personnel attempting to stop a leak. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Unusual Fire Hazards: Highly flammable. Vapors are flammable and heavier than air. Vapors may travel across the ground and reach remote ignition sources causing a flashback fire danger. Hazardous material. Firefighters should consider protective equipment indicated in Section 8.

Hazardous Combustion Products: Incomplete combustion products, Oxides of carbon, Smoke, Fume

FLAMMABILITY PROPERTIES

Flash Point [Method]: 12°C (54°F) [ASTM D-56]
Flammable Limits (Approximate volume % in air): LEL: 2.0 UEL: 13
Autoignition Temperature: >350°C (662°F) [Technical literature]

SECTION 6 ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. US regulations require reporting releases of this material to the environment which exceed the applicable reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The National Response Center can be reached at (800)424-8802.

PROTECTIVE MEASURES

Avoid contact with spilled material. Warn or evacuate occupants in surrounding and downwind areas if required due to toxicity or flammability of the material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

SPILL MANAGEMENT

Land Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do it without risk. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Prevent entry into waterways, sewer, basements or confined areas. A vapor suppressing foam may be used to reduce vapors. Use clean non-sparking tools to collect absorbed material. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Large Spills: Water spray may reduce vapor; but may not prevent ignition in closed spaces. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do it without risk. Eliminate sources of ignition. Warn other shipping. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Dike far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7 HANDLING AND STORAGE

HANDLING

Avoid contact with eyes. Prevent exposure to ignition sources, for example use non-sparking tools and explosion-proof equipment. Potentially toxic/irritating fumes/vapors may be evolved from heated or agitated material. Use only with adequate ventilation. Use proper bonding and/or ground procedures. However, bonding and grounds may not eliminate the hazard from static accumulation. Peroxides may form upon prolonged storage. Exposure to light, heat or air significantly increases peroxide formation. If evaporated to a

residue, the mixture of peroxides residue and material vapor may explode when exposed to heat or shock. Prevent small spills and leakage to avoid slip hazard.

Loading/Unloading Temperature: [Ambient]

Transport Temperature: [Ambient]
Transport Pressure: [Ambient]

Static Accumulator: This material is not a static accumulator.

STORAGE

Ample fire water supply should be available. A fixed sprinkler/deluge system is recommended. Keep container closed. Handle containers with care. Open slowly in order to control possible pressure release. Store in a cool, well-ventilated area. Outside or detached storage preferred. Storage containers should be grounded and bonded. Fixed storage containers, transfer containers and associated equipment should be grounded and bonded to prevent accumulation of static charge.
Storage Temperature: [Ambient]
Storage Pressure: [Ambient]

Suitable Containers/Packing: Drums; Tank Cars; Tank Trucks; Tankers; Barges
Suitable Materials and Coatings (Chemical Compatibility): Carbon Steel; Stainless Steel; Polyester; Teflon; Polyethylene; Polypropylene; Copper Bronze; Epoxy Phenolic; Zinc; Vinyls
Unsuitable Materials and Coatings: Aluminum; Cast iron; Polystyrene; Ethylene-proplyene-diene monomer (EPDM); Monel; Butyl Rubber; Natural Rubber

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMIT VALUES

Exposure limits/standards (Note: Exposure limits are not additive)

Substance Name	Form	Limit / Standard			NOTE	Source
ISOPROPYL ALCOHOL		TWA	980 mg/m3	400 ppm	N/A	OSHA Z1
ISOPROPYL ALCOHOL		STEL	400 ppm		N/A	ACGIH
ISOPROPYL ALCOHOL		TWA	200 ppm		N/A	ACGIH

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

Biological limits

Substance	Specimen	Sampling Time	Limit	Determinant	Source
ISOPROPYL ALCOHOL	Urine	End of shift at end of work wk	40 mg/l	Acetone	ACGIH BELs (BEIs)

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

Adequate ventilation should be provided so that exposure limits are not exceeded. Use

explosion-proof ventilation equipment.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

Half-face filter respirator

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

If prolonged or repeated contact is likely, chemical resistant gloves are recommended. If contact with forearms is likely, wear gauntlet style gloves.

Eye Protection: Chemical goggles are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

If prolonged or repeated contact is likely, chemical, and oil resistant clothing is recommended.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

ENVIRONMENTAL CONTROLS

Comply with applicable environmental regulations limiting discharge to air, water and soil. Protect the environment by applying appropriate control measures to prevent or limit emissions.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

GENERAL INFORMATION

Physical State: Liquid
Form: Clear
Color: Colorless

Odor: Alcohol
Odor Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 20 °C): 0.786 [With respect to water] [Calculated]
Density (at 20 °C): 785 kg/m³ (6.55 lbs/gal, 0.79 kg/dm³) [ISO 12185]
Flammability (Solid, Gas): N/D
Flash Point [Method]: 12°C (54°F) [ASTM D-56]
Flammable Limits (Approximate volume % in air): LEL: 2.0 UEL: 13
Autoignition Temperature: >350°C (662°F) [Technical literature]
Boiling Point / Range: 82°C (180°F) - 83°C (181°F) [ASTM D1078]
Decomposition Temperature: N/D
Vapor Density (Air = 1): > 1 at 101 kPa [Calculated]
Vapor Pressure: 4.3 kPa (32.25 mm Hg) at 20 °C [Calculated]
[In-house method]
Evaporation Rate (n-butyl acetate = 1): 3.9 [In-house method]
pH: N/D
Log Pow (n-Octanol/Water Partition Coefficient): 0.05 [Technical literature]
Solubility in Water: Complete
Viscosity: [N/D at 40 °C] | 2.66 cSt (2.66 mm2/sec) at 25°C [ASTM D7042]
Oxidizing Properties: See Hazards Identification Section.

OTHER INFORMATION

Freezing Point: N/D
Melting Point: -89°C (-128°F) [Technical literature]
Molecular Weight: 60 G/MOLE [Calculated]
Hygroscopic: Yes
Coefficient of Thermal Expansion: 0.00117 V/VDEGC [In-house method]

SECTION 10 STABILITY AND REACTIVITY

REACTIVITY: See sub-sections below.

STABILITY: Under normal storage conditions peroxides may accumulate and explode when subjected to heat or shock. Distillation or evaporation increases peroxide formation and increases the explosion hazard.

CONDITIONS TO AVOID: Avoid heat, sparks, open flames and other ignition sources.

MATERIALS TO AVOID: Aldehydes, Amines, Strong oxidizers, Caustics, Chlorinated Compounds, Alkanolamines

HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

POSSIBILITY OF HAZARDOUS REACTIONS: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS

Hazard Class	Conclusion / Remarks
Inhalation	

Acute Toxicity: (Rat) 6 hour(s) LC50 > 25000 mg/m3 (Vapor)	Minimally Toxic. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 403
Irritation: No end point data for material.	Elevated temperatures or mechanical action may form vapors, mist, or fumes which may be irritating to the eyes, nose, throat, or lungs.
Ingestion	
Acute Toxicity (Rat): LD50 5840 mg/kg	Minimally Toxic. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 401
Skin	
Acute Toxicity (Rabbit): LD50 13900 mg/kg	Minimally Toxic. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 402
Skin Corrosion/Irritation: Data available.	May dry the skin leading to discomfort and dermatitis. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 404
Eye	
Serious Eye Damage/Irritation: Data available.	Irritating and will injure eye tissue. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 405
Sensitization	
Respiratory Sensitization: No end point data for material.	Not expected to be a respiratory sensitizer.
Skin Sensitization: Data available.	Not expected to be a skin sensitizer. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 406
Aspiration: Data available.	May be harmful if swallowed and enters airways. Based on physico-chemical properties of the material.
Germ Cell Mutagenicity: Data available.	Not expected to be a germ cell mutagen. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 471 474 476
Carcinogenicity: Data available.	Not expected to cause cancer. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 451
Reproductive Toxicity: Data available.	Not expected to be a reproductive toxicant. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 414 415 416
Lactation: No end point data for material.	Not expected to cause harm to breast-fed children.
Specific Target Organ Toxicity (STOT)	
Single Exposure: No end point data for material.	May cause drowsiness or dizziness.
Repeated Exposure: Data available.	Not expected to cause organ damage from prolonged or repeated exposure. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 413

OTHER INFORMATION

For the product itself:

Vapor concentrations above recommended exposure levels are irritating to the eyes and the respiratory tract, may cause headaches and dizziness, are anesthetic and may have other central nervous system effects.
Prolonged and/or repeated skin contact with low viscosity materials may defat the skin resulting in possible irritation and dermatitis.
Small amounts of liquid aspirated into the lungs during ingestion or from vomiting may cause chemical pneumonitis or pulmonary edema.

The following ingredients are cited on the lists below: None.

--REGULATORY LISTS SEARCHED--

1 = NTP CARC	3 = IARC 1	5 = IARC 2B
2 = NTP SUS	4 = IARC 2A	6 = OSHA CARC

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY

Material -- Not expected to demonstrate chronic toxicity to aquatic organisms.

MOBILITY

Material -- Expected to remain in water or migrate through soil.

PERSISTENCE AND DEGRADABILITY

Biodegradation:

Material -- Expected to be readily biodegradable.

Hydrolysis:

Material -- Transformation due to hydrolysis not expected to be significant.

Photolysis:

Material -- Transformation due to photolysis not expected to be significant.

Atmospheric Oxidation:

Material -- Expected to degrade at a moderate rate in air

OTHER ECOLOGICAL INFORMATION

VOC (EPA Method 24): 6.551 lbs/gal

ECOLOGICAL DATA

Ecotoxicity

Test	Duration	Organism Type	Test Results
Aquatic - Acute Toxicity	96 hour(s)	Pimephales promelas	LC50 9640 mg/l: data for the material
Aquatic - Acute Toxicity	24 hour(s)	Daphnia magna	LC50 9714 mg/l: data for the material
Aquatic - Acute Toxicity	8 day(s)	Alga	LOEC 1000 mg/l: data for the material

Persistence, Degradability and Bioaccumulation Potential

Media	Test Type	Duration	Test Results
Octanol-Water	Calculated		log Kow 0.05 : material
Water	Ready Biodegradability	5 day(s)	Percent Degraded 53 : material

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products.

REGULATORY DISPOSAL INFORMATION

RCRA Information: Disposal of unused product may be subject to RCRA regulations (40 CFR 261). Disposal of the used product may also be regulated due to ignitability, corrosivity, reactivity or toxicity as determined by the Toxicity Characteristic Leaching Procedure (TCLP). Potential RCRA characteristics: IGNITABILITY.

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

SECTION 14 TRANSPORT INFORMATION

LAND (DOT)

Proper Shipping Name: ISOPROPANOL
Hazard Class & Division: 3
ID Number: 1219
Packing Group: II
ERG Number: 129
Label(s): 3
Transport Document Name: UN1219, ISOPROPANOL, 3, PG II

LAND (TDG)

Proper Shipping Name: ISOPROPANOL
Hazard Class & Division: 3
UN Number: 1219
Packing Group: II

SEA (IMDG)

Proper Shipping Name: ISOPROPANOL
Hazard Class & Division: 3
EMS Number: F-E, S-D
UN Number: 1219
Packing Group: II
Marine Pollutant: No
Label(s): 3
Transport Document Name: UN1219, ISOPROPANOL, 3, PG II, (12°C c.c.)

SEA (MARPOL 73/78 Convention - Annex II)

Product Name: ISOPROPYL ALCOHOL
Ship type: NA

Pollution category: Z

AIR (IATA)

Proper Shipping Name: ISOPROPYL ALCOHOL
Hazard Class & Division: 3
UN Number: 1219
Packing Group: II
Label(s) / Mark(s): 3
Transport Document Name: UN1219, ISOPROPYL ALCOHOL, 3, PG II

SECTION 15 REGULATORY INFORMATION

OSHA HAZARD COMMUNICATION STANDARD: This material is considered hazardous in accordance with OSHA HazCom 2012, 29 CFR 1910.1200.

Listed or exempt from listing/notification on the following chemical inventories: AICS, DSL, ENCS, IECSC, KECI, PICCS, TCSI, TSCA

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302

SARA (311/312) REPORTABLE HAZARD CATEGORIES: Fire. Immediate Health. Delayed Health.

SARA (313) TOXIC RELEASE INVENTORY:

Chemical Name	CAS Number	Typical Value
ISOPROPYL ALCOHOL	67-63-0	100 %

Isopropyl alcohol is reportable under SARA 313 only when it is manufactured in a strong acid process.

The following ingredients are cited on the lists below:

Chemical Name	CAS Number	List Citations
ISOPROPYL ALCOHOL	67-63-0	1, 4, 13, 16, 17, 18, 19

--REGULATORY LISTS SEARCHED--

1 = ACGIH ALL	6 = TSCA 5a2	11 = CA P65 REPRO	16 = MN RTK
2 = ACGIH A1	7 = TSCA 5e	12 = CA RTK	17 = NJ RTK
3 = ACGIH A2	8 = TSCA 6	13 = IL RTK	18 = PA RTK
4 = OSHA Z	9 = TSCA 12b	14 = LA RTK	19 = RI RTK
5 = TSCA 4	10 = CA P65 CARC	15 = MI 293	

Code key: CARC=Carcinogen; REPRO=Reproductive

SECTION 16 OTHER INFORMATION

N/D = Not determined, N/A = Not applicable

KEY TO THE H-CODES CONTAINED IN SECTION 3 OF THIS DOCUMENT (for information only):
H225: Highly flammable liquid and vapor; Flammable Liquid, Cat 2
H305: May be harmful if swallowed and enters airways; Aspiration, Cat 2
H319(2A): Causes serious eye irritation; Serious Eye Damage/Irr, Cat 2A
H336: May cause drowsiness or dizziness; Target Organ Single, Narcotic

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:
Revision Changes:
Section 01: Company Mailing Address information was modified.
Section 05: Hazardous Combustion Products information was modified.
Section 15: National Chemical Inventory Listing information was modified.
Section 15: Community RTK - Header information was modified.
Section 12: Environmental tox table in section 12 information was modified.
Hazard Not Otherwise Classified information was modified.
Section 01: Company Mailing Address information was added.
Section 01: Company Mailing Address information was added.
Section 08: Biological Exposure Limits (ACG BEL) - Limit Header information was added.
Section 16: Revision Information - Implementation of GHS requirements phrase. information was deleted.

Internal Use Only
MHC: 2A, 0, 0, 2, 1, 1

DGN: 4407092HUS (1004616)

SECTION 1: IDENTIFICATION

Product Identifier

Product Form: Mixture

Product Name: Liquid Alum

Formula: $Al_2(SO_4)_3 \bullet 14\ H_2O$ (Dry Equivalent)

Intended Use of the Product

Alum is used as a coagulating agent in municipal and industrial water and wastewater treatment and as an additive in papermaking.

Name, Address, and Telephone of the Responsible Party

Manufacturer

CHEMTRADE LOGISTICS INC.
155 Gordon Baker Road
Suite 300
Toronto, Ontario M2H 3N5
For SDS Info: (416) 496-5856
www.chemtradelogistics.com

Distributed by:
SAL Chemical
3036 Birch Drive,
Weirton, WV 26062
304.748.8200 - Phone
304.797.8751 - Fax

Emergency Telephone Number

Emergency Number : Canada: CANUTEC +1-613-996-6666 / US: CHEMTREC +1-800-424-9300
Chemtrade Emergency Contact: (866) 416-4404
For Chemical Emergency, Spill, Leak, Fire, Exposure, or Accident, call CHEMTREC – Day or Night

SECTION 2: HAZARDS IDENTIFICATION

Classification of the Substance or Mixture

Classification (GHS-US)

Met. Corr. 1	H290
Skin Corr. 1A	H314
Eye Dam. 1	H318
Aquatic Acute 3	H402

Full text of H-phrases: see section 16

Label Elements

GHS-US Labeling

Hazard Pictograms (GHS-US) :

GHS05

Signal Word (GHS-US) : Danger

Hazard Statements (GHS-US) : H290 - May be corrosive to metals
H314 - Causes severe skin burns and eye damage
H318 - Causes serious eye damage
H402 - Harmful to aquatic life

Precautionary Statements (GHS-US) : P234 - Keep only in original container.
P260 - Do not breathe vapors, mist, or spray.
P264 - Wash hands, forearms, and other exposed areas thoroughly after handling.
P273 - Avoid release to the environment.
P280 - Wear eye protection, protective clothing, protective gloves.
P301+P330+P331 - If swallowed: rinse mouth. Do NOT induce vomiting.
P303+P361+P353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+P340 - IF INHALED: Remove person to fresh air and keep at rest in a position comfortable for breathing.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310 - Immediately call a doctor.
P321 - Specific treatment (see section 4 on this SDS).
P363 - Wash contaminated clothing before reuse.
P390 - Absorb spillage to prevent material damage.
P405 - Store locked up.
P406 - Store in corrosive resistant container with a resistant inner liner.
P501 - Dispose of contents/container in accordance with local, regional, national, and international regulations.

Other Hazards

Other Hazards Not Contributing to the Classification: Exposure may aggravate those with pre-existing eye, skin, or respiratory conditions.

Unknown Acute Toxicity (GHS-US) Not available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Name	Product identifier	% (w/w)	Classification (GHS-US)
Water	(CAS No) 7732-18-5	30 - 60	Not classified
Sulfuric acid, aluminum salt (3:2)	(CAS No) 10043-01-3	30 - 60	Met. Corr. 1, H290 Eye Dam. 1, H318 Aquatic Acute 3, H402

*As $Al_2(SO_4)_3 \bullet 14\ H_2O$ (Dry Aluminum Sulfate).
The specific chemical identity and/or exact percentage of composition have been withheld as a trade secret [29 CFR 1910.1200].
A range of concentration as prescribed by the Controlled Products Regulations has been used where necessary, due to varying composition.
Full text of H-phrases: see section 16

SECTION 4: FIRST AID MEASURES

Description of First Aid Measures

General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label if possible).
Inhalation: Remove to fresh air and keep at rest in a position comfortable for breathing. Obtain medical attention if breathing difficulty persists.
Skin Contact: Rinse immediately with plenty of water. Obtain medical attention if irritation develops or persists.
Eye Contact: Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention.
Ingestion: Do NOT induce vomiting. Rinse mouth. Immediately call a POISON CENTER or doctor/physician.

Most Important Symptoms and Effects Both Acute and Delayed

General: Causes severe skin burns and eye damage.
Inhalation: May cause respiratory irritation.
Skin Contact: Redness. Pain. Serious skin burns. Blisters.
Eye Contact: Redness. Pain. Blurred vision. Severe burns. Causes permanent damage to the cornea, iris, or conjunctiva.
Ingestion: Ingestion is likely to be harmful or have adverse effects.
Chronic Symptoms: None expected under normal conditions of use.

Indication of Any Immediate Medical Attention and Special Treatment Needed

If you feel unwell, seek medical advice (show the label where possible).

SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media: Use extinguishing media appropriate for surrounding fire.
Unsuitable Extinguishing Media: Do not use a heavy water stream. Use of heavy stream of water may spread fire.

Special Hazards Arising From the Substance or Mixture

Fire Hazard: Not considered flammable but may burn at high temperatures.
Explosion Hazard: Product is not explosive.
Reactivity: Hazardous reactions will not occur under normal conditions. Liquid alum may react with some metals, to give flammable, potentially explosive hydrogen gas. Hydrogen gas can accumulate to explosive concentrations inside confined spaces.

Advice for Firefighters

Precautionary Measures Fire: Not available

Firefighting Instructions: Use water spray or fog for cooling exposed containers. In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

Protection During Firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.

Hazardous Combustion Products: Forms aluminum oxide, sulfur dioxide and/or sulfur trioxide at temperatures above 760°C (1400°F) or when dry alum is encompassed in a fire involving other burning materials.

Other Information: Refer to Section 9 for flammability properties.

Reference to Other Sections

Refer to section 9 for flammability properties.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Avoid all contact with skin, eyes, or clothing. Avoid breathing (dust, vapor, mist, gas).

For Non-Emergency Personnel

Protective Equipment: Use appropriate personal protection equipment (PPE).

Emergency Procedures: Evacuate unnecessary personnel.

For Emergency Personnel

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Stop leak if safe to do so. Eliminate ignition sources. Ventilate area.

Environmental Precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

Methods and Material for Containment and Cleaning Up

For Containment: Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.

Methods for Cleaning Up: Collect spillage. Dispose in a safe manner in accordance with local/national regulations.

Reference to Other Sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Use good housekeeping practices during storage, transfer, handling, to avoid excessive dust accumulation. Protect from moisture.

Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures: Comply with applicable regulations.

Storage Conditions: Store in a dry, cool and well-ventilated place. Keep container closed when not in use. Keep/Store away from direct sunlight, extremely high or low temperatures and incompatible materials.

Incompatible Materials: Strong bases.

Special Rules on Packaging: Store in original container or corrosive resistant and/or lined container.

Specific End Use(s)

For professional use only.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

For substances listed in section 3 that are not listed here, there are no established Exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), NIOSH (REL), OSHA (PEL), Canadian provincial governments, or the Mexican government.

Exposure Controls

Appropriate Engineering Controls: Ensure adequate ventilation, especially in confined areas. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Ensure all national/local regulations are observed.

Personal Protective Equipment: Protective goggles. Gloves. Protective clothing.

Materials for Protective Clothing: Chemically resistant materials and fabrics.

Hand Protection: Wear chemically resistant protective gloves.

Eye Protection: Chemical goggles or safety glasses.
Skin and Body Protection: Wear suitable protective clothing.
Respiratory Protection: Use NIOSH-approved dust mask if dust has the potential to become airborne.
Environmental Exposure Controls: Do not allow the product to be released into the environment.
Consumer Exposure Controls: Do not eat, drink or smoke during use

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on Basic Physical and Chemical Properties

Physical State	:	Liquid
Appearance	:	Clear
Odor	:	Odorless
Odor Threshold	:	Not available
pH	:	1.9 - 2.4
Melting Point	:	Not applicable
Freezing Point	:	-15.56 °C (4°F)
Boiling Point	:	101 °C (213.80 °F)
Flash Point	:	Not flammable
Auto-ignition Temperature	:	Not available
Decomposition Temperature	:	Not available
Flammability (solid, gas)	:	Not applicable
Lower Flammable Limit	:	Not available
Upper Flammable Limit	:	Not available
Vapor Pressure	:	Not available
Relative Vapor Density at 20 °C	:	Not available
Relative Density	:	Not available
Specific Gravity	:	1.335
Solubility	:	Water: Completely miscible in water.
Partition Coefficient: N-Octanol/Water	:	Not available
Viscosity	:	Not available
Explosion Data – Sensitivity to Mechanical Impact	:	Not expected to present an explosion hazard due to mechanical impact.
Explosion Data – Sensitivity to Static Discharge	:	Not expected to present an explosion hazard due to static discharge.

SECTION 10: STABILITY AND REACTIVITY

Reactivity: Hazardous reactions will not occur under normal conditions. Liquid alum may react with some metals, to give flammable, potentially explosive hydrogen gas. Hydrogen gas can accumulate to explosive concentrations inside confined spaces.
Chemical Stability: Stable under recommended handling and storage conditions (see section 7).
Possibility of Hazardous Reactions: Hazardous polymerization will not occur.
Conditions to Avoid: Direct sunlight. Extremely high or low temperatures. Ignition sources. Incompatible materials. Moisture.
Incompatible Materials: Strong bases. Metals.
Hazardous Decomposition Products: Oxides of aluminum. The decomposition products are corrosive and hazardous to health.

SECTION 11: TOXICOLOGICAL INFORMATION

Information on Toxicological Effects - Product

Acute Toxicity: Not classified
LD50 and LC50 Data: Not available
Skin Corrosion/Irritation: Causes severe skin burns and eye damage.
pH: 1.9 - 2.4
Serious Eye Damage/Irritation: Causes serious eye damage.
pH: 1.9 - 2.4
Respiratory or Skin Sensitization: Not classified
Germ Cell Mutagenicity: Not classified
Teratogenicity: Not available

Carcinogenicity: Not classified

Specific Target Organ Toxicity (Repeated Exposure): Not classified

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): Not classified

Aspiration Hazard: Not classified

Symptoms/Injuries After Inhalation: May cause respiratory irritation.

Symptoms/Injuries After Skin Contact: Redness. Pain. Serious skin burns. Blisters.

Symptoms/Injuries After Eye Contact: Redness. Pain. Blurred vision. Severe burns. Causes permanent damage to the cornea, iris, or conjunctiva.

Symptoms/Injuries After Ingestion: Ingestion is likely to be harmful or have adverse effects.

Chronic Symptoms: None expected under normal conditions of use.

Information on Toxicological Effects - Ingredient(s)

LD50 and LC50 Data:

Water (7732-18-5)	
LD50 Oral Rat	> 90000 mg/kg

SECTION 12: ECOLOGICAL INFORMATION

Toxicity **Not classified**

Persistence and Degradability Not available

Bioaccumulative Potential Not available

Mobility in Soil Not available

Other Adverse Effects

Other Information: Avoid release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal Recommendations: Dispose of waste material in accordance with all local, regional, national, and international regulations.

Ecology – Waste Materials: Avoid release to the environment.

SECTION 14: TRANSPORT INFORMATION

14.1 In Accordance with DOT

Proper Shipping Name : CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (CONTAINS ALUMINUM SULFATE)

Hazard Class : 8

Identification Number : UN3264

Label Codes : 8

Packing Group : III

ERG Number : 154

14.2 In Accordance with IMDG

Proper Shipping Name : CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (CONTAINS ALUMINUM SULFATE)

Hazard Class : 8

Identification Number : UN3264

Packing Group : III

Label Codes : 8

EmS-No. (Fire) : F-A

EmS-No. (Spillage) : S-B

14.3 In Accordance with IATA

Proper Shipping Name : CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (CONTAINS ALUMINUM SULFATE)
Packing Group : III
Identification Number : UN3264
Hazard Class : 8
Label Codes : 8
ERG Code (IATA) : 8L

14.4 In Accordance with TDG

Proper Shipping Name : CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (CONTAINS ALUMINUM SULFATE)
Packing Group : III
Hazard Class : 8
Identification Number : UN3264
Label Codes : 8

SECTION 15: REGULATORY INFORMATION

US Federal Regulations

Liquid Alum	
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard

Water (7732-18-5)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

Sulfuric acid, aluminum salt (3:2) (10043-01-3)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

US State Regulations

Liquid Alum()

Sulfuric acid, aluminum salt (3:2) (10043-01-3)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
U.S. - Pennsylvania - RTK (Right to Know) List

Canadian Regulations

Liquid Alum	
WHMIS Classification	Class D Division 2 Subdivision B - Toxic material causing other toxic effects Class E - Corrosive Material

Water (7732-18-5)	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria

Sulfuric acid, aluminum salt (3:2) (10043-01-3)	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class E - Corrosive Material

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all of the information required by CPR.

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Revision date : 05/01/15

Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

GHS Full Text Phrases:

Aquatic Acute 3	Hazardous to the aquatic environment - Acute Hazard Category 3
Eye Dam. 1	Serious eye damage/eye irritation Category 1
Met. Corr. 1	Corrosive to metals Category 1
Skin Corr. 1A	Skin corrosion/irritation Category 1A
H290	May be corrosive to metals
H314	Causes severe skin burns and eye damage
H318	Causes serious eye damage
H402	Harmful to aquatic life

Party Responsible for the Preparation of This Document

CHEMTRADE LOGISTICS, INC.

For SDS Info: (416) 496-5856

Handle product with due care and avoid unnecessary contact. This information is supplied under U.S. OSHA'S "Right to Know" (29 CFR 1910.1200) and Canada's WHMIS regulations. Although certain hazards are described herein, we cannot guarantee these are the only hazards that exist. The information contained herein is based on data available to us and is believed to be true and accurate but it is not offered as a product specification. No warranty, expressed or implied, regarding the accuracy of this data, the hazards connected with the use of the product, or the results to be obtained from the use thereof, is made and Chemtrade and its affiliates assume no responsibility. Chemtrade is a member of the CIAC (Chemistry Industry Association of Canada) and adheres to the codes and principles of Responsible Care™.

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Chemtrade North America SDS Template

SAFETY DATA SHEET

Distributed by:
SAL Chemical
3036 Birch Drive,
Weirton, WV 26062
304.748.8200 - Phone
304.797.8751 - Fax

1. Identification

Product identifier — **Sodium Hydroxide Solution 30 - 54%**

Other means of identification

- **SDS number** — 10000009
- **Synonyms** — Caustic Soda, Caustic, Alkali, Lye, Caustic lye, Caustic Soda Liquid 50%, Soda Lye, Liquid Caustic, Sodium Hydrate.

Recommended use — Pulping and Bleaching, pH neutralizer, Detergent, Soaps.

Recommended restrictions — None known.

Manufacturer/Importer/Supplier/Distributor information

- **Company name** — KA Steel Chemicals, Inc
- **Address** — 1001 W. 31st Street
  Downers Grove, IL 60515
- **Telephone** — 630-257-3900
- **E-mail** — http://www.kasteelchemicals.com/
- **Contact person** — SDS Review Group
- **Emergency phone number** — CHEMTREC (US) 1-800-424-9300
  (Canada) 1-800-567-7455

2. Hazard(s) identification

Physical hazards	Corrosive to metals	Category 1
Health hazards	Acute toxicity, oral	Category 4
	Skin corrosion/irritation	Category 1
	Serious eye damage/eye irritation	Category 1
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 3

OSHA defined hazards — Not classified.

Label elements

- **Signal word** — Danger
- **Hazard statement** — Harmful if swallowed. May be corrosive to metals. Causes severe skin burns and eye damage. Harmful to aquatic life with long lasting effects.
- **Precautionary statement**
  - **Prevention** — Keep only in original container. Wear protective gloves/protective clothing/eye protection/face protection. Do not eat, drink or smoke when using this product. Do not breathe mist or vapor. Wash thoroughly after handling. Avoid release to the environment.
  - **Response** — If swallowed: Rinse mouth. Do NOT induce vomiting. If inhaled: Remove person to fresh air and keep comfortable for breathing. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor/. Wash contaminated clothing before reuse. Absorb spillage to prevent material damage.
  - **Storage** — Store locked up.
  - **Disposal** — Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC) — None known.

Supplemental information — None.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Sodium hydroxide	1310-73-2	30 - 54

4. First-aid measures

Inhalation

Move to fresh air. If breathing is difficult, give oxygen. If breathing stops, provide artificial respiration. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a physician or poison control center immediately.

Skin contact

Take off immediately all contaminated clothing. Wash off IMMEDIATELY with plenty of water for at least 15-20 minutes. Get medical attention immediately! Wash clothing separately before reuse. Destroy or thoroughly clean contaminated shoes.

Eye contact

Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.

Ingestion

Call a physician or poison control center immediately. Do not induce vomiting. Immediately rinse mouth and drink plenty of water. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Never give anything by mouth to an unconscious person. Do not use mouth-to-mouth method if victim ingested the substance.

Most important symptoms/effects, acute and delayed

Burning pain and severe corrosive skin damage. Permanent eye damage including blindness could result. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Shortness of breath.

Indication of immediate medical attention and special treatment needed

Provide general supportive measures and treat symptomatically. Symptoms may be delayed. Keep victim under observation.

General information

In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media

Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2). Use extinguishing agent suitable for type of surrounding fire.

Unsuitable extinguishing media

Do not use a solid water stream as it may scatter and spread fire. Do not use halogenated extinguishing agents.

Specific hazards arising from the chemical

The product itself does not burn. May decompose upon heating to produce corrosive and/or toxic fumes. Contact with metal may release flammable hydrogen gas.

Special protective equipment and precautions for firefighters

Fire fighters should enter the area only if they are protected from all contact with the material. Full protective clothing, including self-contained breathing apparatus, coat, pants, gloves, boots and bands around legs, arms, and waist, should be worn. No skin surface should be exposed.

Fire fighting equipment/instructions

In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk. Use water spray to cool unopened containers.

Specific methods

Use water spray to cool unopened containers.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Keep unnecessary personnel away. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Local authorities should be advised if significant spillages cannot be contained.

Methods and materials for containment and cleaning up

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb spill with inert material (e.g., dry sand or earth), then place in a chemical waste container. Following product recovery, flush area with water.

Small Spills: Absorb spill with vermiculite or other inert material. Clean surface thoroughly to remove residual contamination.

Never return spills in original containers for re-use. For waste disposal, see Section 13 of the SDS.

Environmental precautions

Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling

Use caution when combining with water; DO NOT add water to caustic; ALWAYS add caustic to water while stirring to minimize heat generation. Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Do not breathe mist or vapor. Use only with adequate ventilation. Wear appropriate personal protective equipment. Transfer and storage systems should be compatible and corrosion resistant. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Keep container tightly closed. Store in a cool, dry, well-ventilated place. Store in corrosive resistant container with a resistant inner liner. Store away from incompatible materials (See Section 10). Store at temperatures not exceeding 40°C/104°F. Compatible storage materials may include, but not be limited to, the following: nickel and nickel alloys, steel, plastics, plastic or rubber-lined steel, FRP, or Derakane vinyl ester resin. Do not allow material to freeze.

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	PEL	2 mg/m3

US. ACGIH Threshold Limit Values

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3

Biological limit values

No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection

Wear chemical goggles and face shield.

Skin protection

Hand protection

Wear appropriate chemical resistant gloves.

Other

Wear appropriate chemical resistant clothing.

Respiratory protection

If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Respirator type: Chemical respirator with organic vapor cartridge and full facepiece.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Physical state

Liquid.

Form

Viscous liquid.

Color

Clear.

Odor

Odorless.

Odor threshold

Not available.

pH

14

Melting point/freezing point

50 - 53 °F (10 - 11.67 °C) (50% solution)

Initial boiling point and boiling range	266 - 284 °F (130 - 140 °C) (50% solution)
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	23.76 mm Hg (approximately) (77 °F (25 °C))
Vapor density	Not available.
Relative density	1.525 (50% solution)
Relative density temperature	68 °F (20 °C)
Solubility(ies)	
Solubility (water)	Completely miscible with water.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Molecular formula	NaOH
Molecular weight	40.1 g/mol

10. Stability and reactivity

Reactivity	Contact with metal may release flammable hydrogen gas.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Reacts violently with strong acids. This product may react with oxidizing agents. Do not mix with other chemicals. Corrosive to aluminum, tin, zinc, copper and most alloys in which they are present including brass and bronze. Corrosive to steels at elevated temperatures above 40°C (104°F).
Incompatible materials	Oxidizing agents. Acids. Phosphorus. Aluminum. Zinc. Tin. Initiates or catalyzes violent polymerization of acetaldehyde, acrolein or acrylonitrile.
Hazardous decomposition products	Contact with metals (aluminum, zinc, tin) and sodium tetrahydroborate liberates hydrogen gas.

11. Toxicological information

Information on likely routes of exposure

Inhalation	May cause irritation to the respiratory system.
Skin contact	Causes severe skin burns.
Eye contact	Causes severe eye burns. Causes serious eye damage.
Ingestion	Causes digestive tract burns. Harmful if swallowed.
Symptoms related to the physical, chemical and toxicological characteristics	Burning pain and severe corrosive skin damage. Permanent eye damage including blindness could result.

Information on toxicological effects

Acute toxicity	Harmful if swallowed.

Product	Species	Test Results
Sodium Hydroxide Solution 30 - 54% (CAS Mixture)		
Acute		
Dermal		
LD50	Rabbit	> 2 g/kg
Oral		
LD50	Rat	300 - 500 mg/kg
Other		
LD50	Mouse	40 mg/kg, Intraperitoneal

Skin corrosion/irritation Causes severe skin burns and eye damage.
Standard Draize Test: 500 mg/24 hour(s) skin - rabbit severe.

Serious eye damage/eye irritation Causes severe eye burns. Causes serious eye damage.
Standard Draize Test: 400 µg eyes - rabbit mild; 1 percent eyes - rabbit severe.

Respiratory or skin sensitization

Respiratory sensitization This product is not expected to cause respiratory sensitization.

Skin sensitization This product is not expected to cause skin sensitization.

Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.

NTP Report on Carcinogens

Not listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure Not classified.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard Droplets of the product aspirated into the lungs through ingestion or vomiting may cause a serious chemical pneumonia.

Chronic effects Prolonged exposure may cause chronic effects.

12. Ecological information

Ecotoxicity Harmful to aquatic life.

Product		Species	Test Results
Sodium Hydroxide Solution 30 - 54%			
Aquatic			
Acute			
Fish	LC50	Bluegill (Lepomis macrochirus)	99 mg/l, 48 hours
		Mosquitofish (Gambusia affinis affinis)	125 mg/l, 96 hours

Persistence and degradability Expected to degrade rapidly in air.

Bioaccumulative potential The product is not expected to bioaccumulate.

Mobility in soil Not available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous waste. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

UN number	UN1824
UN proper shipping name	Sodium hydroxide solution
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Label(s)	8
Packing group	II
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling. Read safety instructions, SDS and emergency procedures before handling.
Special provisions	B2, IB2, N34, T7, TP2
Packaging exceptions	154
Packaging non bulk	202
Packaging bulk	242

IATA

UN number	UN1824
UN proper shipping name	Sodium hydroxide solution
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Label(s)	8
Packing group	II
Environmental hazards	No.
ERG Code	8L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling. Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number	UN1824
UN proper shipping name	SODIUM HYDROXIDE SOLUTION
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Label(s)	8
Packing group	II
Environmental hazards	
Marine pollutant	No.
EmS	F-A, S-B
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling. Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

15. Regulatory information

US federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

CERCLA Hazardous Substance: Sodium Hydroxide, CAS # 1310-73-2, RQ = 1000 lbs.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

CERCLA Hazardous Substance List (40 CFR 302.4)

Sodium hydroxide (CAS 1310-73-2) LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - Yes

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations

US. Massachusetts RTK - Substance List

Sodium hydroxide (CAS 1310-73-2)

US. New Jersey Worker and Community Right-to-Know Act

Sodium hydroxide (CAS 1310-73-2)

US. Pennsylvania Worker and Community Right-to-Know Law

Sodium hydroxide (CAS 1310-73-2)

US. Rhode Island RTK

Sodium hydroxide (CAS 1310-73-2)

US. California Proposition 65

This product is not listed, but it may contain elements known to the State of California to cause cancer or reproductive toxicity as listed under Proposition 65 Safe Drinking Water and Toxic Enforcement Act. For additional information, contact Olin Technical Services (800-299-6546).

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	Yes
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes

Country(s) or region	Inventory name	On inventory (yes/no)*
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 05-August-2015

Revision date -

Version # 01

HMIS® ratings Health: 3
Flammability: 0
Physical hazard: 0

NFPA ratings

List of abbreviations

LD50: Lethal Dose, 50%.

LC50: Lethal Concentration, 50%.
EC50: Effective concentration, 50%.
TWA: Time weighted average.

References

EPA: AQUIRE database
HSDB® - Hazardous Substances Data Bank
US. IARC Monographs on Occupational Exposures to Chemical Agents
IARC Monographs. Overall Evaluation of Carcinogenicity
ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices

Disclaimer This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Trade name	:	GLYCOL ETHER EB
CAS Number:	:	111-76-2
Chemical characterization	:	Glycol Ethers
Chemical name	:	2-butoxyethanol
Synonyms	:	Ethylene glycol monobutyl ether; Glycol butyl ether; Butyl glycol (BG); Ethylene glycol butyl ether (EGBE)
Identified uses	:	Solvent; Stabilizers; Intermediate

Distributed By:
SAL Chemical
3036 Birch Drive
Weirton, WV 26062
304-748-8200

Company Address
Equistar Chemicals, LP
LyondellBasell Tower, Suite 300
1221 McKinney St.
P.O. Box 2583
Houston Texas 77252-2583

Company Telephone
Customer Service
888 777-0232
Product Safety
800 700-0946
product.safety@lyb.com

Emergency telephone
CHEMTREC USA 800-424-9300
EQUISTAR 800-245-4532

E-mail address : product.safety@lyb.com
Responsible/issuing person

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Flammable Liquids	Category 4
Acute toxicity; Oral	Category 4
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2A
Specific target organ systemic toxicity - single exposure	Category 3

GHS Classification Scale (1= severe hazard; 4= slight hazard)

Label elements

Hazard symbols :

Signal Word : Warning

Hazard Statements : H227 Combustible liquid.
H302 Harmful if swallowed.

H315 Causes skin irritation.
H319 Causes serious eye irritation.
H336 May cause drowsiness or dizziness.

Precautionary Statements : **Prevention**

P210 Keep away from open flames/hot surfaces. - No smoking.
P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
P264 Wash hands thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response

P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P301 + P312 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
P330 Rinse mouth.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P332 + P313 If skin irritation occurs: Get medical advice/ attention.
P362 Take off contaminated clothing and wash before reuse.

Storage

P403 + P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.

Disposal

P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards

No additional information available.

3. Composition/information on ingredients

Substances

Chemical nature : Substance

Ingredients

Chemical name	CAS-No. EC-No.	Weight %	Component Type
2-Butoxyethanol	111-76-2	<99.5 %	A

Key:
(A) Substance

4. FIRST AID MEASURES

General advice : Inhalation of high vapor concentrations can cause CNS-depression and narcosis.
Consult a physician/doctor if necessary.
Take proper precautions to ensure your own health and safety before attempting rescue and providing first aid.
Show this material safety data sheet to the doctor in attendance.

If inhaled : Call a physician or poison control center immediately.
Move to fresh air.
If unconscious place in recovery position and seek medical advice.

In case of skin contact : If skin irritation persists, call a physician.
If on skin, rinse well with water.
If on clothes, remove clothes.

In case of eye contact : In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.

If swallowed : Clean mouth with water and drink afterwards plenty of water.
Keep respiratory tract clear.
Do NOT induce vomiting.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.
Call a POISON CENTER/doctor.

Notes to physician

Symptoms : irritant effects
Inhalation may cause CNS depression.

Hazards	:	Harmful if swallowed. Causes skin irritation. Causes serious eye irritation. May cause drowsiness or dizziness.
Treatment	:	Treat symptomatically. Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	SMALL FIRE: Use dry chemicals, CO2, water spray or alcohol-resistant foam. LARGE FIRE: Use water spray, water fog or alcohol-resistant foam.
Unsuitable extinguishing media	:	Do not use solid water stream.
Specific hazards during fire fighting	:	Evacuate area. Eliminate all ignition sources if safe to do so. Flash back possible over considerable distance. Fight fire with normal precautions from a reasonable distance. Cool closed containers exposed to fire with water spray.
Special protective equipment for fire-fighters	:	Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighter's protective clothing will only provide limited protection.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	:	Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Use personal protective equipment. Ensure adequate ventilation. Eliminate all sources of ignition.
Environmental precautions	:	Do not allow contact with soil, surface or ground water. Do not discharge product into the aquatic environment without pretreatment (biological treatment plant). Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.
Methods for containment /	:	Eliminate all sources of ignition.

Methods for cleaning up	All equipment used when handling this product must be grounded. Do not touch or walk through spilled material. Stop leak if you can do it without risk. Prevent entry into waterways, sewers, basements or confined areas. A vapor suppressing foam may be used to reduce vapors. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Use clean non-sparking tools to collect absorbed material.

SECTION 7. HANDLING AND STORAGE

Handling

Advice on safe handling	: Containers, even those that have been emptied, will retain product residue and vapor and should be handled as if they were full. Do not eat, drink or smoke in areas where this material is used. After handling, always wash hands thoroughly with soap and water. Do not handle near heat, sparks, or flame. Avoid contact with incompatible agents. Use only with adequate ventilation/personal protection. Avoid contact with eyes, skin and clothing. Do not enter storage area unless adequately ventilated. Metal containers involved in the transfer of this material should be grounded and bonded.

Storage

Requirements for storage areas and containers	: Prevent unauthorized access. Keep away from open flames, hot surfaces and sources of ignition. 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. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards.

8. Exposure controls/personal protection

Control parameters

Ingredients with workplace control parameters

Occupational Exposure Limits

Ingredients	CAS-No.	Type	Limit Value	Basis Revision Date	Additional Information
2-Butoxyethanol	111-76-2	TWA	20 ppm	US (ACGIH) 2012	
2-Butoxyethanol	111-76-2	IDLH	700 ppm	NIOSH September 2007	
2-Butoxyethanol	111-76-2	TWA	50 ppm 240 mg/m3	US (OSHA) June 23, 2006	

Consult local authorities for acceptable exposure limits.

Exposure controls

Engineering measures

Ensure that eyewash stations and safety showers are close to the workstation location.
Handle only in a place equipped with local exhaust (or other appropriate exhaust).

Personal protective equipment

Respiratory protection : When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

Hand protection : The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Eye and face protection : Wear safety glasses as minimum eye protection. Conditions may warrant the use of chemical goggles and possibly a face shield. Consult your standard operating procedure or safety professional for advice. Use protective eye and face devices that comply with ANSI Z87.1-1987.

Skin and body protection : Appropriate protective clothing should be worn to prevent skin contact.

Hygiene measures : Selection of appropriate personal protective equipment should be based on an evaluation of the performance characteristics of the protective equipment relative to the task(s) to be performed, conditions present, duration of use, and the hazards and/or potential hazards that may be encountered during use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid

Color	:	colorless
Odor	:	Mild odor.
	:	Ether-like odor.
Odor Threshold	:	no data available
Flash point	:	68 - 70 °C at 1,013 hPa (760 mm Hg) Method: Tag closed cup Method: ASTM D 56
Ignition temperature	:	230 - 245 °C
Lower explosion limit	:	1.1 vol%
Upper explosion limit	:	10.6 vol%
Flammability (solid, gas)	:	Not applicable
Oxidizing properties	:	Not considered an oxidizing agent.
Autoignition temperature	:	230 - 245 °C
Molecular weight	:	118.17 g/mol
Decomposition temperature	:	not determined
Melting point/freezing point	:	-74.8 °C
Boiling point/boiling range	:	171 - 173.5 °C
Vapor pressure	:	0.8 - 1.0 hPa at 20 °C
Density	:	0.90 g/cm3 at 20 °C
Water solubility	:	Miscible
Partition coefficient: n-octanol/water	:	log Pow: 0.81 at 25 °C
Viscosity, dynamic	:	3.3 mPa.s at 20 °C
Viscosity, kinematic	:	20 mm2/s at 20 °C
		2.3 mm2/s

		at 40 °C
Relative vapor density	:	4.1 (Air = 1.0)
Evaporation rate	:	0.1
Explosive properties	:	Not explosive

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	May form peroxides in the presence of air.
Chemical stability	:	Stable under recommended storage conditions.
Hazardous reactions	:	No dangerous reaction known under conditions of normal use. Reacts with air to form peroxides.
Conditions to avoid	:	Heat, flames and sparks.
Materials to avoid	:	Oxidizing agents Acids Bases Amines Ammonia Acid chlorides
Hazardous decomposition products	:	Not expected to decompose under normal conditions.
Thermal decomposition	:	Carbon monoxide, carbon dioxide and unburned hydrocarbons (smoke).

SECTION 11. TOXICOLOGICAL INFORMATION

Product Summary	:	The below given information is based on the assessment of the product including impurities.
Acute toxicity		
Acute oral toxicity	:	Classified Harmful if swallowed.
	:	Ingestion may cause weakness, confusion, anxiety, decreased blood pressure, and CNS depression with collapse and coma.
	:	LD50: 1,414 mg/kg Species: Guinea pig

Acute inhalation toxicity : Based on acute toxicity values, not classified.

: Exposure to very high concentrations of aerosols may cause irritation of the eyes, nose, and throat and depression of the central nervous system.

: LC0: > 3.1 mg/l
> 641 ppm
Exposure time: 1 HOURS
Species: Guinea pig

Acute dermal toxicity : Based on acute toxicity values, not classified.

: LD50: > 2,000 mg/kg
Species: Guinea pig

Skin corrosion/irritation : Classified
Causes skin irritation.

Serious eye damage/eye irritation : Classified
Causes serious eye irritation.

Respiratory or skin sensitization : Respiratory sensitization
Not classified
No study available.

: Skin sensitization
Not classified
No adverse effect observed.

Chronic toxicity

Carcinogenicity : Not classified
Long-term exposure via inhalation at concentrations up to 125 ppm caused an increase in the incidence of liver tumors in male mice and forestomach tumors in female mice. A slight increase in adrenal tumors was observed in female rats. The NTP has determined that EGBE displays some evidence of carcinogenicity in mice, and equivocal evidence of carcinogenicity in female rats.

Germ cell mutagenicity : Not classified

No adverse effect observed.

Reproductive toxicity

Effects on fertility / Effects on or via lactation : Not classified
No adverse effect observed.

Effects on Development : Not classified
No adverse effect observed.

Target Organ Systemic Toxicant - Single exposure : Classified, May cause drowsiness or dizziness.

: Routes of exposure: Inhalation
Target Organs: Central nervous system

Target Organ Systemic Toxicant - Repeated exposure : Based on repeated exposure toxicity values, not classified.

: Results from acute and repeat exposure studies in rats, mice and rabbits indicate that EGBE causes injury to red blood cells with subsequent intravascular hemolysis and anemia, and secondary changes in the liver and kidney. Human and guinea pig red blood cells are resistant to EGBE injury and therefore the effects noted in sensitive species are not relevant to humans.

Aspiration hazard : Based on physico-chemical values or lack of human evidence, not classified.

12. ECOLOGICAL INFORMATION

Ecotoxicology Assessment

Acute aquatic toxicity : Based on acute aquatic toxicity values, not classified.

Chronic aquatic toxicity : Not classified, based on readily biodegradability and low acute toxicity.

Toxicity to fish :

Low acute toxicity to fish

Toxicity to daphnia and other aquatic invertebrates : Low acute toxicity to aquatic invertebrates.

Toxicity to algae : Low toxicity to algae.

Toxicity to bacteria : Low toxicity to sewage microbes.

Toxicity to fish (Chronic toxicity) : Chronic toxicity to fish is expected to be low.

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : Chronic toxicity expected to be low.

Persistence and degradability

Biodegradability : 90.4 %
Rapidly degradable.
(After 28 days in a ready biodegradability test)

Bioaccumulative potential

Bioaccumulation : Bioconcentration factor (BCF): 3.16
Method: (QSAR calculated value)
This material is not expected to bioaccumulate.

Mobility in soil

Distribution among environmental compartments : Stability in water
Not expected to hydrolyze readily.
Contains no functional groups considered likely to be hydrolyzed in water.

: Stability in soil
Low absorption to soil particulates predicted

Additional advice Environmental fate and pathways : No additional information available.

Results of PBT and vPvB assessment

Not applicable.

Other adverse effects

Additional ecological information : No additional information available.

SECTION 13. DISPOSAL CONSIDERATIONS

Further information : Do not dispose of waste into sewer.

Do not contaminate ponds, waterways or ditches with chemical or used container.
Dispose of as hazardous waste in compliance with local and national regulations.

SECTION 14. TRANSPORT INFORMATION

CFR_ROAD

UN number	:	NA1993
Description of the goods	:	COMBUSTIBLE LIQUID, N.O.S.
	:	(ETHYLENE GLYCOL MONOBUTYL ETHER)
Class	:	C
Packing group	:	III
Labels	:	3

CFR_RAIL

UN number	:	NA1993
Description of the goods	:	COMBUSTIBLE LIQUID, N.O.S.
	:	(ETHYLENE GLYCOL MONOBUTYL ETHER)
Class	:	C
Packing group	:	III
Labels	:	3

SECTION 15. REGULATORY INFORMATION

If identified components of this product are listed under the TSCA 12(b) Export Notification rule, they will be listed below.

SARA 302/304

This product contains no known chemicals regulated under SARA 302/304.

SARA 311/312

Based upon available information, this material is classified as the following health and/or physical hazards according to Section 311 & 312:

Fire Hazard.
Immediate (Acute) Health Hazard.

SARA 313

This product contains the following chemicals subject to the reporting requirements of SARA Title III, Section 313 and 40 CFR 372:

Component	Reporting Threshold
2-Butoxyethanol	1.0%

State Reporting

This material is not known to contain a chemical substance known to the State of California to cause cancer, reproductive, or developmental toxicity under California Proposition 65. However, LyondellBasell has not tested for the presence of listed chemical substances.

This product contains the following chemicals regulated by New Jersey's Worker and Community Right to Know Act:
111-76-2 2-Butoxyethanol

This product contains the following chemicals regulated by Massachusetts' Right to Know Law:
111-76-2 2-Butoxyethanol

This product contains the following chemicals regulated by Pennsylvania's Right to Know Act:
111-76-2 2-Butoxyethanol

Other international regulations

Global Inventory Status
The ingredients of this product are compliant with the following chemical inventory requirements or exemptions.
*Additional Explanatory Status Statements follow the table, as necessary.

Country/Region	Inventory	Status Description
Australia	AICS	Compliant
Canada	DSL	Compliant
China	IECSC	Compliant
Europe	REACH	See REACH Compliance Statement
Japan	ENCS	Compliant
Korea	KECI	Compliant
New Zealand	NZIoC	Compliant
Philippines	PICCS	Compliant
United States of America	TSCA	Compliant
Taiwan	TCSCA	Compliant

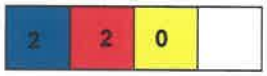
REACh status
If the product has been purchased from any company of the LyondellBasell group of companies registered in the European Union, we confirm that the chemical substance in this product has been pre-registered or, where required under REACh, registered, and that we have the intention to proceed with any required registration in accordance with the deadlines set forth in REACh. (Regulation (EU) No. 1907/2006)

Contact product.safety@lyb.com for additional global inventory information.

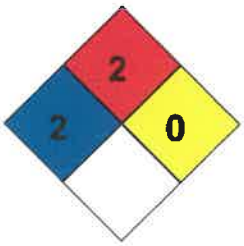
SECTION 16. OTHER INFORMATION

Further information

HMIS Classification : Health Hazard: 2
Flammability: 2
Physical hazards: 0



NFPA Classification : Health Hazard: 2
Fire Hazard: 2
Instability: 0



Other Information
HMIS rating scale (0 = minimal hazard; 4 = severe hazard)
NFPA rating scale (0 = minimal hazard; 4 = severe hazard)

Material safety datasheet sections which have been updated:
Revised Section(s): 9 Revision Date February 26 2016

Disclaimer

This document is generated for the purpose of distributing health, safety, and environmental data.
Information is correct to the best of our knowledge at the date of the SDS publication.
It is not a specification sheet nor should any displayed data be construed as a specification.
Before using a product sold by a company of the LyondellBasell family of companies, users should make their own independent determination that the product is suitable for the intended use and can be used safely and legally.
SELLER MAKES NO WARRANTY; EXPRESS OR IMPLIED (INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY WARRANTY) OTHER THAN AS SEPARATELY AGREED TO BY THE PARTIES IN A CONTRACT.
Users should review the applicable Safety Data Sheet before handling the product.
This product(s) may not be used in the manufacture of any of the following, without prior written approval by Seller for each specific product and application:
(i) U.S. FDA Class I or II Medical Devices; Health Canada Class I, II or III Medical Devices; European Union Class I or II Medical Devices;
(ii) film, overwrap and/or product packaging that is considered a part or component of one of the aforementioned medical devices;
(iii) packaging in direct contact with a pharmaceutical active ingredient and/or dosage form that is intended for inhalation, injection, intravenous, nasal, ophthalmic (eye), digestive, or topical (skin) administration;
(iv) tobacco related products and applications, electronic cigarettes and similar devices.

The product(s) may not be used in:
(i) U.S. FDA Class III Medical Devices; Health Canada Class IV Medical Devices; European Class III Medical Devices;
(ii) applications involving permanent implantation into the body;
(iii) life-sustaining medical applications.

Disclaimer

All references to U.S. FDA, Health Canada, and European Union regulations include another country's equivalent regulatory classification.
In addition to the above, LyondellBasell may further prohibit or restrict the use of its products in certain applications. For further information, please contact a LyondellBasell representative.

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Language Translations
The information presented in this document has been translated from English by a vendor LyondellBasell believes to be reliable. LyondellBasell and its vendor have made a good-faith effort to verify the accuracy of the translation, but assume no liability or other responsibility for any errors that may have occurred. Please refer to our web site (www.lyondellbasell.com) for the original document written in English.

Distributed by:
SAL Chemical
3036 Birch Drive,
Weirton, WV 26062
304.748.8200 - Phone
304.797.8751 - Fax

Safety Data Sheet

Revision Date Mar-15-2015 **Item #** 10244 **Safety Data Sheet** 0235

1. PRODUCT AND COMPANY IDENTIFICATION

CONTROLLED DOCUMENT IF STAMPED IN RED

Product Name Ferric Chloride Solution DWG Grade
UN/ID No. UN2582
Synonyms Iron (III) Chloride, Iron trichloride, $FeCl_3$
Recommended Use Water treatment chemical
Uses advised against Consumer uses: Private households (= general public = consumers).

Company Name
PVS Technologies, Inc.
10900 Harper Ave.
Detroit, MI 48213
(313) 571-1100

24 Hour Emergency Phone Number CHEMTREC 1-800-424-9300

2. HAZARDS IDENTIFICATION

Classification

Acute toxicity - Oral	Category 4
Skin corrosion/irritation	Category 1
Serious eye damage/eye irritation	Category 1

Emergency Overview

DANGER

Hazard statements Causes severe skin burns and eye damage
Harmful if swallowed

Physical hazards Corrosive
May be corrosive to metals

Precautionary statements

Prevention
- Wear eye/face protection
- Wear protective gloves/protective clothing/eye protection/face protection
- Do not breathe dust/fume/gas/mist/vapors/spray
- Do not eat, drink or smoke when using this product
- Wash face, hands and any exposed skin thoroughly after handling

Response
- Immediately call a POISON CENTER or doctor/physician
- Specific treatment (see section 4 on this Safety Data Sheet)

Storage
- Store in a secure area

Disposal
- Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC) None known.

Other Information

Other hazards
- Toxic to aquatic life with long lasting effects
- Toxic to aquatic life

Unknown Acute Toxicity — 0.85% of the mixture consists of ingredient(s) of unknown toxicity

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	EC No.	Weight-% *
Water	7732-18-5	231-791-2	55-69
Iron trichloride	7705-08-0	231-729-4	31-45
Hydrogen chloride	7647-01-0	231-595-7	0.0-1.0
Ferrous chloride	7758-94-3	231-843-4	0.0-0.7

*The exact percentage (concentration) of composition has been withheld as a trade secret.

4. FIRST AID MEASURES

General advice

- Immediate medical attention is required

Eye contact

- Immediate medical attention is required
- Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes
- Do not rub affected area

Skin Contact

- Immediate medical attention is required
- Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes
- Wash contaminated clothing before reuse

Inhalation

- Call a physician or poison control center immediately
- Remove to fresh air
- If not breathing, give artificial respiration
- If breathing is difficult, give oxygen

Ingestion

- Call a physician or poison control center immediately
- Do NOT induce vomiting
- Rinse mouth
- Drink 4 to 8 ounces (120-240 ml) of water or milk as soon as possible after ingestion.
- Never give anything by mouth to an unconscious person

Note to physician

Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Do not give chemical antidotes. Asphyxia from glottal edema may occur. Marked decrease in blood pressure may occur with moist rales, frothy sputum, and high pulse pressure. Treat symptomatically.

Self-protection for first aid personnel

Use personal protective equipment as required. Avoid contact with skin, eyes or clothing.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

- Dry chemical, CO_2, water spray or alcohol-resistant foam
- Use extinguishing measures that are appropriate to local circumstances and the surrounding environment

Unsuitable extinguishing media

- Caution: Use of water spray when fighting fire may be inefficient
- Do not use a solid water stream as it may scatter and spread fire

Specific hazards arising from the chemical

- The product causes burns of eyes, skin and mucous membranes
- Thermal decomposition can lead to release of irritating and toxic gases and vapors
- In the event of fire and/or explosion, do not breathe fumes

Protective equipment and precautions for firefighters
• Wear a self-contained breathing apparatus and chemical protective clothing

Flammable properties
• No information available

Explosive properties
• No information available

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
• Evacuate personnel to safe areas
• Use personal protective equipment as required
• Avoid contact with skin, eyes or clothing
• Keep people away from and upwind of spill/leak

Environmental precautions
• For small spills, absorb material with clay absorbent or other compatible material. Dispose of the waste material according to local, state and governmental requirements.
• For large spills, contain the material using barriers of absorbent pigs, clay absorbent or earth dams.
• US regulations require reporting spills of this material that could reach any surface waters. The toll-free phone number for the US Coast Guard National Response Center is 1-800-424-8802

Methods for cleaning up
• Neutralize with soda ash or lime
• Take up mechanically, placing in appropriate containers for disposal
• Clean contaminated surface thoroughly
• Soak up with inert absorbent material

Other Information
• Spills exceeding the Reportable Quantity (RQ) of 1000 pounds or more must be reported to the National Response Center, (800) 424-8802.

7. HANDLING AND STORAGE

Advice on safe handling
• Use personal protective equipment as required
• Avoid contact with skin, eyes or clothing
• Ensure adequate ventilation, especially in confined areas
• In case of insufficient ventilation, wear suitable respiratory equipment
• Use only with adequate ventilation and in closed systems

Storage Conditions
• Keep container tightly closed in a dry and well-ventilated place
• Keep out of the reach of children
• Keep containers tightly closed in a dry, cool and well-ventilated place
• Keep in properly labeled containers

Incompatible materials
Incompatible with strong acids and bases, oxidizers, steel, and most metals

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Iron trichloride 7705-08-0	TWA: 1 mg/m³ Fe	-	TWA: 1 mg/m³ Fe
Hydrogen chloride 7647-01-0	Ceiling: 2 ppm	Ceiling: 5 ppm Ceiling: 7 mg/m³	IDLH: 50 ppm Ceiling: 5 ppm Ceiling: 7 mg/m³
Ferrous chloride 7758-94-3	TWA: 1 mg/m³ Fe	(vacated) TWA: 1 mg/m³ Fe	TWA: 1 mg/m³ Fe

Exposure Guidelines
.

Engineering Controls
Ensure adequate ventilation, especially in confined areas.

Individual protection measures, such as personal protective equipment

Respiratory protection
• A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant the use of a respriator.

Eye/Face protection	• Tight sealing safety goggles • Face protection shield
Skin and body protection	• Wear suitable protective clothing • Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact
General Hygiene Considerations	• Do not eat, drink or smoke when using this product • Wash contaminated clothing before reuse • Contaminated work clothing should not be allowed out of the workplace • Regular cleaning of equipment, work area and clothing is recommended • Avoid contact with skin, eyes or clothing

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	Liquid
Appearance	Clear to slightly hazy
Color	Red brown
Odor	Slight Iron acidic
Odor threshold	No information available

Property	Values	Remarks • Method
pH	<2	
Melting point/Freezing Point	-26 °C / -15 °F	
Boiling point / boiling range	110 °C / 230 °F	
Flash point	No information available	
Evaporation rate	<1	n-Butyl acetate =1
Flammability (solid, gas)	No information available	
Flammability Limit in Air		Not flammable
Upper flammability limit (%)	No information available	
Lower flammability limit (%):	No information available	
Vapor pressure	No information available	negligible
Vapor density	No information available	
Specific Gravity	1.40	
Water solubility	Miscible in water	
Solubility in other solvents	No information available	
Partition coefficient	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
Explosive properties	No information available	
Oxidizing properties	No information available	

Other Information

Softening point °C	No information available
Molecular weight	No information available
VOC Content (%)	No information available
Density	No information available
Bulk density	11.7 Pounds per gallon (lb/gal), Typical

10. STABILITY AND REACTIVITY

Stability	• Stable under recommended storage conditions
Conditions to avoid	• Exposure to air or moisture over prolonged periods
Incompatible materials	• Incompatible with strong acids and bases, oxidizers, steel, and most metals

Hazardous Decomposition Products • Thermal decomposition can lead to release of irritating and toxic gases and vapors

Possibility of Hazardous Reactions • None under normal processing and storage

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Principle Routes of Exposure Inhalation Skin Contact Eye contact
Inhalation May cause irritation of respiratory tract. Avoid breathing vapors or mists.
Ingestion May cause adverse kidney effects. May cause adverse liver effects.
Skin Contact Contact causes severe skin irritation and possible burns.
Eye contact Corrosive to the eyes and may cause severe damage including blindness.

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Iron trichloride 7705-08-0	= 450 mg/kg (Rat)	>2000 mg/kg (rat)	-
Hydrogen chloride 7647-01-0	= 700 mg/kg (Rat)	> 5010 mg/kg (Rabbit)	= 3124 ppm (Rat) 1 h
Ferrous chloride 7758-94-3	450	-	-

Information on toxicological effects

Symptoms Vomiting, Hypoxemia (reduced O2 in the blood), Metabolic Acidosis
Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sensitization No information available.
Germ cell mutagenicity No information available.
Carcinogenicity No information available.

Chemical Name	ACGIH	IARC	NTP	OSHA
Hydrogen chloride 7647-01-0	-	Group 3	-	-

Reproductive toxicity No information available.
STOT - single exposure No information available.
STOT - repeated exposure No information available.
Chronic toxicity Chronic exposure to corrosive fumes/gases may cause erosion of the teeth followed by jaw necrosis. Bronchial irritation with chronic cough and frequent attacks of pneumonia are common. Gastrointestinal disturbances may also be seen. Avoid repeated exposure. Possible risk of irreversible effects. May cause adverse liver effects.
Target Organ Effects Eyes, Gastrointestinal tract (GI), Liver, Respiratory system, Skin.
Aspiration hazard No information available.

Numerical measures of toxicity - Product Information

Unknown Acute Toxicity 0.85% of the mixture consists of ingredient(s) of unknown toxicity
The following values are calculated based on chapter 3.1 of the GHS document mg/kg

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity Toxic to aquatic life with long lasting effects
0.85% of the mixture consists of components(s) of unknown hazards to the aquatic environment

Chemical Name	Algae/aquatic plants	Fish	Crustacea
Iron trichloride 7705-08-0	-	20.95 - 22.56: 96 h Pimephales promelas mg/L LC50 semi-static 20.26: 96 h Lepomis macrochirus mg/L LC50 semi-static	27.9: 48 h Daphnia magna mg/L EC50 9.6: 48 h Daphnia magna mg/L EC50 Static

Persistence and degradability No information available.
Bioaccumulation No information available

Chemical Name	Partition coefficient
Iron trichloride 7705-08-0	-4

Other adverse effects No information available

13. DISPOSAL CONSIDERATIONS

Disposal of wastes • This material, as supplied, is a hazardous waste according to federal regulations (40 CFR 261)
Contaminated packaging • Do not reuse container
US EPA Waste Number • D002

This product contains one or more substances that are listed with the State of California as a hazardous waste.

Chemical Name	California Hazardous Waste Status
Iron trichloride 7705-08-0	Toxic Corrosive

14. TRANSPORT INFORMATION

DOT

Proper shipping name	FERRIC CHLORIDE, SOLUTION
Hazard Class	8
UN/ID No.	UN2582
Packing Group	III
RQ (lbs)(dry)	1000
RQ as is (lbs)(wet)	2222 (45% Ferric Chloride)
Description	UN2582, Ferric chloride, solution, 8, III
Special Provisions	B15, IB3, T4, TP1
Emergency Response Guide Number	154

IATA

UN/ID No.	UN2582
Proper shipping name	FERRIC CHLORIDE SOLUTION
Hazard Class	8
Packing Group	III
ERG Code	8L
Special Provisions	A3

IMDG

UN/ID No.	UN2582
Proper shipping name	FERRIC CHLORIDE, SOLUTION
Hazard Class	8
Packing Group	III
EmS-No.	F-A, S-B
Special Provisions	223

15. REGULATORY INFORMATION

US Federal Regulations

SARA 311/312 Hazard Categories

Acute health hazard	Yes
Chronic Health Hazard	Yes
Fire hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	No

SARA 313 Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

CWA (Clean Water Act)

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Iron trichloride 7705-08-0	1000 lb	-	-	X
Hydrogen chloride 7647-01-0	5000 lb	-	-	X
Ferrous chloride 7758-94-3	100 lb	-	-	X

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Chemical Name	Hazardous Substances RQs	CERCLA/SARA RQ	RQ (lbs)(dry)
Iron trichloride 7705-08-0	1000 lb	-	RQ 1000 lb final RQ RQ 454 kg final RQ
Hydrogen chloride 7647-01-0	5000 lb	5000 lb	RQ 5000 lb final RQ RQ 2270 kg final RQ
Ferrous chloride 7758-94-3	100 lb	-	RQ 100 lb final RQ RQ 45.4 kg final RQ

US State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Iron trichloride 7705-08-0	X	X	X
Ferrous chloride 7758-94-3	X	X	X

Chemical Name	U.S. - DEA - List I or Precursor Chemicals	U.S.- DEA - List II or Essential Chemicals
Hydrogen chloride 7647-01-0	-	50 gallon, Export Volume 27 kg, Export Weight 0 kg, Domestic Sales Weight

International Inventories

TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Complies
ENCS	Does not comply
IECSC	Complies
KECL	Complies
PICCS	Complies
AICS	Complies

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

16. OTHER INFORMATION

NFPA	**Health hazards** 3	**Flammability** 0	**Instability** 0	**Physical and Chemical Properties** -
HMIS	**Health hazards** 3	**Flammability** 0	**Physical hazards** 0	**Personal protection** D

Item #	**10244**
Safety Data Sheet	**0235**
Revision Date	Mar-15-2015
Issue Date	Mar-15-2015
Version	1
Revision Note	*** Updated value on SDS.

Disclaimer

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End of Safety Data Sheet

SAFETY DATA SHEET

Distributed by:
SAL Chemical
3036 Birch Drive,
Weirton, WV 26062
304.748.8200 - Phone
304.797.8751 - Fax

1. Identification

Product identifier **Hydrochloric acid, < 37%**

Other means of identification

Synonyms Chlorohydric acid, hydrogen chloride, muriatic acid

Recommended use Acid, steel, oil & gas, ore & mineral, food processing, pharmaceutical, organic chemical synthesis

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Company name KA Steel Chemicals, Inc

Address 1001 W. 31st Street
Downers Grove, IL 60515

Telephone 630-257-3900

E-mail http://www.kasteelchemicals.com/

Contact person SDS Review Group

Emergency phone number CHEMTREC (US) 1-800-424-9300
(Canada) 1-800-567-7455

2. Hazard(s) identification

Physical hazards	Corrosive to metals	Category 1
Health hazards	Acute toxicity, oral	Category 4
	Skin corrosion/irritation	Category 1
	Serious eye damage/eye irritation	Category 1
	Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation

OSHA defined hazards Not classified.

Label elements

Signal word Danger

Hazard statement May be corrosive to metals. Harmful if swallowed. Causes severe skin burns and eye damage. May cause respiratory irritation.

Precautionary statement

Prevention Wear protective gloves/protective clothing/eye protection/face protection. Do not eat, drink or smoke when using this product. Do not breathe mist or vapor. Use only outdoors or in a well-ventilated area. Wash thoroughly after handling. Keep only in original container.

Response If swallowed: Rinse mouth. Do NOT induce vomiting. If inhaled: Remove person to fresh air and keep comfortable for breathing. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. Wash contaminated clothing before reuse. Absorb spillage to prevent material damage.

Storage Store in a well-ventilated place. Keep container tightly closed. Store locked up.

Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC) None known.

Supplemental information

Not applicable.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Hydrochloric acid	7647-01-0	< 37

4. First-aid measures

Inhalation
Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a physician or poison control center immediately.

Skin contact
Take off immediately all contaminated clothing. Wash off IMMEDIATELY with plenty of water for at least 15-20 minutes. Get medical attention IMMEDIATELY. Call a physician or poison control center immediately.

Eye contact
Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.

Ingestion
Call a physician or poison control center immediately. Rinse mouth thoroughly. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

Most important symptoms/effects, acute and delayed
Contact with this material will cause burns to the skin, eyes and mucous membranes.

Indication of immediate medical attention and special treatment needed
Provide general supportive measures and treat symptomatically. Symptoms may be delayed.

General information
Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Wash contaminated clothing before reuse.

5. Fire-fighting measures

Suitable extinguishing media
Dry chemical. Foam. Carbon dioxide (CO2).

Unsuitable extinguishing media
Water. Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical
During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters
Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions
In case of fire and/or explosion do not breathe fumes. Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards
No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures
Immediately evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Wear appropriate personal protective equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up
Should not be released into the environment.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Deactivation materials include lime, limestone, sodium carbonate (soda ash), sodium bicarbonate, and dilute sodium hydroxide. Prevent entry into waterways, sewer, basements or confined areas.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills in original containers for re-use. For waste disposal, see Section 13 of the SDS.

Environmental precautions
Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling
Wear appropriate personal protective equipment. Do not get in eyes, on skin, on clothing. Do not breathe mist or vapor. Observe good industrial hygiene practices. Do not empty into drains. Use caution when combining with water; DO NOT add water to acid, ALWAYS add acid to water while stirring to prevent release of heat, steam and fumes.

Conditions for safe storage, including any incompatibilities
Store in a well-ventilated place. Store away from incompatible materials. Store in containers specially designed for this product and strength. Keep away from heat, sparks and open flame.

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Hydrochloric acid (CAS 7647-01-0)	Ceiling	7 mg/m3
		5 ppm

US. ACGIH Threshold Limit Values

Components	Type	Value
Hydrochloric acid (CAS 7647-01-0)	Ceiling	2 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Hydrochloric acid (CAS 7647-01-0)	Ceiling	7 mg/m3
		5 ppm

Biological limit values No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide eyewash station.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles). Face-shield. Wear a full-face respirator, if needed.

Skin protection

Hand protection Chemical resistant gloves.

Other Wear appropriate chemical resistant clothing.

Respiratory protection When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

Thermal hazards Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations Do not get this material on clothing. Keep away from food and drink. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Physical state Liquid.

Form Liquid.

Color Clear. Colorless.

Odor Pungent.

Odor threshold Not available.

pH < 1 (at 25°C)

Melting point/freezing point For product range of concentrations: -71°F(-57.22°C) to -17°F(-27°C)

Initial boiling point and boiling range For product range of concentrations: 226°F(107.78°C) to 127°F(53°C)

Flash point Not applicable.

Evaporation rate 1 (Approximately, water = 1)

Flammability (solid, gas) Not available.

Upper/lower flammability or explosive limits

Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not applicable.
Explosive limit - upper (%)	Not applicable.
Vapor pressure	For product range of concentrations: 0.01 mmHg to 200 mmHg @68°F(20°C)
Vapor density	Approximate
Relative density	For product range of concentrations: 1.102 g/cm3 to 1.188 g/cm3
Solubility(ies)	
Solubility (water)	Completely soluble.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Bulk density	Not applicable.
Molecular weight	36.46 g/mol

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Contact with metal may release flammable hydrogen gas. Contact with incompatible materials. Do not mix with other chemicals.
Incompatible materials	Incompatible with bases. Amines. Acid anhydrides. Metals. Organic compounds. Sulfides.
Hazardous decomposition products	Hydrogen chloride gas.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Vapors and mist will irritate throat and respiratory system and cause coughing.
Skin contact	Causes skin burns.
Eye contact	Causes eye burns.
Ingestion	Harmful if swallowed. Causes digestive tract burns. Ingestion may produce burns to the lips, oral cavity, upper airway, esophagus and possibly the digestive tract.
Symptoms related to the physical, chemical and toxicological characteristics	Contact with this material will cause burns to the skin, eyes and mucous membranes. Permanent eye damage including blindness could result.

Information on toxicological effects

Acute toxicity Harmful if swallowed.

Components	Species	Test Results
Hydrochloric acid (CAS 7647-01-0)		
Acute		
Inhalation		
LC50	Rat	3124 mg/l, 1 Hours
Oral		
LD50	Rabbit	900 mg/kg

Skin corrosion/irritation Causes severe skin burns and eye damage.

Serious eye damage/eye irritation	Causes serious eye damage.
Respiratory or skin sensitization	
Respiratory sensitization	This product is not expected to cause respiratory sensitization.
Skin sensitization	No data available.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

IARC Monographs. Overall Evaluation of Carcinogenicity

Hydrochloric acid (CAS 7647-01-0) 3 Not classifiable as to carcinogenicity to humans.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	May cause respiratory irritation.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not an aspiration hazard.
Chronic effects	Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity Because of the low pH of this product, it would be expected to produce significant ecotoxicity upon exposure to aquatic organisms and aquatic systems.

Components		Species	Test Results
Hydrochloric acid (CAS 7647-01-0)			
Aquatic			
Fish	LC50	Western mosquitofish (Gambusia affinis)	282 mg/l, 96 hours

Persistence and degradability	No data is available on the degradability of this product.
Bioaccumulative potential	No data available.
Mobility in soil	No data available.
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous waste. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

UN number	UN1789
UN proper shipping name	Hydrochloric acid
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Label(s)	8

Packing group	II
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling. Read safety instructions, SDS and emergency procedures before handling.
Special provisions	A3, A6, B3, B15, IB2, N41, T8, TP2, TP12
Packaging exceptions	154
Packaging non bulk	202
Packaging bulk	242

IATA

UN number	UN1789
UN proper shipping name	Hydrochloric acid
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	II
Environmental hazards	No.
ERG Code	8L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling. Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number	UN1789
UN proper shipping name	HYDROCHLORIC ACID
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	II
Environmental hazards	
Marine pollutant	No.
EmS	F-A, S-B
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling. Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not available.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

CERCLA Hazardous Substance: Hydrochloric acid, <37%, CAS # 7647-01-0, RQ = 5000 lbs

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

CERCLA Hazardous Substance List (40 CFR 302.4)

Hydrochloric acid (CAS 7647-01-0) LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - Yes

SARA 302 Extremely hazardous substance

Chemical name	CAS number	Reportable quantity (pounds)	Threshold planning quantity (pounds)	Threshold planning quantity, lower value (pounds)	Threshold planning quantity, upper value (pounds)
Hydrochloric acid	7647-01-0	5000	500		

SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Hydrochloric acid	7647-01-0	< 37

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Hydrochloric acid (CAS 7647-01-0)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Hydrochloric acid (CAS 7647-01-0)

Safe Drinking Water Act (SDWA) Not regulated.

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number

Hydrochloric acid (CAS 7647-01-0) 6545

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

Hydrochloric acid (CAS 7647-01-0) 20 %WV

DEA Exempt Chemical Mixtures Code Number

Hydrochloric acid (CAS 7647-01-0) 6545

US state regulations

US. Massachusetts RTK - Substance List

Hydrochloric acid (CAS 7647-01-0)

US. New Jersey Worker and Community Right-to-Know Act

Hydrochloric acid (CAS 7647-01-0)

US. Pennsylvania Worker and Community Right-to-Know Law

Hydrochloric acid (CAS 7647-01-0)

US. Rhode Island RTK

Hydrochloric acid (CAS 7647-01-0)

US. California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date	25-September-2014
Revision date	10-June-2015
Version #	02

HMIS® ratings

Health: 3
Flammability: 0
Physical hazard: 0

NFPA ratings

Disclaimer

KA Steel Chemicals, Inc cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

- Trade name: HYDROFLUORIC ACID 49%
- Chemical Name: Hydrofluoric acid
- Molecular formula: HF

1.2 Relevant identified uses of the substance or mixture and uses advised against

Uses of the Substance / Mixture

- Chemical industry
- Glass industry
- Metallurgy.
- Fuel additive
- Chemical intermediate

1.3 Details of the supplier of the safety data sheet

Company

SOLVAY FLUORIDES, LLC
3333 RICHMOND AVENUE
77098-3099, HOUSTON
USA
Tel: +1-713-5256700
Fax: +1-713-5257805

Distributed by:
SAL Chemical
3036 Birch Drive,
Weirton, WV 26062
304.748.8200 - Phone
304.797.8751 - Fax

1.4 Emergency telephone

FOR EMERGENCIES INVOLVING A SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT CONTACT: CHEMTREC 800-424-9300 within the United States and Canada, or 703-527-3887 for international collect calls.

SECTION 2: Hazards identification

Although OSHA has not adopted the environmental portion of the GHS regulations, this document may include information on environmental effects.

2.1 Classification of the substance or mixture

HCS 2012 (29 CFR 1910.1200)

Acute toxicity, Category 2	H300: Fatal if swallowed.
Acute toxicity, Category 2	H330: Fatal if inhaled.
Acute toxicity, Category 1	H310: Fatal in contact with skin.
Skin corrosion, Category 1A	H314: Causes severe skin burns and eye damage.
Serious eye damage, Category 1	H318: Causes serious eye damage.

2.2 Label elements

HCS 2012 (29 CFR 1910.1200)

Pictogram

Signal Word

- Danger

Hazard Statements

- H300 + H310 + H330 — Fatal if swallowed, in contact with skin or if inhaled.
- H314 — Causes severe skin burns and eye damage.
- H318 — Causes serious eye damage.

Precautionary Statements

Prevention

- P260 — Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
- P262 — Do not get in eyes, on skin, or on clothing.
- P264 — Wash skin thoroughly after handling.
- P270 — Do not eat, drink or smoke when using this product.
- P271 — Use only outdoors or in a well-ventilated area.
- P280 — Wear protective gloves/ protective clothing/ eye protection/ face protection.
- P284 — Wear respiratory protection.

Response

- P301 + P310 + P330 — IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician. Rinse mouth.
- P301 + P330 + P331 — IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
- P303 + P361 + P353 — IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
- P304 + P340 + P310 — IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/ physician.
- P305 + P351 + P338 + P310 — IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/ physician.
- P363 — Wash contaminated clothing before reuse.

Storage

- P403 + P233 — Store in a well-ventilated place. Keep container tightly closed.
- P405 — Store locked up.

Disposal

- P501 — Dispose of contents/ container to an approved waste disposal plant.

2.3 Other hazards which do not result in classification

- Chronic exposure may entail dental or skeletal fluorosis

SECTION 3: Composition/information on ingredients

3.1 Substance

- Not applicable, this product is a mixture.

3.2 Mixture

- Formula HF

Hazardous Ingredients and Impurities

Chemical Name	Identification number CAS-No.	Concentration [%]
Hydrogen fluoride	7664-39-3	49

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice

- Call a physician immediately.
- Take victim immediately to hospital.

In case of inhalation

- In case of accident by inhalation: remove casualty to fresh air and keep at rest.
- Oxygen or artificial respiration if needed.
- Victim to lie down in the recovery position, cover and keep him warm.
- Call a physician immediately.
- Take victim immediately to hospital.

In case of skin contact

- Call a physician immediately.
- Take victim immediately to hospital.
- Take off contaminated clothing and shoes immediately.
- Wash off with plenty of water.
- First treatment with calcium gluconate paste.
- Rinse with lukewarm running water.
- Please make sure that hospital staff is aware of the unique characteristics of injuries caused by HF exposures and the fact that the systemic toxic effects of the exposure will require prompt serum monitoring of fluorides, calcium, magnesium and sodium, and calcium replacement by infusion.

In case of eye contact

- Immediate medical attention is required.
- Take victim immediately to hospital.
- Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
- In the case of difficulty of opening the lids, administer an analgesic eye wash (oxybuprocaine).

In case of ingestion

- Call a physician immediately.
- Take victim immediately to hospital.

- If victim is conscious:
- Rinse mouth with water.
- Give to drink a 1% aqueous calcium gluconate solution.
- Do NOT induce vomiting.
- Artificial respiration and/or oxygen may be necessary.

4.2 Most important symptoms and effects, both acute and delayed

In case of inhalation

Symptoms

- Breathing difficulties
- sore throat
- Nose bleeding

Effects

- Inhalation of vapors is irritating to the respiratory system, may cause throat pain and cough.
- Aspiration may cause pulmonary edema and pneumonitis.
- risk of hypocalcemia with nervous problems (tetany) and cardiac arrhythmia

Repeated or prolonged exposure

- chronic bronchitis

In case of skin contact

Symptoms
- Irritation
- Redness
- Swelling of tissue
- Burn

Effects
- Causes severe burns.
- Risk of shock.
- Risk of hypocalcemia following the extent of the lesions.

In case of eye contact

Symptoms
- Lachrymation
- Redness
- Swelling of tissue
- Burn

Effects
- May cause permanent eye injury.
- May cause blindness.

In case of ingestion

Symptoms
- Nausea
- Bloody vomiting
- Abdominal pain
- Diarrhea
- Cough
- Severe shortness of breath

Effects
- If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach.
- Risk of throat (o)edema and suffocation.
- Risk of chemical pneumonitis from product inhalation.
- risk of hypocalcemia with nervous problems (tetany) and cardiac arrhythmia
- Risk of convulsions, loss of consciousness, deep coma and cardiopulmonary arrest.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician

- Please make sure that hospital staff is aware of the unique characteristics of injuries caused by HF exposures and the fact that the systemic toxic effects of the exposure will require prompt serum monitoring of fluorides, calcium, magnesium and sodium, and calcium replacement by infusion.
- Immediately apply calcium gluconate gel 2.5% and massage into the affected area using rubber gloves; continue to massage while repeatedly applying gel until 15 minutes after pain is relieved.
- HF-Antidote Gel from IPS Healthcare is recommended as treatment for injuries from hydrofluoric acid.

SECTION 5: Firefighting measures

Flash point Not applicable

Autoignition temperature Not applicable

Flammability / Explosive limit no data available

5.1 Extinguishing media

Suitable extinguishing media

- Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media

- Water may be ineffective.

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire fighting

- The product is not flammable.
- Not combustible.
- Hazardous decomposition products formed under fire conditions.
- Gives off hydrogen by reaction with metals.

Hazardous combustion products:

- Hydrogen

5.3 Advice for firefighters

Special protective equipment for fire-fighters

- Wear self-contained breathing apparatus and protective suit.
- Wear chemical resistant oversuit
- Special protective actions for fire-fighters
- In case of fire, use water spray.
- Keep product and empty container away from heat and sources of ignition.
- Cool containers/tanks with water spray.
- Keep from any possible contact with water.
- Approach from upwind.

Further information

- Suppress (knock down) gases/vapors/mists with a water spray jet.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel

- Immediately evacuate personnel to safe areas.
- Keep people away from and upwind of spill/leak.

Advice for emergency responders

- Wear self-contained breathing apparatus and protective suit.
- Suppress (knock down) gases/vapors/mists with a water spray jet.
- Avoid spraying the leak source.
- Ventilate the area.
- Prevent further leakage or spillage if safe to do so.
- Keep away from incompatible products

6.2 Environmental precautions

- Discharge into the environment must be avoided.
- If the product contaminates rivers and lakes or drains inform respective authorities.
- Prevent product from entering sewage system.

6.3 Methods and materials for containment and cleaning up

- Prevent product from entering sewage system.
- Dilute with water.
- Contact with water may produce heat release and presents risks of splashing.
- Keep in properly labeled containers.
- Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

- Refer to protective measures listed in sections 7 and 8.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

- Use only in well-ventilated areas.
- Used in closed system
- Use only clean and dry utensils.
- Keep away from water.
- Preferably transfer by pump or gravity.
- Avoid inhalation, ingestion and contact with skin and eyes.
- Keep away from incompatible products

Hygiene measures

- Ensure that eyewash stations and safety showers are close to the workstation location.
- Take off contaminated clothing and shoes immediately.
- Wash contaminated clothing before re-use.
- May not get in touch with:
- Leather
- Wash hands before breaks and at the end of workday.
- Handle in accordance with good industrial hygiene and safety practice.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/Storage conditions

- Keep container tightly closed.
- Keep in a cool, well-ventilated place.
- Keep away from heat.
- Prevent spreading over a wide area (e.g. by containment or oil barriers).
- Information about special precautions needed for bulk handling is available on request.

- Keep away from:
- Incompatible products

Packaging material

Suitable material
- Steel drum
- Coated steels.

- Plastic drum
- Polyethylene

Unsuitable material
- glass

7.3 Specific end use(s)

- Contact your supplier for additional information

SECTION 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. Assistance with selection, use and maintenance of worker protection equipment is generally available from equipment manufacturers.

8.1 Control parameters

Components with workplace occupational exposure limits

Ingredients	Value type	Value	Basis
Hydrogen fluoride	TWA	0.5 ppm	American Conference of Governmental Industrial Hygienists
	Danger of cutaneous absorption Expressed as :Fluorine		
Hydrogen fluoride	C	2 ppm	American Conference of Governmental Industrial Hygienists
	Danger of cutaneous absorption Expressed as :Fluorine		
Hydrogen fluoride	TWA	3 ppm 2.5 mg/m3	National Institute for Occupational Safety and Health
Hydrogen fluoride	C	6 ppm 5 mg/m3	National Institute for Occupational Safety and Health
	15 minute ceiling value		
Hydrogen fluoride			Occupational Safety and Health Administration - Table Z-1 Limits for Air Contaminants
	See Table Z-2Expressed as :Fluorine		
Hydrogen fluoride	TWA	3 ppm	Occupational Safety and Health Administration - Table Z-2
	Z37.28-1969		

NIOSH IDLH (Immediately Dangerous to Life or Health Concentrations)

Ingredients	CAS-No.	Concentration
Hydrogen fluoride	7664-39-3	30 ppm

Biological Exposure Indices

Ingredients	Value type	Value	Basis
Hydrogen fluoride	BEI	2 mg/l Fluoride Urine Prior to shift (16 hours after exposure ceases)	American Conference of Governmental Industrial Hygienists

Hydrogen fluoride	BEI	3 mg/l Fluoride Urine End of shift (As soon as possible after exposure ceases)	American Conference of Governmental Industrial Hygienists

8.2 Exposure controls

Control measures

Engineering measures
- Provide appropriate exhaust ventilation at machinery.
- Apply technical measures to comply with the occupational exposure limits.

Individual protection measures

Respiratory protection
- Use only respiratory protection that conforms to international/ national standards.
- Use NIOSH approved respiratory protection.
- In the case of dust or aerosol formation use respirator with an approved filter.
- Respirator with a full face mask.
- Self-contained breathing apparatus in confined spaces/insufficient oxygen/in case of large uncontrolled emissions/in all circumstances when the mask and cartridge do not give adequate protection.
- Use respirator when performing operations involving potential exposure to vapor of the product.

Hand protection
- Heat insulating gloves

- Impervious gloves
- 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).

Suitable material
- Fluoroelastomer

Eye protection
- Chemical resistant goggles must be worn.

- If splashes are likely to occur, wear:
- Face-shield

Skin and body protection
- Complete suit protecting against chemicals
- Boots

- Do not wear leather shoes.

Hygiene measures
- Ensure that eyewash stations and safety showers are close to the workstation location.
- Take off contaminated clothing and shoes immediately.
- Wash contaminated clothing before re-use.
- May not get in touch with:
- Leather
- Wash hands before breaks and at the end of workday.
- Handle in accordance with good industrial hygiene and safety practice.

SECTION 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.

9.1 Information on basic physical and chemical properties

Appearance	Physical state: liquid Color: colorless colorless
Odor	pungent
Odor Threshold	no data available
pH	< 1.0
Freezing point	-33.0 °F (-36.1 °C)
Boiling point/boiling range	223 °F (106 °C)
Flash point	Not applicable
Evaporation rate (Butylacetate = 1)	no data available
Flammability (solid, gas)	Not applicable
Flammability (liquids)	The product is not flammable.
Flammability / Explosive limit	Explosiveness: With certain materials (see section 10).
Autoignition temperature	Not applicable
Vapor pressure	23.03 mmHg (30.70 hPa) (68 °F (20 °C))
Vapor density	no data available
Density	Bulk density: Not applicable
Solubility	Water solubility : completely miscible, Reacts violently with water.
Partition coefficient: n-octanol/water	Not applicable
Thermal decomposition	no data available
Viscosity	no data available
Explosive properties	no data available
Oxidizing properties	Not applicable

9.2 Other information

Molecular weight	20 g/mol

SECTION 10: Stability and reactivity

10.1 Reactivity

- Reacts violently with water.
- Risk of explosion.

10.2 Chemical stability

- Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

- Corrosive in contact with metals, Gives off hydrogen by reaction with metals.

10.4 Conditions to avoid

- Exposure to moisture.

10.5 Incompatible materials

- Water
- glass
- Metals
- Strong bases
- Alkali metals

10.6 Hazardous decomposition products

- Hydrogen

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Acute oral toxicity	LD100 : 80 mg/kg - Guinea pig Test substance: 2 % solution
Acute inhalation toxicity	LC50 - 1 h 2240 - 2340 ppm - Rat Test substance: gas
Acute dermal toxicity sodium fluoride	LD 10 : ca. 300 mg/kg - Mouse
Acute toxicity (other routes of administration)	no data available
Skin corrosion/irritation	Corrosive

Serious eye damage/eye irritation

sodium fluoride	Rabbit Eye irritation

Respiratory or skin sensitization

sodium fluoride	not sensitizing

Mutagenicity

Genotoxicity in vitro

sodium fluoride	In vitro tests did not show mutagenic effects

Genotoxicity in vivo

sodium fluoride	In vivo tests did not show mutagenic effects

Carcinogenicity	no data available

This product does not contain any ingredient designated as probable or suspected human carcinogens by:
NTP
IARC
OSHA
ACGIH

Toxicity for reproduction and development

Toxicity to reproduction / fertility

sodium fluoride	Rat NOAEL parent: 10 - 14 mg/kg Rabbit NOAEL parent: 14 mg/kg not significant Developmental Toxicity
Developmental Toxicity/Teratogenicity	no data available

STOT

STOT-single exposure	no data available
STOT-repeated exposure	Inhalation Prolonged exposure - Rat Test substance: gas Target Organs: Cardio-vascular system, Nervous system observed effect Inhalation - Rat Target Organs: Respiratory system, Kidney, Liver, Testes observed effect gas

Aspiration toxicity no data available

Further information

corrosive effects
Liver and kidney injuries may occur.
Chronic exposure may entail dental or skeletal fluorosis
The carcinogenic effect is not demonstrated in human
risk of effect to:
toxic effects for reproduction

SECTION 12: Ecological information

12.1 Toxicity

Aquatic Compartment

Acute toxicity to fish

sodium fluoride — LC50 - 96 h : 51 mg/l - Fishes, Salmo gairdneri
static test

Fresh water

Acute toxicity to daphnia and other aquatic invertebrates.

sodium fluoride — EC50 - 48 h : 26 mg/l - Daphnia magna (Water flea)
Fresh water

EC50 - 96 h : 10.5 mg/l - Daphnia magna (Water flea)
salt water

Chronic toxicity to fish

sodium fluoride — NOEC: 4 mg/l - 21 Days - Oncorhynchus mykiss (rainbow trout)
static test
Fresh water

Chronic toxicity to daphnia and other aquatic invertebrates.

sodium fluoride — NOEC: 8.9 mg/l - 21 Days - Daphnia magna (Water flea)
static test
Fresh water

12.2 Persistence and degradability

Abiotic degradation

Photodegradation neutralization by natural alkalinity
Medium
Air

Biodegradation

Biodegradability The methods for determining the biological degradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

Bioconcentration factor (BCF) Does not bioaccumulate.

12.4 Mobility in soil

Adsorption potential (Koc)

Water
Solubility(ies)
Mobility

Soil/sediments
potential adsorption
pH
fluorides

Air
mobility as solid aerosols

12.5 Results of PBT and vPvB assessment no data available

12.6 Other adverse effects no data available

Ecotoxicity assessment

Acute aquatic toxicity
sodium fluoride Harmful to aquatic organisms.

Chronic aquatic toxicity
sodium fluoride . low chronic toxicity.

Remarks No data is available on the product itself., Ecological data therefore refers only to the effects of the decomposition products., Harmful to aquatic organisms., Nevertheless, hazard for the environment is limited due to product properties:, . low chronic toxicity., Product fate is highly dependent on environmental conditions: pH, temperature, redox potential, mineral and organic content of the medium ,...

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product Disposal

- or

Waste Code

- Environmental Protection Agency
- Hazardous Waste – YES

- RCRA Hazardous Waste (40 CFR 302)
- Corrosive waste – (C)

Advice on cleaning and disposal of packaging

- Clean container with water.
- The empty and clean containers are to be reused in conformity with regulations.
- To avoid treatments, as far as possible, use dedicated containers.

SECTION 14: Transport information

Transportation status: IMPORTANT! Statements below provide additional data on listed transport classification.
The listed Transportation Classification does not address regulatory variations due to changes in package size, mode of shipment or other regulatory descriptors.

DOT

14.1 UN number	UN 1790
14.2 Proper shipping name	HYDROFLUORIC ACID
14.3 Transport hazard class	8
Subsidiary hazard class	6.1
Label(s)	8 (6.1)
14.4 Packing group	
Packing group	II
ERG No	157
14.5 Environmental hazards	NO
Marine pollutant	

14.6 Special precautions for user

This product contains one or more ingredients identified as a hazardous substance in Appendix A of 49 CFR 172.101. The product quantity, in one package, which triggers the RQ requirements under 49 CFR for each hazardous substance is shown.

Reportable quantities	: RQ substance: Hydrogen fluoride RQ limit for substance: 100 lb RQ limit for product: 201.08 lb

TDG

14.1 UN number	UN 1790
14.2 Proper shipping name	HYDROFLUORIC ACID
14.3 Transport hazard class	8
Subsidiary hazard class	6.1
Label(s)	8 (6.1)

14.4 Packing group	
Packing group	II
ERG No	157
14.5 Environmental hazards	NO
Marine pollutant	

NOM

no data available

IMDG

14.1 UN number	UN 1790
14.2 Proper shipping name	HYDROFLUORIC ACID
14.3 Transport hazard class	8
Subsidiary hazard class	6.1
Label(s)	8 (6.1)
14.4 Packing group	
Packing group	II
14.5 Environmental hazards	NO
Marine pollutant	
14.6 Special precautions for user	
EmS	F-A , S-B

For personal protection see section 8.

IATA

14.1 UN number	UN 1790
14.2 Proper shipping name	HYDROFLUORIC ACID
14.3 Transport hazard class	8
Subsidiary hazard class:	6.1
Label(s):	8 (6.1)
14.4 Packing group	
Packing group	II
Packing instruction (cargo aircraft)	855
Max net qty / pkg	30.00 L
Packing instruction (passenger aircraft)	851
Max net qty / pkg	1.00 L
14.5 Environmental hazards	NO

14.6 Special precautions for user

For personal protection see section 8.

Note: The above regulatory prescriptions are those valid on the date of publication of this sheet. Given the possible evolution of transportation regulations for hazardous materials, it would be advisable to check their validity with your sales office.

SECTION 15: Regulatory information

15.1 Notification status

Inventory Information	Status
United States TSCA Inventory	Listed on Inventory
Mexico INSQ (INSQ)	In compliance with the inventory
Canadian Domestic Substances List (DSL)	Listed on Inventory
New Zealand. Inventory of Chemical Substances	In compliance with the inventory
Australia Inventory of Chemical Substances (AICS)	Listed on Inventory
Japan. CSCL - Inventory of Existing and New Chemical Substances	One or more components not listed on inventory
Korea. Korean Existing Chemicals Inventory (KECI)	Listed on Inventory
China. Inventory of Existing Chemical Substances in China (IECSC)	Listed on Inventory
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	Listed on Inventory

15.2 Federal Regulations

US. EPA EPCRA SARA Title III

SARA Hazard Designation Sections 311/312 (40 CFR 370)

Fire Hazard	no
Reactivity Hazard	no
Sudden Release of Pressure Hazard	no
Acute Health Hazard	yes
Chronic Health Hazard	yes

Section 313 Toxic Chemicals (40 CFR 372.65)

The following components are subject to reporting levels established by SARA Title III, Section 313:

Ingredients	CAS-No.	Concentration
Hydrogen fluoride	7664-39-3	49 %

Section 302 Emergency Planning Extremely Hazardous Substance Threshold Planning Quantity (40 CFR 355)

The following components are subject to reporting levels established by SARA Title III, Section 302:

Ingredients	CAS-No.	Threshold planning quantity	Remarks
Hydrogen fluoride	7664-39-3	100 lb	

Section 302 Emergency Planning Extremely Hazardous Substance Reportable Quantity (40 CFR 355)

Ingredients	CAS-No.	Reportable quantity
Hydrogen fluoride	7664-39-3	100 lb

Section 304 Emergency Release Notification Reportable Quantity (40 CFR 355)

Ingredients	CAS-No.	Reportable quantity
Hydrogen fluoride	7664-39-3	100 lb

US. EPA CERCLA Hazardous Substances and Reportable Quantities (40 CFR 302.4)

Ingredients	CAS-No.	Reportable quantity
Hydrogen fluoride	7664-39-3	100 lb

15.3 State Regulations

US. California Safe Drinking Water & Toxic Enforcement Act (Proposition 65)

This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

SECTION 16: Other information

NFPA (National Fire Protection Association) - Classification

Health	4 severe
Flammability	0 minimal
Instability or Reactivity	1 slight
Special Notices	None

HMIS (Hazardous Materials Identification System (Paint & Coating)) - Classification

Health	4 severe
Flammability	0 minimal
Reactivity	1 slight
PPE	Determined by User; dependent on local conditions

Further information

- Environmental Protection Agency (EPA) requirements for a Risk Management Plan must be followed anytime at least 1000 lbs. of Hydrogen fluoride/Hydrofluoric acid (conc 50% or greater) are used or stored. Refer to 40 CFR 68.150 for specific details.
- Occupational Safety and Health Administration (OSHA) requirements for process safety management must be followed anytime at least 1000 lbs. of Hydrogen Fluoride are used or stored. Refer to 29 CFR 1910.119 for specific details.
- Product evaluated under the US GHS format.

Date Prepared: 04/01/2015

Key or legend to abbreviations and acronyms used in the safety data sheet

- C	Ceiling limit
- STEL	Short-term exposure limit
- TWA	8-hour, time-weighted average
- ACGIH	American Conference of Governmental Industrial Hygienists
- OSHA	Occupational Safety and Health Administration
- NTP	National Toxicology Program
- IARC	International Agency for Research on Cancer
- NIOSH	National Institute for Occupational Safety and Health

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SAFETY DATA SHEET

SECTION 1	PRODUCT AND COMPANY IDENTIFICATION
TRADE NAME:	Hydrofluosilicic Acid
CHEMICAL NAME:	Hydrofluosilicic Acid
CAS NUMBER:	16961 - 83 – 4
CHEMICAL FAMILY:	Inorganic Fluorides
SYNONYMS:	Fluorosilicic Acid, Hexafluosilicic Acid, HFS, FSA
PRIMARY USE:	Industrial Chemical
COMPANY INFORMATION:	THE MOSAIC COMPANY 3033 Campus Drive Plymouth, MN 55441 www.mosaicco.com 800-918-8270 or 763-577-2700 8 AM to 5 PM Central Time US
EMERGENCY TELEPHONE:	24 Hour Emergency Telephone Number: For Chemical Emergencies: Spill, Leak, Fire or Accident Call CHEMTREC North America: (800) 424-9300 Others: (703) 527-3887 (collect)

SECTION 2	HAZARD IDENTIFICATION
Emergency Overview:	Water white to straw yellow liquid with a pungent odor. Corrosive to the skin, eyes and mucous membranes through direct contact, inhalation or ingestion. May cause severe irritation and burns, which may not be immediately apparent. Will not burn, if involved in a fire, use extinguishing media suitable for the material that is burning.
GHS Classification	Acute Tox Category 4 (Oral) — Hazard Statement H302 Skin Corrosion/Irritation: Category 1C — Hazard Statement H314 Serious Eye Damage/Eye Irritation: Category 1 — Hazard Statement H318

Signal Word: DANGER
Hazard Statement(s)
H302 Harmful if swallowed
H314 Causes severe skin burns and eye damage
H318 Causes serious eye damage

Label Elements	
Prevention	P260 Do not breath fumes/gas/mist/vapors/spray P264 Wash skin thoroughly after handling P270 Do not eat, drink or smoke when using this product. P280 Wear protective gloves/protective clothing / Wear eye protection/face protection P284 In case of inadequate ventilation/ wear respiratory protection

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Response	P301+ P312	IF SWALLOWED: Call a Poison Center/Doctor if you feel unwell.
	P301+P330+P331	IF SWALLOWED: Rinse mouth, Do NOT induce vomiting.
	P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes; Remove contact lenses, if present and easy to do. Continue rinsing.
	P303+P361+P353	IF ON SKIN: Take off immediately all contaminated clothing. Rinse skin with water.
	P304+P340	IFINHALED: Remove person to fresh air and keep comfortable for breathing
	P310	Immediately call a doctor
	P363	Wash contaminated clothing before reuse.
	P390	Absorb Spillage to prevent material damage.
Storage	P405 Store locked up	
Disposal	P501 Disposal of content/containers to be in accordance with local/regional/national regulations.	

NFPA HAZARD CLASS	
Health:	3
Flammability:	0
Instability:	1
Special Hazard:	Corrosive

HMIS HAZARD CLASS	
Health:	3
Flammability:	0
Physical Hazard:	0
PPE:	Section 8

WHMIS HAZARD CLASS	
Symbol	
Classification	E
Sub Class	

SECTION 3	COMPOSITION INFORMATION ON INGREDIENTS		
FORMULA:	H_2SiF_6		
COMPOSITION:	Hydrofluosilicic Acid	CAS No. 16961-83-4	20-25%
	Water		75-80%

SECTION 4	FIRST AID MEASURES	
FIRST AID PROCEDURES:	Eyes:	Immediately flush with plenty of water for at least 15 minutes. Get medical attention immediately.
	Skin:	Immediately flush with plenty of water. Remove contaminated clothing. Discard contaminated clothing properly. Get medical attention if irritation occurs or persists.
	Inhaled:	Move to fresh air. Administer oxygen. Treat symptomatically. Get medical attention promptly. Observe for possible delayed reaction.
	Ingestion:	Do Not induce vomiting. Give large quantities of milk or water to patient if conscious. Seek medical attention promptly.
NOTE TO PHYSICIAN:	None	

SECTION 5	FIRE FIGHTING MEASURES	
Flammable Properties:	Flash Point:	Not applicable
	OSHA Flammability Class:	Not applicable
	LEL/UEL:	Not applicable
	Auto-Ignition Temperature:	Not applicable

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Extinguishing Media:	Small fires: Water spray, foam, dry chemical or CO_2. Large fires: Water spray, fog or foam.
Protection of Firefighters:	Wear self-contained breathing apparatus with full protective clothing. Fluorosilicic Acid is not flammable, however when heated to decomposition, highly toxic and corrosive fumes of fluorides are emitted. May generate flammable and explosive hydrogen gas in contact with some metals.

SECTION 6	ACCIDENTAL RELEASE MEASURES
RESPONSE TECHNIQUES:	Small spills: Contain spill and stop leak if it can be done without risk. Use sodium carbonate or a mixture of soda ash and slaked lime, sand or noncombustible absorbent material to soak up material. Large spills: Use same procedure as above. Isolate spill area and deny entry. Prevent discharge into waterways and sewers. Material may be neutralized with sodium carbonate or a mixture of soda ash and slaked lime. Contact proper local, state, or federal regulatory agencies to ascertain proper disposal techniques and procedures. All waste to be collected in a DOT-approved poly drum for disposal. Do not breathe fumes, gases, mists

SECTION 7	HANDLING AND STORAGE
HANDLING:	Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. Maintain proper hygiene practices when handling this product.
STORAGE:	Store in tightly closed containers, in a well ventilated area. Keep away from heat, combustible materials, strong bases and metals. Large storage tanks should be bermed. Avoid using glass, metal or ceramic containers.

SECTION 8	EXPOSURE CONTROLS / PERSONAL PROTECTION	
ENGINEERING CONTROLS:	Assure that ventilation is adequate to control airborne levels.	
PERSONAL PROTECTIVE EQUIPMENT (PPE):	Eye/Face:	Splash proof goggles and full-face shield should be worn at all times.
	Skin:	Acid proof gloves, headgear, protective shoes and clothing should be worn to prevent contact.
	Respiratory:	Wear NIOSH approved respiratory protective equipment when vapor or mists may exceed applicable concentration limits.
	Other:	Facilities utilizing or storing this material should be equipped with an eyewash station and a safety shower.
GENERAL HYGIENE CONSIDERATIONS:	Avoid breathing fumes. Avoid ingestion. Wash thoroughly after handling. Avoid contact with eyes or skin Use with adequate ventilation	
EXPOSURE GUIDELINES:	OSHA Permissible Exposure Limits (PEL):	2.5 mg/m^3 as Fluoride
	ACGIH Threshold Limit Value (TLV):	2.5 mg/m^3 as Fluoride
*A biological threshold limit of 2 mg of Fluoride/l in urine collected at the end of the work shift is recommended to prevent development of fluorosis. An increase of 1 mg Fluoride/l in urine over an 8-hour shift reportedly corresponds to a time-weighted average exposure of 0.5 mg Fluoride/m^3.		

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SECTION 9	PHYSICAL AND CHEMICAL PROPERTIES		
Note: Unless otherwise stated, values in this section are determined at 20°C (68°F) and 760 mm Hg (1 atm).			
Appearance:	Water white to straw yellow liquid	Vapor Pressure (mm Hg):	Not applicable
Odor:	Pungent	Vapor Density (air=1):	Not applicable
Odor Threshold:	No data available	Specific Gravity or Relative Density:	1.2
Physical state:	Liquid	Bulk Density:	9.7 – 10.1 lbs./ft^3, 25% Sol. @ 77°F
pH:	1.2	Solubility in Water:	100% Soluble in water
Melting Point/ Freezing Point:	Not applicable	Partition coefficient:	No data available
Boiling Point:	222 – 223 °F	Auto-Ignition Temperature:	Not applicable
Flash Point:	Not applicable	Decomposition Temperature:	No data available
Evaporation Rate:	No data available	Viscosity:	6.5 cps
Flammability:	No data available	Volatility:	Not applicable
Upper/lower Flammability or explosive limits	Not applicable		

SECTION 10	STABILITY AND REACTIVITY
Chemical Stability:	Stable under recommended conditions of storage, handling and proper use.
Conditions to Avoid:	Avoid all heat sources.
Incompatible Materials:	Avoid contact with metals, stoneware, strong acids and alkalies, explosives, toxicants, readily oxidizable materials, alkali metals, combustible solids, and organic peroxides.
Hazardous Decomposition Products:	Extreme temperatures such as a fire cause formation of highly toxic and corrosive fumes of fluorides such as SiF_4 and HF. Hydrogen gas may be formed at temperatures above 227°F.
Corrosiveness:	Attacks silica bearing materials, metals, and stoneware
Hazardous Polymerization:	Will not occur.

SECTION 11	TOXICOLOGICAL INFORMATION		
Acute Oral Toxicity	LD_{50} = 200 mg/Kg (guinea pig)		
Acute Inhalation Toxicity	LC_{50} = 850 – 1070 ppm / 1 hour (Rat)		
Acute Dermal Toxicity	140 mg/kg LDLo (Frog)		
Mutagenesis	No data available	Target Organ	No data available
Developmental Toxicity	No data available	Carcinogenicity	No data available

SECTION 12	ECOLOGICAL INFORMATION
Ecotoxicology	No data available

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SECTION 13	DISPOSAL CONSIDERATIONS
	It is the responsibility of the waste generator to properly characterize all waste materials for treatment and/or disposal according to applicable regulatory entities. Consult Federal, State, Provincial Local regulation regarding disposal of waste material that may incorporate some amount of this product. If the undiluted material is spilled to soil or water, it is recommended to characterize the waste material according to 40CFR 261.20-24 (USA). Keep material in labeled, covered DOT- approved container pending disposal.

SECTION 14	TRANSPORT INFO		
Regulatory Status	Regulated by US DOT, Canada TDG, IATA, IMO/IMDG		
Identification Number	UN1778	Proper Shipping Name	Fluorosilicic Acid
Hazard Class	Class 8 (Corrosive)	Packing Group	II
DOT Emergency Response Guide Number		154	

SECTION 15	REGULATORY INFORMATION				
CERCLA:	Not Regulated. Product is not listed with an RQ (Reportable Quantity)				
RCRA 261.33:	Not Regulated				
SARA TITLE III: (Exemptions at 40 CFR, Part 370 may apply for agricultural use, or for quantities of less than 10,000 pounds on-site.)	Section 302/304: Not Regulated		RQ: No		TPQ: No
	Section 311/312:				
	Acute: Yes	Chronic: Yes	Fire: No	Pressure: No	Reactivity: No
	Section 313: Not Regulated				
NTP, IARC, OSHA:	The ingredient(s) of this product is (are) not classified as carcinogenic by NTP, IARC, or OSHA				
Canada DSL and NDSL:			On Inventory		
TSCA:	TSCA 8 (b): On Inventory TSCA 8 (d):				
CA Proposition 65: (Health & Safety Code Section 25249.5)			Not listed		
WHMIS:	Listed as Fluorosilicic Acid. Class E - Corrosive Material. This MSDS has been prepared according to the hazard criteria of the Controlled Product Regulations (CPR) and the MSDS contains all of the information required by the CPR				
CBSA:	N/A				

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SECTION 16	OTHER INFORMATION
Disclaimer:	The information in this document is believed to be correct as of the date issued. **HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THIS INFORMATION, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE.** This information and product are furnished on the condition that the person receiving them shall make their own determination as to suitability of the product for their particular purpose and on the condition that they assume the risk of their use thereof. The conditions and use of this product are beyond the control of Mosaic, and Mosaic disclaims any liability for loss or damage incurred in connection with the use or misuse of this substance.
Preparation:	The preparation of this MSDS was in accordance with ANSI Z400.1-2010.
Revision Date:	January 12, 2015
Sections Revised:	All
SDS Number:	MOS 200011.01
References:	Globally Harmonized System of Classification and Labelling of Chemicals (GHS) – 4th Edition 2011 OSHA Hazard Communication Standard, 2012

Distributed by:
SAL Chemical
3036 Birch Drive
Weirton, WV 26062
304-748-8200

Safety Data Sheet
Methanol

Version 1.7 Revision Date: 10/14/2014

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Methanol
Product Use Description : Industrial chemical

Manufacturer or supplier's details

Company : Nexeo Solutions LLC
Address 3 Waterway Square Place Suite 1000
Woodlands, Tx. 77380
United States of America

Emergency telephone number:
Health North America: 1-855-NEXEO4U (1-855-639-3648)
Health International: 1-855-NEXEO4U (1-855-639-3648)
Transport North America: CHEMTREC 800.424.9300

Additional Information: : Responsible Party: Product Safety Group
E-Mail: msds@nexeosolutions.com
SDS Requests: 1-855-429-2661
SDS Requests Fax: 1-281-500-2370
Website: www.nexeosolutions.com

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Flammable liquids	: Category 2
Acute toxicity (Oral)	: Category 3
Acute toxicity (Inhalation)	: Category 3
Acute toxicity (Dermal)	: Category 3
Carcinogenicity	: Category 2
Reproductive toxicity	: Category 2
Specific target organ toxicity - single exposure	: Category 1 (Eyes, Central nervous system)

GHS Label element

Hazard pictograms :

Signal word : Danger

Hazard statements : H225 Highly flammable liquid and vapour.
H301 + H311 + H331 Toxic if swallowed, in contact with skin or if inhaled
H351 Suspected of causing cancer.
H361 Suspected of damaging fertility or the unborn child.
H370 Causes damage to organs (Eyes, Central nervous system).

Precautionary statements : **Prevention:**
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233 Keep container tightly closed.
P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/ eye protection/ face protection.
P281 Use personal protective equipment as required.
Response:
P301 + P310 + P330 IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician. Rinse mouth.
P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 + P311 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician.
P307 + P311 IF exposed: Call a POISON CENTER or doctor/ physician.
P363 Wash contaminated clothing before reuse.

P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
Storage:
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P403 + P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.
Disposal:
P501 Dispose of contents/ container to an approved waste disposal plant.

Potential Health Effects

Carcinogenicity:

IARC No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

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.

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.

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.

Emergency Overview

Appearance	liquid
Colour	colourless, clear
Odour	mild, alcohol-like
Hazard Summary	No information available.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Pure substance

Hazardous components

CAS-No.	Chemical Name	Concentration (%)
67-56-1	Methanol	90 - 100

Molecular formula	: C-H4-O
Synonyms	: Methyl alcohol,

SECTION 4. FIRST AID MEASURES

General advice	: Move out of dangerous area. Consult a physician. Show this safety data sheet to the doctor in attendance. Do not leave the victim unattended. Consult a physician.
If inhaled	: If unconscious place in recovery position and seek medical advice. If symptoms persist, call a physician.
In case of skin contact	: If on skin, rinse well with water. If on clothes, remove clothes. Take off contaminated clothing and shoes immediately. Take victim immediately to hospital.
In case of eye contact	: Flush eyes with water as a precaution. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.
If swallowed	: Keep respiratory tract clear. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital. Never give anything by mouth to an unconscious person. If accidentally swallowed obtain immediate medical attention.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	: Alcohol-resistant foam Carbon dioxide (CO2)

		Dry chemical
Unsuitable extinguishing media	:	High volume water jet
Specific hazards during firefighting	:	Do not allow run-off from fire fighting to enter drains or water courses. Do not use a solid water stream as it may scatter and spread fire. Cool closed containers exposed to fire with water spray.
Hazardous combustion products	:	No hazardous combustion products are known
Specific extinguishing methods	:	Use a water spray to cool fully closed containers.
Further information	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. For safety reasons in case of fire, cans should be stored separately in closed containments. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Special protective equipment for firefighters	:	Wear self-contained breathing apparatus for firefighting if necessary. In the event of fire, wear self-contained breathing apparatus.

NFPA Flammable and Combustible Liquids Classification:
Flammable Liquid Class IB

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Use personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas.

Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

: Use personal protective equipment.
Ensure adequate ventilation.
Remove all sources of ignition.
Evacuate personnel to safe areas.
Material can create slippery conditions.

Environmental precautions : Prevent product from entering drains.
Prevent further leakage or spillage if safe to do so.
If the product contaminates rivers and lakes or drains inform respective authorities.

Local authorities should be advised if significant spillages cannot be contained.

Methods and materials for containment and 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).

Keep in suitable, closed containers for disposal.
Clean contaminated floors and objects thoroughly while observing environmental regulations.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling : Avoid formation of aerosol.
Do not breathe vapours/dust.
Avoid exposure - obtain special instructions before use.
Avoid contact with skin and eyes.
For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
Take precautionary measures against static discharges.
Provide sufficient air exchange and/or exhaust in work rooms.
Container may be opened only under exhaust ventilation hood.
Open drum carefully as content may be under pressure.
Dispose of rinse water in accordance with local and national regulations.

Avoid contact with skin and eyes.

For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
Keep away from heat.

Conditions for safe storage : No smoking.
Keep container tightly closed in a dry and well-ventilated place.
Containers which are opened must be carefully re-sealed and kept upright to prevent leakage.
Observe label precautions.
Electrical installations / working materials must comply with the technological safety standards.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

CAS-No.	Components	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
67-56-1	Methanol	TWA	200 ppm	ACGIH
		STEL	250 ppm	ACGIH
		TWA	200 ppm 260 mg/m3	NIOSH REL
		ST	250 ppm 325 mg/m3	NIOSH REL
		TWA	200 ppm 260 mg/m3	OSHA Z-1
		STEL	250 ppm 325 mg/m3	OSHA P0
		TWA	200 ppm 260 mg/m3	OSHA P0

Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
Methanol	67-56-1	Methanol	Urine	End of shift (As soon as possible after exposure ceases)	15 mg/l	ACGIH BEI

Personal protective equipment

Respiratory protection	:	No personal respiratory protective equipment normally required. In the case of vapour formation use a respirator with an approved filter.
Hand protection Remarks	:	The suitability for a specific workplace should be discussed with the producers of the protective gloves.
Eye protection	:	Eye wash bottle with pure water Tightly fitting safety goggles Safety glasses Ensure that eyewash stations and safety showers are close to the workstation location.
Skin and body protection	:	impervious clothing Choose body protection according to the amount and concentration of the dangerous substance at the work place. impervious clothing
Protective measures	:	Wear suitable protective equipment. Avoid contact with skin. When using do not eat, drink or smoke.
Hygiene measures	:	Avoid contact with skin, eyes and clothing. When using do not eat or drink. When using do not smoke. Wash hands before breaks and immediately after handling the product. Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. Remove contaminated clothing and protective equipment before entering eating areas.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	liquid
Colour	:	colourless, clear
Odour	:	mild, alcohol-like
Odour Threshold	:	4.2 - 8940 ppm

pH	: No data available
Freezing Point (Melting point/freezing point)	: -97.8 °C (-144.0 °F)
Boiling Point (Boiling point/boiling range)	: 64 °C (147 °F)
Flash point	: 11 °C (52 °F)
Evaporation rate	: 5.9 n-Butyl Acetate
Flammability (solid, gas)	: No data available
Burning rate	: No data available
Upper explosion limit	: 36.5 %(V)
Lower explosion limit	: 6 %(V)
Vapour pressure	: 96 mmHg @ 20 °C (68 °F)
Relative vapour density	: 1.01 @ 15 - 20 °C (59 - 68 °F) AIR=1
Relative density	: 0.791 - 0.793Reference substance: (water = 1)
Density	: No data available
Bulk density	: No data available
Solubility(ies)	
Water solubility	: completely soluble
Solubility in other solvents	: soluble Solvent: Benzene soluble Solvent: Alcohol soluble Solvent: Chloroform
Partition coefficient: n-octanol/water	: log Pow: -0.82 - -0.66
Auto-ignition temperature	: No data available

Thermal decomposition : No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity : No dangerous reaction known under conditions of normal use.

Chemical stability : Stable under normal conditions.

Possibility of hazardous reactions : Vapours may form explosive mixture with air.

Conditions to avoid : Heat, flames and sparks.

Extremes of temperature and direct sunlight.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Components:

67-56-1:

Acute oral toxicity : LD50 (rat): 100 mg/kg
Assessment: The component/mixture is toxic after single ingestion.

Acute inhalation toxicity : LC50 (rat): 5 mg/l
Assessment: The component/mixture is toxic after short term inhalation.

Acute dermal toxicity : LD50 (rabbit): 300 mg/kg
Assessment: The component/mixture is toxic after single contact with skin.

Skin corrosion/irritation

Components:

67-56-1:

Species: rabbit
Result: No skin irritation

Serious eye damage/eye irritation

Components:
67-56-1:
Species: rabbit
Result: No eye irritation

Respiratory or skin sensitisation

Components:
67-56-1:
Test Type: Maximisation Test (GPMT)
Species: guinea pig
Method: OECD Test Guideline 406
Result: Did not cause sensitisation on laboratory animals.

Germ cell mutagenicity

Components:
67-56-1:

Genotoxicity in vitro	: Test Type: DNA damage and/or repair Metabolic activation: with and without metabolic activation Result: Ambiguous
Genotoxicity in vivo	: Test Type: In vivo micronucleus test Test species: mouse (male and female) Cell type: Bone marrow Application Route: Intraperitoneal Exposure time: Single Dose: 0, 1920, 3200, 4480 mg/kg Result: negative
Germ cell mutagenicity-Assessment	: Tests on bacterial or mammalian cell cultures did not show mutagenic effects.

Carcinogenicity

Components:
67-56-1:

Carcinogenicity - Assessment	: Suspected human carcinogens

Reproductive toxicity

Components:
67-56-1:

Effects on fertility	: Test Type: Two-generation study Species: rat, male and female

Application Route: Inhalation
Dose: 0, 0.013, 0.13, 1.3 mg/L
Duration of Single Treatment: 20 h
General Toxicity - Parent: NOAEC: 1.3 mg/l
General Toxicity F1: NOAEC: 0.13 mg/l
Fertility: NOAEC: 1.3 mg/l
Symptoms: Effects on postnatal development.
Result: Animal testing did not show any effects on fertility.

Effects on foetal development : Species: rat
Application Route: inhalation (vapour)
Dose: 0, 6.65, 13.3, 26.6 mg/L
Duration of Single Treatment: 20 d
Frequency of Treatment: 7 hr/day
General Toxicity Maternal: NOAEC: 13.3 mg/L
Teratogenicity: NOAEC: 6.65 mg/L
Result: Teratogenic effects.

Reproductive toxicity - Assessment : Some evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments.

STOT - single exposure

Product: No data available

Components:
67-56-1:

Exposure routes:	Target Organs:	Assessment:	Remarks:
	Eyes, Central nervous system	Causes damage to organs., The substance or mixture is classified as specific target organ toxicant, single exposure, category 1.	

STOT - repeated exposure

Product: No data available

Components:

67-56-1: No data available

Repeated dose toxicity

Components:
67-56-1:
Species: mouse, male and female
NOAEL: 1.3 mg/l

Application Route: Inhalation
Exposure time: 12 mths
Number of exposures: Continuous
Dose: 0, 0.013, 0.13, 1.3 mg/L

Aspiration toxicity

Further information

Product:
Remarks: Solvents may degrease the skin.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:
67-56-1:

Toxicity to fish	: LC50 (Lepomis macrochirus (Bluegill sunfish)): 15,400 mg/l Exposure time: 96 h Test Type: flow-through test
Toxicity to daphnia and other aquatic invertebrates	: EC50 (Daphnia magna (Water flea)): > 10,000 mg/l Exposure time: 48 h Test Type: static test
Toxicity to algae	: EC50 (Scenedesmus capricornutum (fresh water algae)): 22,000 mg/l End point: Growth rate Exposure time: 96 h Test Type: static test Method: OECD Test Guideline 201
Toxicity to bacteria	: IC50 (activated sludge): > 1,000 mg/l End point: Growth rate Exposure time: 3 h Test Type: Static Method: OECD Test Guideline 209

Persistence and degradability

Components:
67-56-1:

Biodegradability	: aerobic Result: Readily biodegradable.

	Biodegradation: 72 % Remarks: Readily biodegradable
Biochemical Oxygen Demand (BOD)	: 600 - 1,120 mg/g
Chemical Oxygen Demand (COD)	: 1,420 mg/g
BOD/COD	: BOD: 600 - 1120COD: 1420
Stability in water	: Hydrolysis: 91 % at19 °C(72 h) Remarks: Hydrolyses on contact with water. Hydrolyses readily.

Bioaccumulative potential

Components:

67-56-1:

Bioaccumulation	: Species: Cyprinus carpio (Carp) Bioconcentration factor (BCF): 1.0 Exposure time: 72 d Temperature: 20 °C Concentration: 5 mg/l Remarks: This substance is not considered to be very persistent nor very bioaccumulating (vPvB).
Partition coefficient: n-octanol/water	: log Pow: -0.77

Mobility in soil

No data available

Other adverse effects

No data available

Product:

Regulation	40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances
Remarks	This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).
Additional ecological information	: No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : Do not dispose of waste into sewer.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Send to a licensed waste management company.

Dispose of in accordance with all applicable local, state and federal regulations.
For assistance with your waste management needs - including disposal, recycling and waste stream reduction, contact NEXEO's Environmental Services Group at 800-637-7922.

Dispose of wastes in an approved waste disposal facility.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Do not re-use empty containers.
Do not burn, or use a cutting torch on, the empty drum.

SECTION 14. TRANSPORT INFORMATION

IATA (International Air Transport Association): UN1230, METHANOL, 3 (6.1), II, Flash Point:11 °C(52 °F)

IMDG (International Maritime Dangerous Goods): UN1230, METHANOL, 3, (6.1), II

DOT (Department of Transportation): UN1230, Methanol, 3, II

SECTION 15. REGULATORY INFORMATION

OSHA Hazards : Flammable liquid, Toxic by ingestion, Toxic by skin absorption, Carcinogen, Teratogen, Reproductive hazard

WHMIS Classification : B2: Flammable liquid
D1B: Toxic Material Causing Immediate and Serious Toxic Effects
D2A: Very Toxic Material Causing Other Toxic Effects

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Methanol	67-56-1	5000	5000

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : Fire Hazard
Acute Health Hazard
Chronic Health Hazard

SARA 302 : SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

67-56-1 Methanol 100 %

Clean Air Act

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61):

67-56-1 Methanol 100 %

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).
The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489):

67-56-1 Methanol 100 %

Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.
This product does not contain any Hazardous Chemicals listed under the U.S. Clean-Water Act, Section 311, Table 117.3.
This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

US State Regulations

Massachusetts Right To Know

67-56-1 Methanol 90 - 100 %

Pennsylvania Right To Know

67-56-1 Methanol 90 - 100 %

New Jersey Right To Know

67-56-1	Methanol	90 - 100 %

California Prop 65 WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

67-56-1 Methanol

The components of this product are reported in the following inventories:

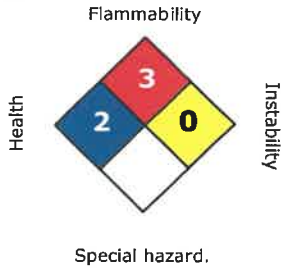
1907/2006 (EU)	:	n (Negative listing) (Not in compliance with the inventory)
Switzerland. New notified substances and declared preparations	:	y (positive listing) (The formulation contains substances listed on the Swiss Inventory)
United States TSCA Inventory	:	y (positive listing) (On TSCA Inventory)
Canadian Domestic Substances List (DSL)	:	y (positive listing) (All components of this product are on the Canadian DSL.)
Australia Inventory of Chemical Substances (AICS)	:	y (positive listing) (On the inventory, or in compliance with the inventory)
New Zealand. Inventory of Chemical Substances	:	y (positive listing) (On the inventory, or in compliance with the inventory)
Japan. ENCS - Existing and New Chemical Substances Inventory	:	y (positive listing) (On the inventory, or in compliance with the inventory)
Japan. ISHL - Inventory of Chemical Substances (METI)	:	y (positive listing) (On the inventory, or in compliance with the inventory)
Korea. Korean Existing Chemicals Inventory (KECI)	:	y (positive listing) (On the inventory,

		or in compliance with the inventory)
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	:	y (positive listing) (On the inventory, or in compliance with the inventory)
China. Inventory of Existing Chemical Substances in China (IECSC)	:	y (positive listing) (On the inventory, or in compliance with the inventory)

SECTION 16. OTHER INFORMATION

Further information

NFPA:



HMIS III:

HEALTH	2*
FLAMMABILITY	3
PHYSICAL HAZARD	0

0 = not significant, 1 =Slight,
2 = Moderate, 3 = High
4 =Extreme, * = Chronic

The information accumulated is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made become available subsequently to the date hereof, we do not assume any responsibility for the results of its use. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. This MSDS has been prepared by NEXEO™ Solutions EHS Product Safety Department (1-855-429-2661) MSDS@nexeosolutions.com.

Legecy MSDS: R0001447, 140000001042

Material number:
20298, 160329, 20303, 16056428, 16061973, 16061181, 16056425, 16056426, 16056427, 16055184, 16053934, 16049742, 16048212, 16047323, 16039562,

16034861, 16032613, 16031073, 16024445, 16024444, 16021152, 16018469, 16016316, 779915, 743459, 736115, 730007, 730006, 717897, 716726, 713298, 710534, 699273, 695309, 695256, 694361, 689940, 690224, 682513, 638917, 627702, 625491, 602665, 600798, 554053, 554376, 554361, 554308, 554052, 554159, 546854, 546132, 508417, 122681, 136311, 117978, 132227, 131334, 146769, 161018, 118306, 116867, 117981, 145658, 161021, 144602, 130207, 130736, 131538, 159527, 115232, 82339, 160328, 82470, 115098, 159524, 115229, 143136, 508297, 504381, 504224, 501342, 39841, 22244, 22243, 20305, 20304, 20302, 20301, 20300, 20299, 20297, 500031

Key or legend to abbreviations and acronyms used in the safety data sheet			
ACGIH	American Conference of Government Industrial Hygienists	LD50	Lethal Dose 50%
AICS	Australia, Inventory of Chemical Substances	LOAEL	Lowest Observed Adverse Effect Level
DSL	Canada, Domestic Substances List	NFPA	National Fire Protection Agency
NDSL	Canada, Non-Domestic Substances List	NIOSH	National Institute for Occupational Safety & Health
CNS	Central Nervous System	NTP	National Toxicology Program
CAS	Chemical Abstract Service	NZIoC	New Zealand Inventory of Chemicals
EC50	Effective Concentration	NOAEL	No Observable Adverse Effect Level
EC50	Effective Concentration 50%	NOEC	No Observed Effect Concentration
EGEST	EOSCA Generic Exposure Scenario Tool	OSHA	Occupational Safety & Health Administration
EOSCA	European Oilfield Specialty Chemicals Association	PEL	Permissible Exposure Limit
EINECS	European Inventory of Existing Chemical Substances	PICCS	Philipines Inventory of Commercial Chemical Substances
MAK	Germany Maximum Concentration Values	PRNT	Presumed Not Toxic
GHS	Globally Harmonized System	RCRA	Resource Conservation Recovery Act
>=	Greater Than or Equal To	STEL	Short-term Exposure Limit
IC50	Inhibition Concentration 50%	SARA	Superfund Amendments and Reauthorization Act.
IARC	International Agency for Research on Cancer	TLV	Threshold Limit Value
IECSC	Inventory of Existing Chemical Substances in China	TWA	Time Weighted Average
ENCS	Japan, Inventory of Existing and New Chemical Substances	TSCA	Toxic Substance Control Act
KECI	Korea, Existing Chemical Inventory	UVCB	Unknown or Variable Compositon, Complex Reaction Products, and Biological Materials
<=	Less Than or Equal To	WHMIS	Workplace Hazardous Materials Information System
LC50		Lethal Concentration 50%	

SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: **ExxonMobil™MEK**
Product Description: Ketone

Intended Use: Solvent

Distributed by:
SAL Chemical
3036 Birch Drive
Weirton, WV 26062
304-748-8200

COMPANY IDENTIFICATION

Supplier: **EXXONMOBIL CHEMICAL COMPANY**
P.O. BOX 3272
HOUSTON, TX. 77253-3272 USA

24 Hour Health Emergency	(800) 726-2015
Transportation Emergency Phone	(800) 424-9300 or (703) 527-3887 CHEMTREC
Product Technical Information	(832) 624-8500
Supplier General Contact	(832) 624-8500

SECTION 2 HAZARDS IDENTIFICATION

This material is hazardous according to regulatory guidelines (see (M)SDS Section 15).

CLASSIFICATION:

Flammable liquid: Category 2.
Eye irritation: Category 2A. Specific target organ toxicant (central nervous system): Category 3.

LABEL:
Pictogram:

Signal Word: Danger

Hazard Statements:
H225: Highly flammable liquid and vapor. H319: Causes serious eye irritation. H336: May cause drowsiness or dizziness.

Precautionary Statements:

P210: Keep away from heat/sparks/open flames/hot surfaces. -- No smoking. P233: Keep container tightly closed. P240: Ground / bond container and receiving equipment. P241: Use explosion-proof electrical, ventilating, and lighting equipment. P242: Use only non-sparking tools. P243: Take precautionary measures against static discharge. P261: Avoid breathing mist / vapours. · P264: Wash skin thoroughly after handling. P271: Use only outdoors or in a well-ventilated area. P280: Wear protective gloves and eye / face protection.P303 + P361 + P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. P304 + P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing. P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P312: Call a POISON CENTER or doctor/physician if you feel unwell. P337 + P313: If eye irritation persists: Get medical advice/attention. P370 + P378: In case of fire: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish.P403 + P235: Store in a well-ventilated place. Keep cool. P405: Store locked up.P501: Dispose of contents and container in accordance with local regulations.

Contains: METHYL ETHYL KETONE

Other hazard information:

HAZARD NOT OTHERWISE CLASSIFIED (HNOC): None as defined under 29 CFR 1900.1200.

PHYSICAL / CHEMICAL HAZARDS

Material can release vapors that readily form flammable mixtures. Vapor accumulation could flash and/or explode if ignited.

HEALTH HAZARDS

Repeated exposure may cause skin dryness or cracking. May be irritating to nose, throat, and lungs. May cause central nervous system depression. If swallowed, may be aspirated and cause lung damage.

ENVIRONMENTAL HAZARDS

No significant hazards.

NFPA Hazard ID:	Health:	2	Flammability:	3	Reactivity:	0
HMIS Hazard ID:	Health:	2*	Flammability:	3	Reactivity:	0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

This material is defined as a substance.

Hazardous Substance(s) or Complex Substance(s) required for disclosure

Name	CAS#	Concentration*	GHS Hazard Codes
METHYL ETHYL KETONE	78-93-3	100 %	H225, H303, H305, H336, H319(2A)

* All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.

As per paragraph (i) of 29 CFR 1910.1200, formulation is considered a trade secret and specific chemical identity and

exact percentage (concentration) of composition may have been withheld. Specific chemical identity and exact percentage composition will be provided to health professionals, employees, or designated representatives in accordance with applicable provisions of paragraph (i).

SECTION 4 FIRST AID MEASURES

INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

SKIN CONTACT

Wash contact areas with soap and water. Remove contaminated clothing. Launder contaminated clothing before reuse.

EYE CONTACT

Flush thoroughly with water for at least 15 minutes. Get medical assistance.

INGESTION

Seek immediate medical attention. Do not induce vomiting.

NOTE TO PHYSICIAN

If ingested, material may be aspirated into the lungs and cause chemical pneumonitis. Treat appropriately.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO_2) to extinguish flames.

Inappropriate Extinguishing Media: Straight Streams of Water

FIRE FIGHTING

Fire Fighting Instructions: Evacuate area. If a leak or spill has not ignited, use water spray to disperse the vapors and to protect personnel attempting to stop a leak. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Unusual Fire Hazards: Highly flammable. Vapors are flammable and heavier than air. Vapors may travel across the ground and reach remote ignition sources causing a flashback fire danger. Hazardous material. Firefighters should consider protective equipment indicated in Section 8.

Hazardous Combustion Products: Smoke, Fume, Incomplete combustion products, Oxides of carbon

FLAMMABILITY PROPERTIES

Flash Point [Method]: -6°C (21°F) [Technical literature]
Flammable Limits (Approximate volume % in air): LEL: 1.0 UEL: 11
Autoignition Temperature: 404°C (759°F) [Technical literature]

SECTION 6 ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. US regulations require reporting releases of this material to the environment which exceed the applicable reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The National Response Center can be reached at (800)424-8802.

PROTECTIVE MEASURES

Avoid contact with spilled material. Warn or evacuate occupants in surrounding and downwind areas if required due to toxicity or flammability of the material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

SPILL MANAGEMENT

Land Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do it without risk. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Prevent entry into waterways, sewer, basements or confined areas. A vapor suppressing foam may be used to reduce vapors. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Large Spills: Use clean non-sparking tools to collect absorbed material. Large Spills: Water spray may reduce vapor; but may not prevent ignition in closed spaces. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do it without risk. Eliminate sources of ignition. Warn other shipping. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Dike far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7 HANDLING AND STORAGE

HANDLING

Avoid contact with skin. Avoid contact with eyes. Prevent exposure to ignition sources, for example use non-sparking tools and explosion-proof equipment. Potentially toxic/irritating fumes/vapors may be evolved from heated or agitated material. Use only with adequate ventilation. Do not enter storage areas or confined spaces unless adequately ventilated. Use proper bonding and/or ground procedures. However, bonding and grounds may not eliminate the hazard from static accumulation. Prevent small spills and leakage to avoid slip hazard.

Loading/Unloading Temperature: [Ambient]

Transport Temperature: [Ambient]
Transport Pressure: [Ambient]

Static Accumulator: This material is not a static accumulator.

STORAGE

Ample fire water supply should be available. A fixed sprinkler/deluge system is recommended. Keep container closed. Handle containers with care. Open slowly in order to control possible pressure release. Store in a cool, well-ventilated area. Outside or detached storage preferred. Storage containers should be grounded and bonded. Fixed storage containers, transfer containers and associated equipment should be grounded and bonded to prevent accumulation of static charge.
Storage Temperature: [Ambient]
Storage Pressure: [Ambient]

Suitable Containers/Packing: Tank Trucks; Drums; Barges; Tank Cars
Suitable Materials and Coatings (Chemical Compatibility): Carbon Steel; Stainless Steel; Polyester; Teflon; Butyl Rubber
Unsuitable Materials and Coatings: Ethylene-proplyene-diene monomer (EPDM); Polyacrylonitrile; Polypropylene; Polystyrene; Polyvinyl Alcohol; PVC; Polyethylene; Natural Rubber

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMIT VALUES

Exposure limits/standards (Note: Exposure limits are not additive)

Substance Name	Form	Limit / Standard			NOTE	Source
METHYL ETHYL KETONE		TWA	590 mg/m3	200 ppm	N/A	OSHA Z1
METHYL ETHYL KETONE		STEL	300 ppm		N/A	ACGIH
METHYL ETHYL KETONE		TWA	200 ppm		N/A	ACGIH

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

Biological limits

Substance	Specimen	Sampling Time	Limit	Determinant	Source
METHYL ETHYL KETONE	Urine	End of shift	2 mg/l	MEK	ACGIH BELs (BEIs)

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

Adequate ventilation should be provided so that exposure limits are not exceeded. Use explosion-proof ventilation equipment.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications,

handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

Half-face filter respirator

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

If prolonged or repeated contact is likely, chemical resistant gloves are recommended. If contact with forearms is likely, wear gauntlet style gloves.

Eye Protection: Chemical goggles are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

If prolonged or repeated contact is likely, chemical, and oil resistant clothing is recommended.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

ENVIRONMENTAL CONTROLS

Comply with applicable environmental regulations limiting discharge to air, water and soil. Protect the environment by applying appropriate control measures to prevent or limit emissions.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

GENERAL INFORMATION

Physical State: Liquid
Form: Clear
Color: Colorless
Odor: Pungent
Odor Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 20 °C): 0.805 - 0.807 [With respect to water] [Calculated]

Density: 804 kg/m³ (6.71 lbs/gal, 0.8 kg/dm³) - 806 kg/m³ (6.72 lbs/gal, 0.81 kg/dm³) [ASTM D4052]
Flammability (Solid, Gas): N/D
Flash Point [Method]: -6°C (21°F) [Technical literature]
Flammable Limits (Approximate volume % in air): LEL: 1.0 UEL: 11
Autoignition Temperature: 404°C (759°F) [Technical literature]
Boiling Point / Range: 79°C (173°F) - 81°C (178°F) [ASTM D1078]
Decomposition Temperature: N/D
Vapor Density (Air = 1): > 1 at 101 kPa [In-house method]
Vapor Pressure: 10.4 kPa (78 mm Hg) at 20 °C | 12.6 kPa (94.5 mm Hg) at 25°C [Technical literature]
Evaporation Rate (n-butyl acetate = 1): 7.7 [In-house method]
pH: N/D
Log Pow (n-Octanol/Water Partition Coefficient): 0.3 [Technical literature]
Solubility in Water: Appreciable
Viscosity: [N/D at 40 °C] | 0.51 cSt (0.51 mm2/sec) at 20°C [ASTM D7042]
Oxidizing Properties: See Hazards Identification Section.

OTHER INFORMATION

Freezing Point: N/D
Melting Point: -86°C (-123°F) [Technical literature]
Molecular Weight: 72 G/MOLE [Calculated]
Hygroscopic: Yes
Coefficient of Thermal Expansion: 0.00138 [Calculated] [In-house method]

SECTION 10 STABILITY AND REACTIVITY

REACTIVITY: See sub-sections below.

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Avoid heat, sparks, open flames and other ignition sources.

MATERIALS TO AVOID: Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

POSSIBILITY OF HAZARDOUS REACTIONS: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS

Hazard Class	Conclusion / Remarks
Inhalation	
Acute Toxicity: No end point data for material.	Minimally Toxic.
Irritation: No end point data for material.	May be irritating to the respiratory tract. The effects are reversible.
Ingestion	
Acute Toxicity (Rat): LD50 2193 mg/kg	Minimally Toxic. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 423
Skin	

Acute Toxicity (Rabbit): LD50 > 5000 mg/kg	Minimally Toxic. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 402
Skin Corrosion/Irritation: Data available.	May dry the skin leading to discomfort and dermatitis. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 404
Eye	
Serious Eye Damage/Irritation: Data available.	Irritating and will injure eye tissue. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 405
Sensitization	
Respiratory Sensitization: No end point data for material.	Not expected to be a respiratory sensitizer.
Skin Sensitization: Data available.	Not expected to be a skin sensitizer. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 406
Aspiration: Data available.	May be harmful if swallowed and enters airways. Based on physico-chemical properties of the material.
Germ Cell Mutagenicity: Data available.	Not expected to be a germ cell mutagen. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 471 473 474 476
Carcinogenicity: No end point data for material.	Not expected to cause cancer.
Reproductive Toxicity: Data available.	Not expected to be a reproductive toxicant. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 414 416
Lactation: No end point data for material.	Not expected to cause harm to breast-fed children.
Specific Target Organ Toxicity (STOT)	
Single Exposure: No end point data for material.	May cause drowsiness or dizziness.
Repeated Exposure: Data available.	Not expected to cause organ damage from prolonged or repeated exposure. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 413

OTHER INFORMATION

For the product itself:

Vapor concentrations above recommended exposure levels are irritating to the eyes and the respiratory tract, may cause headaches and dizziness, are anesthetic and may have other central nervous system effects.
Prolonged and/or repeated skin contact with low viscosity materials may defat the skin resulting in possible irritation and dermatitis.
Small amounts of liquid aspirated into the lungs during ingestion or from vomiting may cause chemical pneumonitis or pulmonary edema.
METHYL ETHYL KETONE (MEK): Simultaneous exposure to Methyl Ethyl Ketone (MEK) or Methyl Isobutyl Ketone (MIBK) and n-Hexane can potentiate the risk of adverse effects from n-Hexane on the peripheral nervous system.

The following ingredients are cited on the lists below: None.

--REGULATORY LISTS SEARCHED--

1 = NTP CARC	3 = IARC 1	5 = IARC 2B
2 = NTP SUS	4 = IARC 2A	6 = OSHA CARC

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY

Material -- Not expected to be harmful to aquatic organisms.
Material -- Not expected to demonstrate chronic toxicity to aquatic organisms.

MOBILITY

Material -- Expected to remain in water or migrate through soil.

PERSISTENCE AND DEGRADABILITY

Biodegradation:

Material -- Expected to be readily biodegradable.

Hydrolysis:

Material -- Transformation due to hydrolysis not expected to be significant.

Photolysis:

Material -- Transformation due to photolysis not expected to be significant.

Atmospheric Oxidation:

Material -- Expected to degrade at a moderate rate in air

OTHER ECOLOGICAL INFORMATION

VOC (EPA Method 24): 6.718 lbs/gal

ECOLOGICAL DATA

Ecotoxicity

Test	Duration	Organism Type	Test Results
Aquatic - Acute Toxicity	96 hour(s)	Pimephales promelas	LC50 2993 mg/l
Aquatic - Acute Toxicity	48 hour(s)	Daphnia magna	EC50 308 mg/l
Aquatic - Acute Toxicity	96 hour(s)	Pseudokirchneriella subcapitata	ErC50 2029 mg/l

Persistence, Degradability and Bioaccumulation Potential

Media	Test Type	Duration	Test Results
Octanol-Water	Calculated		log Kow 0.3
Water	Ready Biodegradability	28 day(s)	Percent Degraded 98

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products.

REGULATORY DISPOSAL INFORMATION

RCRA Information: Disposal of unused product may be subject to RCRA regulations (40 CFR 261). Disposal of the used product may also be regulated due to ignitability, corrosivity, reactivity or toxicity as determined by the Toxicity Characteristic Leaching Procedure (TCLP). Potential RCRA characteristics: IGNITABILITY. TCLP (METHYL ETHYL KETONE)

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

SECTION 14 TRANSPORT INFORMATION

LAND (DOT)

Proper Shipping Name: ETHYL METHYL KETONE
Hazard Class & Division: 3
ID Number: 1193
Packing Group: II
Product RQ: 5000 LBS - METHYL ETHYL KETONE
ERG Number: 127
Label(s): 3
Transport Document Name: UN1193, ETHYL METHYL KETONE, 3, PG II

LAND (TDG)

Proper Shipping Name: ETHYL METHYL KETONE
Hazard Class & Division: 3
UN Number: 1193
Packing Group: II

SEA (IMDG)

Proper Shipping Name: ETHYL METHYL KETONE (METHYL ETHYL KETONE)
Hazard Class & Division: 3
EMS Number: F-E, S-D
UN Number: 1193
Packing Group: II
Marine Pollutant: No
Label(s): 3
Transport Document Name: UN1193, ETHYL METHYL KETONE (METHYL ETHYL KETONE), 3, PG II, (-6°C c.c.)

AIR (IATA)

Proper Shipping Name: METHYL ETHYL KETONE
Hazard Class & Division: 3

UN Number: 1193
Packing Group: II
Label(s) / Mark(s): 3
Transport Document Name: UN1193, METHYL ETHYL KETONE, 3, PG II

SECTION 15 REGULATORY INFORMATION

OSHA HAZARD COMMUNICATION STANDARD: This material is considered hazardous in accordance with OSHA HazCom 2012, 29 CFR 1910.1200.

Listed or exempt from listing/notification on the following chemical inventories: AICS, DSL, ENCS, IECSC, KECI, PICCS, TSCA

EPCRA SECTION 302: This material contains no extremely hazardous substances.

CERCLA:

Chemical Name	CAS Number	Typical Value	Component RQ	Product RQ
METHYL ETHYL KETONE	78-93-3	100 %	5000 LBS	5000 LBS

SARA (311/312) REPORTABLE HAZARD CATEGORIES: Fire. Immediate Health. Delayed Health.

SARA (313) TOXIC RELEASE INVENTORY: This material contains no chemicals subject to the supplier notification requirements of the SARA 313 Toxic Release Program.

The following ingredients are cited on the lists below:

Chemical Name	CAS Number	List Citations
METHYL ETHYL KETONE	78-93-3	1, 4, 13, 16, 17, 18, 19

--REGULATORY LISTS SEARCHED--

1 = ACGIH ALL	6 = TSCA 5a2	11 = CA P65 REPRO	16 = MN RTK
2 = ACGIH A1	7 = TSCA 5e	12 = CA RTK	17 = NJ RTK
3 = ACGIH A2	8 = TSCA 6	13 = IL RTK	18 = PA RTK
4 = OSHA Z	9 = TSCA 12b	14 = LA RTK	19 = RI RTK
5 = TSCA 4	10 = CA P65 CARC	15 = MI 293	

Code key: CARC=Carcinogen; REPRO=Reproductive

SECTION 16 OTHER INFORMATION

N/D = Not determined, N/A = Not applicable

KEY TO THE H-CODES CONTAINED IN SECTION 3 OF THIS DOCUMENT (for information only):
H225: Highly flammable liquid and vapor; Flammable Liquid, Cat 2

H303: May be harmful if swallowed; Acute Tox Oral, Cat 5
H305: May be harmful if swallowed and enters airways; Aspiration, Cat 2
H319(2A): Causes serious eye irritation; Serious Eye Damage/Irr, Cat 2A
H336: May cause drowsiness or dizziness; Target Organ Single, Narcotic

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:
Updates made in accordance with implementation of GHS requirements.

Internal Use Only
MHC: 2A, 0, 0, 2, 1, 2

DGN: 4400034HUS (1004484)

SAFETY DATA SHEET

SECTION 1: Identification of the substance/mixture and of the company/undertaking

Product identifier

Product name: Eastman(TM) Methyl Isobutyl Ketone

Product No.: EAN 900416. 02039-00, P0203907, P0203911, P0203908, P0203909, P0203900, P0203901, P020390Q, P020390S, P020390X, P0203910

Synonyms, Trade Names: 02039-00

Additional identification

Chemical name:	4-methylpentan-2-one
CAS-No.:	108-10-1

Relevant identified uses of the substance or mixture and uses advised against

Identified uses: Solvent

Uses advised against: None known.

Details of the supplier of the safety data sheet

Manufacturer / Supplier

Eastman Chemical Company
200 South Wilcox Drive
Kingsport, TN 37660-5280 US
+14232292000

Distributed by:
SAL Chemical
3036 Birch Drive
Weirton, WV 26062
304-748-8200

Visit our website at www.EASTMAN.com or email emnmsds@eastman.com

Emergency telephone number:

For emergency health, safety, and environmental information, call 1-423-229-4511 or 1-423-229-2000.

For emergency transportation information, in the United States: call CHEMTREC at 800-424-9300 or call 423-229-2000.

SECTION 2: Hazards identification

Hazard classification:

Physical hazards

Flammable liquids	Category 2

Health hazards

Acute toxicity (Inhalation)	Category 4
Eye Damage/Irritation	Category 2A
Specific target organ toxicity - single exposure	Category 3

OSHA Specified Hazards: not applicable

Warning label items including precautionary statement:

Pictogram:

Signal words: Danger

Hazard Statement(s):
H225: Highly flammable liquid and vapor.
H332: Harmful if inhaled.
H319: Causes serious eye irritation.
H335: May cause respiratory irritation.

Precautionary statement:

Prevention:
P210: Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P233: Keep container tightly closed.
P240: Ground/bond container and receiving equipment.
P241: Use explosion-proof electrical/ventilating/lighting/equipment.
P242: Use only non-sparking tools.
P243: Take precautionary measures against static discharge.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P261: Avoid breathing dust/fume/gas/mist/vapors/spray.
P271: Use only outdoors or in a well-ventilated area.
P264: Wash hands thoroughly after handling.

Response:
P370 + 378: In case of fire: Use water spray, carbon dioxide, dry chemical or foam for extinction.
P303+P361+P353: IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P312: Call a POISON CENTER or doctor/physician if you feel unwell.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313: If eye irritation persists: Get medical advice/attention.

Storage:
P403+P235: Store in a well-ventilated place. Keep cool.
P233: Keep container tightly closed.
P405: Store locked up.

Disposal:
P501: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Hazard(s) not otherwise classified (HNOC): Potential peroxide former.

SECTION 3: Composition/information on ingredients

Substances / Mixtures

General information:

Chemical name	Concentration	Additional identification	Notes
methyl isobutyl ketone	100%	CAS-No.: 108-10-1	#

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.
# This substance has workplace exposure limit(s).

SECTION 4: First aid measures

Description of first aid measures

Inhalation: Move to fresh air. If breathing stops, provide artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Eye contact: Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention.

Skin contact: Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention if symptoms persist. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.

Ingestion: Seek medical advice.

Most important symptoms and effects, both acute and delayed: May irritate and cause redness and pain.

Indication of any immediate medical attention and special treatment needed

Hazards: None known.

Treatment: Treat symptomatically.

SECTION 5: Firefighting measures

General fire hazards: Flammable liquid and vapor. USE WATER WITH CAUTION. Material will float and may ignite on surface of water.

Extinguishing media

Suitable extinguishing media: Water spray. Dry chemical. Carbon Dioxide. Foam.

Unsuitable extinguishing media: None known.

Special hazards arising from the substance or mixture: Vapors may cause a flash fire or ignite explosively. Vapors may travel considerable distance to a source of ignition and flash back. Prevent buildup of vapors or gases to explosive concentrations. Forms explosive peroxides which may be shock sensitive.

Advice for firefighters

Special fire fighting procedures: Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters: Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures: Wear appropriate personal protective equipment.

Environmental precautions: Avoid release to the environment.

Methods and material for containment and cleaning up: Eliminate sources of ignition. Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Large Spillages: Use water spray to disperse vapors and dilute spill to a nonflammable mixture. Prevent runoff from entering drains, sewers, or streams. Dike for later disposal.

Notification Procedures: In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

SECTION 7: Handling and storage:

Precautions for safe handling: Keep away from heat, sparks and open flame. Use only with adequate ventilation. After opening, purge container with nitrogen before reclosing. Periodically test for peroxide formation on long-term storage. If peroxide formation is suspected, do not open or move container. Do not distill to near dryness. Addition of water or appropriate reducing materials will lessen peroxide formation. Minimize exposure to air.

Conditions for safe storage, including any incompatibilities: Keep container tightly closed and in a well-ventilated place. Store away from other materials. Comply with all national, state, and local codes pertaining to the storage, handling, dispensing, and disposal of flammable liquids.

Specific end use(s): Solvent

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational exposure limits

Country specific exposure limits have not been established or are not applicable unless listed below.

Chemical name	Type	Exposure Limit values	Source
4-methylpentan-2-one; isobutyl methyl ketone	TWA	20 ppm	US. ACGIH Threshold Limit Values (01 2010)
	STEL	75 ppm	US. ACGIH Threshold Limit Values (01 2010)
	PEL	100 ppm 410 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)

Biological limit values

Chemical name	Exposure Limit values	Source
4-methylpentan-2-one; isobutyl methyl ketone (methyl isobutyl ketone: Sampling time: End of shift.)	1 mg/l (Urine)	ACGIH BEL (01 2010)

Exposure controls

Appropriate engineering controls: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

General information: Eye bath. Washing facilities. Safety shower.

Eye/face protection: Wear safety glasses with side shields (or goggles). Wear a full-face respirator, if needed.

Skin protection

Hand protection: Wear chemical-resistant gloves, footwear, and protective clothing appropriate for the risk of exposure. Contact health and safety professional or manufacturer for specific information.

Other: No data available.

Respiratory Protection: If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. In the United States of America, if respirators are used, a program should be instituted to assure compliance with OSHA Standard 63 FR 1152, January 8, 1998. Respirator type: Air-purifying respirator with an appropriate, government approved (where applicable), air-purifying filter, cartridge or canister. Contact health and safety professional or manufacturer for specific information.

Hygiene measures: Observe good industrial hygiene practices.

Environmental Controls: No data available.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Appearance

Physical State: Liquid

Form: Liquid

Color: Colorless

Odor: ketone

Odor Threshold: No data available.

pH:	No data available.
Melting Point	-85 °C
Boiling Point:	117 °C
Flash Point:	16 °C (Tagliabue Closed Cup)
Evaporation Rate:	No data available.
Flammability (solid, gas):	No data available.
Flammability Limit - Upper (%)–:	8.0 %(V)
Flammability Limit - Lower (%)–:	1.2 %(V)
Vapor pressure:	No data available.
Vapor density (air=1):	3.5
Specific Gravity:	0.80 (20 °C)
Solubility(ies)	
Solubility in Water:	Moderate
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	Pow: 24 log Pow: 1.38
Autoignition Temperature:	443 °C (ASTM D2155)
Decomposition Temperature:	(DTA) No exotherm to boiling
Dynamic Viscosity:	No data available.
Kinematic viscosity:	No data available.
Explosive properties:	No data available.
Oxidizing properties:	No data available.

SECTION 10: Stability and reactivity

Reactivity:	May form peroxides of unknown stability.
Chemical stability:	Stable
Possibility of hazardous reactions:	Forms peroxides of unknown stability.
Conditions to avoid:	Heat, sparks, flames.
Incompatible materials:	Strong oxidizing agents.
Hazardous decomposition products:	Carbon Dioxide. Carbon Monoxide.

SECTION 11: Toxicological information

Information on likely routes of exposure

Inhalation:	Harmful if inhaled.
Ingestion:	None known.
Skin contact:	Prolonged or repeated skin contact may cause drying, cracking, or irritation.
Eye contact:	Causes serious eye irritation.

Information on toxicological effects

Acute Toxicity

Oral

Product:	No data available.
Specified substance(s)	
4-methylpentan-2-one; isobutyl methyl ketone	Oral LD-50: (Rat): 2,080 mg/kg

Dermal

Product:	No data available.
Specified substance(s)	
4-methylpentan-2-one; isobutyl methyl ketone	Dermal LD-50: (Rabbit): >10 ml/kg

Inhalation

Product:	No data available.
Specified substance(s)	
4-methylpentan-2-one; isobutyl methyl ketone	LC50 (Rat, 4 h): 2000 - 4000 ppm

Repeated dose toxicity

Product:	No data available.
Specified substance(s)	
4-methylpentan-2-one; isobutyl methyl ketone	No data available.

Skin corrosion/irritation:

Product:	No data available.
Specified substance(s)	
4-methylpentan-2-one; isobutyl methyl ketone	(Rabbit, 72 h): none

Serious eye damage/eye irritation:

Product:	No data available.
Specified substance(s)	
4-methylpentan-2-one; isobutyl methyl ketone	(Rabbit): slight to moderate

Respiratory or skin sensitization:

Product:	No data available.
Specified substance(s)	
4-methylpentan-2-one; isobutyl methyl ketone	No data available.

Mutagenicity

In vitro

Product:	No data available.
Specified substance(s)	
4-methylpentan-2-one; isobutyl methyl ketone	No data available.

In vivo

Product:	No data available.
Specified substance(s)	
4-methylpentan-2-one; isobutyl methyl ketone	No data available.

Carcinogenicity

Product:	No data available.
Specified substance(s)	
4-methylpentan-2-one; isobutyl methyl ketone	IARC 2B: possibly carcinogenic to humans.

Reproductive toxicity

Product:	No data available.
Specified substance(s)	
4-methylpentan-2-one; isobutyl methyl ketone	No data available.

Specific target organ toxicity - single exposure

Product:	No data available.
Specified substance(s)	
4-methylpentan-2-one; isobutyl methyl ketone	No data available.

Specific target organ toxicity - repeated exposure

Product:	No data available.
Specified substance(s)	
4-methylpentan-2-one; isobutyl methyl ketone	No data available.

Aspiration hazard

Product:	No data available.
Specified substance(s)	
4-methylpentan-2-one; isobutyl methyl ketone	May be harmful if swallowed and enters airways.

Other adverse effects: Contains an IARC (International Agency for Research on Cancer) 2B material. IARC 2B is a classification for possible human carcinogen based on sufficient evidence on carcinogenicity in experimental animals, but inadequate evidence for cancer in exposed humans.

SECTION 12: Ecological information

Toxicity

Acute toxicity

Fish

Product:	No data available.
Specified substance(s)	
4-methylpentan-2-one; isobutyl methyl ketone	LC-50 (goldfish, 24 h): 460 mg/l LC-50 (golden orfe, 48 h): 675 - 750 mg/l

Aquatic invertebrates

Product:	No data available.
Specified substance(s)	
4-methylpentan-2-one; isobutyl methyl ketone	LC-50 (Water Flea, 24 h): 4,300 mg/l LC-50 (Brown Shrimp, 24 h): 1,250 mg/l

Chronic Toxicity

Fish

Product:	No data available.
Specified substance(s)	
4-methylpentan-2-one; isobutyl methyl ketone	No data available.

Aquatic invertebrates

Product:	No data available.
Specified substance(s)	
4-methylpentan-2-one; isobutyl methyl ketone	No data available.

Toxicity to Aquatic Plants

Product:	No data available.
Specified substance(s)	
4-methylpentan-2-one; isobutyl methyl ketone	No data available.

Persistence and degradability

Biodegradation

Product:	No data available.
Specified substance(s)	
4-methylpentan-2-one; isobutyl methyl ketone	No data available.

Biological Oxygen Demand:

Product	No data available.
Specified substance(s)	
4-methylpentan-2-one; isobutyl methyl ketone	BOD-5: 1,940 - 2,060 mg/g

Chemical Oxygen Demand:

Product	No data available.

Specified substance(s)

4-methylpentan-2-one; isobutyl methyl ketone	2,160 - 2,460 mg/g

BOD/COD ratio

Product	No data available.
Specified substance(s)	
4-methylpentan-2-one; isobutyl methyl ketone	No data available.

Bioaccumulative potential

Product:	No data available.
Specified substance(s)	
4-methylpentan-2-one; isobutyl methyl ketone	No data available.

Mobility in soil: No data available.

Known or predicted distribution to environmental compartments

4-methylpentan-2-one; isobutyl methyl ketone	No data available.

Results of PBT and vPvB assessment: No data available.

4-methylpentan-2-one; isobutyl methyl ketone	No data available.

Other adverse effects: No data available.

SECTION 13: Disposal considerations

Waste treatment methods

General information: No data available.

Disposal methods: Dispose of waste and residues in accordance with local authority requirements. Incinerate. Since emptied containers retain product residue, follow label warnings even after container is emptied. Residual vapors may explode on ignition; do not cut, drill, grind, or weld on or near this container.

SECTION 14: Transport information

Important Note: Shipping descriptions may vary based on mode of transport, quantities, package size, and/or origin and destination. Consult your company's Hazardous Materials/Dangerous Goods expert for information specific to your situation.

DOT

Reportable Quantity: 2,270 kg (methyl isobutyl ketone)
Possible Shipping Description(s):

UN 1245 Methyl isobutyl ketone 3 II

IMDG - International Maritime Dangerous Goods Code

Possible Shipping Description(s):

UN 1245 METHYL ISOBUTYL KETONE 3 II

IATA

Possible Shipping Description(s):

UN 1245 Methyl isobutyl ketone 3 II

SECTION 15: Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture:

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.
WHMIS (Canada) Status: controlled
WHMIS (Canada) Hazard Classification: B/2, D/2/B

SARA 311-312 Hazard Classification(s):
immediate (acute) health hazard
fire hazard

US EPCRA (SARA Title III) Section 313 - Toxic Chemical List
METHYL ISOBUTYL KETONE

OSHA: hazardous

TSCA (US Toxic Substances Control Act): This product is listed on the TSCA inventory. Any impurities present in this product are exempt from listing.

DSL (Canadian Domestic Substances List) and CEPA (Canadian Environmental Protection Act): This product is listed on the DSL or otherwise complies with CEPA new substance notification requirements.

AICS / NICNAS (Australian Inventory of Chemical Substances and National Industrial Chemicals Notification and Assessment Scheme): This product is listed on AICS or otherwise complies with NICNAS.

MITI (Japanese Handbook of Existing and New Chemical Substances): This product is listed in the Handbook or has been approved in Japan by new substance notification.

ECL (Korean Toxic Substances Control Act): This product is listed on the Korean inventory or otherwise complies with the Korean Toxic Substances Control Act.

Philippines Inventory (PICCS) : This product is listed on the Philippine Inventory or otherwise complies with PICCS.

Inventory of Existing Chemical Substances in China: All components of this product are listed on the Inventory of Existing Chemical Substances in China (IECSC).

SECTION 16: Other information

HMIS® Hazard Ratings: Health - 1, Flammability - 3, Chemical Reactivity - 1

HMIS® rating involves data interpretations that may vary from company to company. They are intended only 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 considered.

Revision Information: Not relevant.

Key literature references and sources for data: No data available.

Training information: No data available.

Issue date: 07/07/2014

SDS No.:

Disclaimer: This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.

SAFETY DATA SHEET

Nonexempt Mineral Spirits

Section 1. Identification

GHS product identifier : Nonexempt Mineral Spirits

Synonyms : Low boiling point naphtha - unspecified; Low aromatic hydrocarbon solvents - medium flashpoint.; Petroleum distillates; mineral spirits; White spirits; Stoddard Solvent; Solvent Napthas; Petroleum hydrocarbon solvent; CITGO® Material Code: 19035

Material uses : Hydrocarbon Solvent

Code : 19035

MSDS # : 19035

Distributed by:
SAL Chemical
3036 Birch Drive,
Weirton, WV 26062
304.748.8200 - Phone
304.797.8751 - Fax

Supplier's details : CITGO Petroleum Corporation
1701 Golf Road, Suite 1-1101
Rolling Meadows, IL 60008-4295
custsol@citgo.com

Emergency telephone number : Technical Contact: (847) 734-7630
(8am - 4pm CT M-F)
Medical Emergency: (832) 486-4700
CHEMTREC Emergency: (800) 424-9300
(United States Only)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 3
ACUTE TOXICITY: INHALATION - Category 4
SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A
CARCINOGENICITY - Category 2
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [Narcotic effects] - Category 3
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) [central nervous system (CNS)] - Category 2
ASPIRATION HAZARD - Category 1

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Flammable liquid and vapor.
Harmful if inhaled.
Causes serious eye irritation.
Causes skin irritation.
Suspected of causing cancer.
May be fatal if swallowed and enters airways.
May cause drowsiness and dizziness.
May cause damage to organs through prolonged or repeated exposure. (central nervous system (CNS))

Precautionary statements

Section 2. Hazards identification

Prevention : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wear protective gloves. Wear eye or face protection. Keep away from heat, sparks, open flames and hot surfaces. - No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Do not breathe vapor. Wash hands thoroughly after handling.

Response : Get medical attention if you feel unwell. IF exposed or concerned: Get medical attention. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. If skin irritation occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage : Store locked up. Store in a well-ventilated place. Keep cool.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Substance

Other means of identification : Low boiling point naphtha - unspecified; Low aromatic hydrocarbon solvents - medium flashpoint.; Petroleum distillates; mineral spirits; White spirits; Stoddard Solvent; Solvent Napthas; Petroleum hydrocarbon solvent; CITGO® Material Code: 19035

CAS number/other identifiers

CAS number : 8052-41-3

Ingredient name	%	CAS number
C9-C15 Cycloalkanes	30 - 60	**
C9-C15 Alkanes	10 - 30	**
C9-C15 Aromatics	10 - 30	**
Trimethylbenzene, all isomers	3 - 7	25551-13-7
Xylenes, mixed isomers	0.5 - 1.5	1330-20-7
Cumene	0.1 - 1	98-82-8
Ethylbenzene	0.1 - 1	100-41-4

* = Various ** = Mixture *** = Proprietary

Any concentration shown as a range is to protect confidentiality or is due to process variation.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that gas or vapor is still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. 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. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open

Section 4. First aid measures

airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. 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.

Most important symptoms/effects, acute

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Harmful if inhaled. Can cause central nervous system (CNS) depression. May cause drowsiness and dizziness.

Skin contact : Causes skin irritation.

Ingestion : Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways. Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : Adverse symptoms may include the following:
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo
unconsciousness

Skin contact : Adverse symptoms may include the following:
irritation
redness

Ingestion : Adverse symptoms may include the following:
nausea or vomiting

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : If ingested, this material presents a significant aspiration and chemical pneumonitis hazard. Induction of emesis is not recommended. Consider activated charcoal and/or gastric lavage. If patient is obtunded, protect the airway by cuffed endotracheal intubation or by placement of the body in a Trendelenburg and left lateral decubitus position.

Specific treatments : Treat symptomatically and supportively.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that gas or vapor is 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.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Specific hazards arising from the chemical : Flammable liquid and vapor. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. 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.

Extinguishing media

Suitable extinguishing media : Use dry chemical, carbon dioxide (CO_2,) water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

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.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not swallow. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container. Non equilibrium conditions may increase the fire hazard associated with this product. Always bond receiving containers to the fill pipe before and during loading. Always confirm that receiving container is properly grounded. Bonding and grounding alone may be inadequate to eliminate fire and explosion hazards. Carefully review operations that may increase the risks such as tank and container filling, tank cleaning, sampling, gauging, loading, filtering, mixing, agitation, etc. In addition to bonding and grounding, efforts to mitigate the hazards may include, but are not limited to, ventilation, inerting and/or reduction of transfer velocities.
Always keep nozzle in contact with the container throughout the loading process. Do NOT fill any portable container in or on a vehicle.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Bulk Storage Conditions: Maintain all storage tanks in accordance with applicable regulations. Use necessary controls to monitor tank inventories. Inspect all storage tanks on a periodic basis. Test tanks and associated piping for tightness. Maintain the automatic leak detection devices to assure proper working condition.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
C9-C15 Cycloalkanes	**ACGIH TLV (United States).** TWA: 400 ppm 8 hours. Form: Methylcyclohexane
C9-C15 Aromatics	**ACGIH TLV (United States).** TWA: 400 ppm 8 hours. Form: (Methylcyclohexane)
Nonane, all isomers	**ACGIH TLV (United States, 4/2014).** TWA: 200 ppm 8 hours. TWA: 1050 mg/m³ 8 hours.
Trimethylbenzene, all isomers	**ACGIH TLV (United States, 4/2014).** TWA: 25 ppm 8 hours. TWA: 123 mg/m³ 8 hours.
1,2,4-Trimethylbenzene	**ACGIH TLV (United States, 4/2014).** TWA: 25 ppm 8 hours. TWA: 123 mg/m³ 8 hours.
Xylenes, mixed isomers	**ACGIH TLV (United States, 4/2014).**

Section 8. Exposure controls/personal protection

	TWA: 100 ppm 8 hours. TWA: 434 mg/m³ 8 hours. STEL: 150 ppm 15 minutes. STEL: 651 mg/m³ 15 minutes. **OSHA PEL (United States, 2/2013).** TWA: 100 ppm 8 hours. TWA: 435 mg/m³ 8 hours.
Cumene	**ACGIH TLV (United States, 4/2014).** TWA: 50 ppm 8 hours. **OSHA PEL (United States, 2/2013). Absorbed through skin.** TWA: 50 ppm 8 hours. TWA: 245 mg/m³ 8 hours.
Ethylbenzene	**ACGIH TLV (United States, 4/2014).** TWA: 20 ppm 8 hours. **OSHA PEL (United States, 2/2013).** TWA: 100 ppm 8 hours. TWA: 435 mg/m³ 8 hours.

Appropriate engineering controls : Use only with adequate ventilation. 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.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, vapor controls, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

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.

Eye/face protection : Safety glasses equipped with side shields are recommended as minimum protection in industrial settings. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: Splash goggles. 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. chemical splash goggles. If inhalation hazards exist, a full-face respirator may be required instead.

Skin protection

Hand protection : Chemical-resistant gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers.

Body protection : 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.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Use a properly fitted, air-purifying or supplied-air 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.

Section 9. Physical and chemical properties

Physical state	: Liquid. [Watery liquid.]
Color	: Colorless.
Odor	: Characteristic hydrocarbon solvent odor.
pH	: Not applicable
Boiling point/boiling range	: 157 to 218°C (314.6 to 424.4°F)
Flash point	: Closed cup: 42°C (107.6°F) [Tagliabue (ASTM D-56)]
Evaporation rate	: 0.16 (n-butyl acetate. = 1)
Lower and upper explosive (flammable) limits	: Lower: 0.6% Upper: 8%
Vapor pressure	: 0.029 kPa (0.22 mm Hg) [room temperature]
Vapor density	: 4.5 to 5 [Air = 1]
Relative density	: 0.79
Density lbs/gal	: 6.61 lbs/gal
Gravity, °API	: Estimated 48 @ 60 F
Solubility	: Very slightly soluble in the following materials: cold water.
Auto-ignition temperature	: 230 to 240°C (446 to 464°F)
Conductivity	: <5 picosiemens/meter (unadditized)

Section 10. Stability and reactivity

Reactivity	: Not expected to be Explosive, Self-Reactive, Self-Heating, or an Organic Peroxide under US GHS Definition(s).
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.
Incompatible materials	: Reactive or incompatible with the following materials: oxidizing materials
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Nonane, all isomers	LC50 Inhalation Gas.	Rat	3200 ppm	4 hours
Trimethylbenzene, all isomers	LD50 Oral	Rat	8970 mg/kg	-
1,2,4-Trimethylbenzene	LC50 Inhalation Vapor	Rat	18000 mg/m³	4 hours
	LD50 Oral	Mouse	6900 mg/kg	-
	LD50 Oral	Rat	5 g/kg	-
propylbenzene	LC50 Inhalation Gas.	Rat	65000 ppm	2 hours
	LD50 Oral	Rat	6040 mg/kg	-
Xylenes, mixed isomers	LC50 Inhalation Gas.	Cat	9500 ppm	2 hours
	LC50 Inhalation Gas.	Rat	5000 ppm	4 hours
	LC50 Inhalation Gas.	Rat	6700 ppm	4 hours
	LC50 Inhalation Gas.	Rat	6670 ppm	4 hours

Section 11. Toxicological information

	LD50 Oral	Mouse	2119 mg/kg	-
	LD50 Oral	Rat	4300 mg/kg	-
	LD50 Oral	Rat	4300 mg/kg	-
Cumene	LC50 Inhalation Vapor	Mouse	10 g/m³	7 hours
	LD50 Dermal	Rabbit	12300 uL/kg	-
	LD50 Oral	Rat	2.9 g/kg	-
	LD50 Oral	Rat	4000 mg/kg	-
Ethylbenzene	LD50 Dermal	Rabbit	>5000 mg/kg	-
	LD50 Oral	Rat	3500 mg/kg	-

Conclusion/Summary : **C9-C15 Alkanes**: In animal studies utilizing mineral spirits containing up to 22% aromatics indicated that the acute central nervous system effects are reversible. Based on existing animal studies, the potential for persistent effects is not clear.
Trimethylbenzene, all isomers:

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
C9-C15 Aromatics	Skin - Mild irritant	Rabbit	-	24 hours 500 microliters	-
Nonane, all isomers	Skin - Mild irritant	Pig	-	24 hours 250 microliters	-
	Skin - Moderate irritant	Rat	-	96 hours 300 microliters	-
Trimethylbenzene, all isomers	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Moderate irritant	Rabbit	-	24 hours 500 milligrams	-
Xylenes, mixed isomers	Skin - Mild irritant	Rat	-	8 hours 60 microliters	-
	Skin - Moderate irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Moderate irritant	Rabbit	-	100 Percent	-
Cumene	Eyes - Mild irritant	Rabbit	-	86 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 10 milligrams	-
Ethylbenzene	Skin - Mild irritant	Rabbit	-	24 hours 15 milligrams	-

Skin : **C9-C15 Alkanes**: Primary dermal irritation studies (four hour exposure) in rabbits utilizing mineral spirits containing less than 2% aromatics resulted in slight to moderate skin irritation. In humans, mineral spirits have produced slight to moderate skin irritation particularly with evaporation from the skin is prevented.

Eyes : No additional information.

Respiratory : **C9-C15 Alkanes**: Animal studies have demonstrated that mineral spirits produced mild respiratory tract irritation at elevated concentrations. Also, sensory respiratory tract irritation was evident by reduced breathing rates in the test animals in certain studies.

Sensitization

Skin : **C9-C15 Alkanes**: In animal studies utilizing mineral spirits containing up to 18%, aromatics skin sensitization is not evident.

Respiratory : No additional information.

Mutagenicity

Conclusion/Summary : **C9-C15 Alkanes**: In vivo and in vitro studies on mineral spirits containing up to 22 % aromatics indicate that these products are not genotoxic.

Carcinogenicity

Conclusion/Summary : **C9-C15 Alkanes**: The National Toxicology Program (NTP) conducted two-year carcinogenicity studies in rats and mice with Stoddard Solvent IIC (less than 2% aromatics). The studies indicated that there was some evidence of carcinogenic activity in male rats (adrenal medulla neoplasms and renal tubule adenoma) but no evidence of carcinogenic activity in female rats. Further, there was equivocal evidence of carcinogenic activity in female mice (hepatocellular adenoma) but no evidence of carcinogenic activity in male mice. A low carcinogenic potential is suggested by a lack of

Section 11. Toxicological information

genotoxic potential identified in in vivo and in vitro genetic toxicity tests (with and without metabolic activation).

Classification

Product/ingredient name	OSHA	IARC	NTP
Xylenes, mixed isomers	-	3	-
Cumene	-	2B	Reasonably anticipated to be a human carcinogen.
Ethylbenzene	-	2B	-

Reproductive toxicity

Conclusion/Summary : **C9-C15 Alkanes**: There were no treatment-related effects on pregnancy rate, mortality or gross post mortem observations in animal studies utilizing mineral spirits containing less than 2% aromatics.

Teratogenicity

Conclusion/Summary : **C9-C15 Alkanes**: There were no treatment-related effects on pregnancy rate, mortality or gross post mortem observations in animal studies utilizing mineral spirits containing less than 2% aromatics.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
C9-C15 Cycloalkanes	Category 3	Not applicable.	Narcotic effects
C9-C15 Alkanes	Category 3	Not applicable.	Narcotic effects
C9-C15 Aromatics	Category 3	Not applicable.	Narcotic effects
Nonane, all isomers	Category 3	Not applicable.	Narcotic effects
Trimethylbenzene, all isomers	Category 3	Not applicable.	Respiratory tract irritation and Narcotic effects
1,2,4-Trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
propylbenzene	Category 3	Not applicable.	Respiratory tract irritation
Cumene	Category 3	Not applicable.	Respiratory tract irritation
Ethylbenzene	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Trimethylbenzene, all isomers	Category 2	Not determined	central nervous system (CNS)
Ethylbenzene	Category 2	Inhalation	ears

Aspiration hazard

Name	Result
C9-C15 Cycloalkanes	ASPIRATION HAZARD - Category 1
C9-C15 Alkanes	ASPIRATION HAZARD - Category 1
C9-C15 Aromatics	ASPIRATION HAZARD - Category 1
Nonane, all isomers	ASPIRATION HAZARD - Category 1
Trimethylbenzene, all isomers	ASPIRATION HAZARD - Category 1
propylbenzene	ASPIRATION HAZARD - Category 1
Cumene	ASPIRATION HAZARD - Category 1
Ethylbenzene	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Routes of entry anticipated: Oral, Dermal, Inhalation.

Potential acute health effects

Eye contact : Causes serious eye irritation.

Section 11. Toxicological information

Inhalation : Harmful if inhaled. Can cause central nervous system (CNS) depression. May cause drowsiness and dizziness.

Skin contact : Causes skin irritation.

Ingestion : Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways. Irritating to mouth, throat and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : Adverse symptoms may include the following:
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo
unconsciousness

Skin contact : Adverse symptoms may include the following:
irritation
redness

Ingestion : Adverse symptoms may include the following:
nausea or vomiting

Potential chronic health effects

General : May cause damage to organs through prolonged or repeated exposure.

Carcinogenicity : Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Trimethylbenzene, all isomers	Acute LC50 5600 µg/l Marine water	Crustaceans - Palaemonetes pugio	48 hours
1,2,4-Trimethylbenzene	Acute LC50 17000 µg/l Marine water	Crustaceans - Cancer magister - Zoea	48 hours
	Acute LC50 4910 µg/l Marine water	Crustaceans - Elasmopus pectenicrus - Adult	48 hours
	Acute LC50 7720 µg/l Fresh water	Fish - Pimephales promelas	96 hours
	Acute LC50 22.4 mg/l Fresh water	Fish - Tilapia zillii	96 hours
propylbenzene	Acute EC50 1800 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute LC50 1550 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
Xylenes, mixed isomers	Acute EC50 90 mg/l Fresh water	Crustaceans - Cypris subglobosa	48 hours
	Acute LC50 8.5 ppm Marine water	Crustaceans - Palaemonetes pugio - Adult	48 hours
	Acute LC50 8500 µg/l Marine water	Crustaceans - Palaemonetes pugio	48 hours
	Acute LC50 15700 µg/l Fresh water	Fish - Lepomis macrochirus - Juvenile (Fledgling, Hatchling, Weanling)	96 hours

Section 12. Ecological information

Cumene	Acute LC50 19000 µg/l Fresh water	Fish - Lepomis macrochirus	96 hours
	Acute LC50 13400 µg/l Fresh water	Fish - Pimephales promelas	96 hours
	Acute LC50 16940 µg/l Fresh water	Fish - Carassius auratus	96 hours
	Acute EC50 2600 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 7400 µg/l Fresh water	Crustaceans - Artemia sp. - Nauplii	48 hours
	Acute EC50 10600 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
Ethylbenzene	Acute LC50 2700 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
	Acute EC50 4600 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 3600 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
	Acute EC50 2930 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 5200 µg/l Marine water	Crustaceans - Americamysis bahia	48 hours
	Acute LC50 4200 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
	Chronic NOEC 1000 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours

Conclusion/Summary : Not available.

Persistence and degradability

Conclusion/Summary : Not available.

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
C9-C15 Aromatics	2.8 to 6.5	99 to 5780	high
Nonane, all isomers	5.65	105	low
Trimethylbenzene, all isomers	3.4 to 3.8	-	low
1,2,4-Trimethylbenzene	3.63	243	low
propylbenzene	3.69	-	low
Xylenes, mixed isomers	3.12	8.1 to 25.9	low
Cumene	3.55	94.69	low
Ethylbenzene	3.6	-	low

Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. 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. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

RCRA classification : D001, D018

Section 14. Transport information

	DOT Classification	IMDG	IATA
UN number	UN1268	UN1268	UN1268
UN proper shipping name	UN1268, Petroleum Distillates, n. o.s. (Naphtha Solvent), 3, PG III	UN1268, Petroleum Distillates, n. o.s. (Naphtha Solvent), 3, PG III	UN1268, Petroleum Distillates, n. o.s. (Naphtha Solvent), 3, PG III
Transport hazard class(es)	3 	3 	3 
Packing group	III	III	III
Environmental hazards	No.	Yes.	No.
Additional information	No additional remark.	-	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: Nonane, all isomers

United States inventory (TSCA 8b): All components are listed or exempted.

Clean Water Act (CWA) 307: Ethylbenzene; Naphthalene; Toluene; Benzene

Clean Water Act (CWA) 311: Xylenes, mixed isomers; Ethylbenzene; Naphthalene; Toluene; Benzene

This material is classified as an oil under Section 311 of the Clean Water Act (CWA) and the Oil Pollution Act of 1990 (OPA). Discharges or spills which produce a visible sheen on waters of the United States, their adjoining shorelines, or into conduits leading to surface waters must be reported to the EPA's National Response Center at (800) 424-8802.

SARA 302/304

Composition/information on ingredients

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Fire hazard
Immediate (acute) health hazard
Delayed (chronic) health hazard

Composition/information on ingredients

Section 15. Regulatory information

Name	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
C9-C15 Cycloalkanes	Yes.	No.	No.	Yes.	No.
C9-C15 Alkanes	Yes.	No.	No.	Yes.	No.
C9-C15 Aromatics	Yes.	No.	No.	Yes.	No.
Nonane, all isomers	Yes.	No.	No.	Yes.	No.
Trimethylbenzene, all isomers	Yes.	No.	No.	Yes.	Yes.
1,2,4-Trimethylbenzene	Yes.	No.	No.	Yes.	No.
propylbenzene	Yes.	No.	No.	Yes.	No.
Xylenes, mixed isomers	Yes.	No.	No.	Yes.	No.
Cumene	Yes.	No.	No.	Yes.	Yes.
Ethylbenzene	Yes.	No.	No.	Yes.	Yes.

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	1,2,4-Trimethylbenzene Ethylbenzene	95-63-6 100-41-4	<5 <1
Supplier notification	1,2,4-Trimethylbenzene Ethylbenzene	95-63-6 100-41-4	<5 <1

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts : The following components are listed: STODDARD SOLVENT

New York : The following components are listed: Cumene; Benzene, 1-methylethyl-; Ethylbenzene

New Jersey : The following components are listed: STODDARD SOLVENT

Pennsylvania : The following components are listed: STODDARD SOLVENT

California Prop. 65

WARNING: This product contains a chemical known to the State of California to cause cancer.
WARNING: This product contains less than 1% of a chemical known to the State of California to cause birth defects or other reproductive harm.

Ingredient name	%	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
Cumene	<1	Yes.	No.	No.	No.
Ethylbenzene	<1	Yes.	No.	41 µg/day (ingestion) 54 µg/day (inhalation)	No.
Naphthalene	<0.1	Yes.	No.	Yes.	No.
Toluene	<0.01	No.	Yes.	No.	7000 µg/day (ingestion)
Benzene	<0.001	Yes.	Yes.	6.4 µg/day (ingestion) 13 µg/day (inhalation)	24 µg/day (ingestion) 49 µg/day (inhalation)

International regulations

International lists : **Australia inventory (AICS)**: All components are listed or exempted.
China inventory (IECSC): All components are listed or exempted.
Japan inventory: All components are listed or exempted.
Korea inventory: All components are listed or exempted.
Malaysia Inventory (EHS Register): All components are listed or exempted.
New Zealand Inventory of Chemicals (NZIoC): All components are listed or exempted.
Philippines inventory (PICCS): All components are listed or exempted.
Taiwan inventory (CSNN): Not determined.

Canada inventory : All components are listed or exempted.

Section 15. Regulatory information

EU Inventory : All components are listed or exempted.

WHMIS (Canada) : Class B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F).
Class D-2B: Material causing other toxic effects (Toxic).

Section 16. Other information

National Fire Protection Association (U.S.A.)

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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

History

Date of issue/Date of revision : 6/29/2015.

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

Notice to reader

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Distributed By:
SAL Chemical
3036 Birch Drive
Weirton, WV 26062
304-748-8200

Material Safety Data Sheet

Revision Issued: 10/23/09	Supercedes: 2/28/07	First Issued: 4/11/1996

Section I – Product and Company Identification

Product Name: **Phosphoric Acid 65-80% Technical Grade**

PotashCorp MSDS No.: 80
ERG No.: 154

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Saskatoon, Saskatchewan Canada S7K7G3
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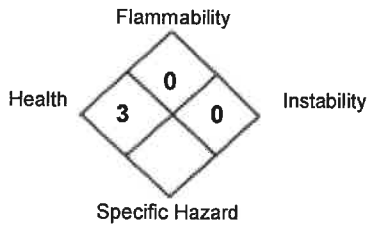
(800) 667-3930 from USA

Emergencies (800) 424-9300 (CHEMTREC)
Web Site www.potashcorp.com
Health Emergencies, Contact Your Local Poison Center



NFPA Code

Common Name: Phosphoric Acid	**Formula:** H_3PO_4	**Synonym:** TG70, TG75, TG75LS, TG80, TG80LS, FERT75, DCHA75	**Uses:** Industrial

Section II – Composition / Information On Ingredients

Chemical Name	CAS No.	Exposure Limits								
		OSHA PEL		TLV – TWA		STEL		CEIL		% by Weight
		mg/m³	ppm	mg/m³	ppm	mg/m³	ppm	mg/m³	ppm	
Phosphoric Acid	7664-38-2	1		1		3				65-80

Section III – Hazard Identification

Potential Acute Health Effects:			
Eyes and Skin:	Contact causes eye irritation, may cause burns or blindness. Substance is corrosive. May cause severe burns and ulceration.		
Inhalation:	Inhalation can cause irritation or corrosive burns to the upper respiratory system, including nose, mouth, and throat. Lung irritation, pulmonary edema, and chemical pneumonitis can also occur.		
Ingestion:	Ingestion causes irritation and can cause corrosive burns to mouth, throat and stomach resulting in hemorrhaging and permanent damage. Can be fatal if swallowed.		
Potential Chronic Health Effects:	Long-term exposure may cause upper respiratory disease and irritation of the skin.		
CARCINOGENICITY LISTS	**IARC Monograph:** No	**NTP:** No	**OSHA:** No

Section IV – First Aid Measures

Eyes:	Immediately flush eyes (holding eyelids apart) with plenty of water for at least 15 minutes. Get medical attention.
Skin:	Immediately flush skin with plenty of water while removing contaminated clothing. Get medical attention if irritation develops or persists.
Ingestion:	Do not induce vomiting. Drink large amounts of water (or milk if available) to dilute the acid. Get medical attention immediately.
Inhalation:	Remove to fresh air. If breathing has stopped, give artificial respiration with the aid of a pocket mask equipped with a none way valve or other proper respiratory medical device. If breathing with difficulty, give oxygen. Observe for possible delayed reaction.

Section V – Fire Fighting Measures			
Flash Point:	Non-flammable	**Autoignition Temperature:**	Not Applicable
Lower Explosive Limit:	Not Applicable	**Upper Explosive Limit:**	Not Applicable
Unusual Fire and Explosion Hazards:	Phosphoric Acid is not flammable however the following hazards can occur when exposure to extreme heat: release of phosphorus oxides and/or phosphine from thermal decomposition and hydrogen from reaction with metals.		
Extinguishing Media:	Phosphoric Acid is not flammable; use most appropriate agent to extinguish surrounding material.		
Special Firefighting Procedures and Equipment:	Keep personnel removed from and upwind of fire. Wear full fire-fighting turn-out gear (full Bunker gear) and respiratory protection (SCBA). Cool containers containing phosphoric acid with water spray to prevent rupture.		

Section VI – Accidental Release Measures	
Small Spill:	Neutralize acid spill with alkali such as soda ash, sodium bicarbonate, limestone or lime. Absorb material with an inert material such as sand, vermiculite, diatomaceous earth or other absorbent material and place in chemical waste container to be disposed at an appropriate waste disposal facility according to current applicable laws and regulations and product characteristics at time of disposal. Adequate ventilation is required for soda ash due to the release of carbon dioxide gas. No smoking in spill area.
Large Spill:	Contain spill with dikes and transfer the material to appropriate containers for reclamation or disposal. Absorb remaining spill with an inert material such as sand, vermiculite or other absorbent material and place in chemical waste container to be disposed at an appropriate waste disposal facility according to current applicable laws and regulations and product characteristics at time of disposal. Neutralize residue with alkali such as soda ash, sodium bicarbonate, limestone or lime. Adequate ventilation is required for soda ash due to the release of carbon dioxide gas. No smoking in spill area.
Release Notes:	If spill could potentially enter any waterway, including intermittent dry creeks, contact the local authorities. If in the U.S., contact the US COAST GUARD NATIONAL RESPONSE CENTER toll free number 800-424-8802. In case of accident or road spill notify: CHEMTREC IN USA at 800-424-9300; CANUTEC in Canada at 613-996-6666 CHEMTREC in other countries at (International code)+1-703-527-3887.
Comments:	See Section XIII for disposal information and Section XV for regulatory requirements. Large and small spills may have a broad definition depending on the user's handling system. Therefore, the spill category must be defined at the point of release by technically qualified personnel.

Section VII – Handling and Storage	
Ventilation:	Use with adequate ventilation.
Handling:	Use appropriate personal protective equipment as specified in Section VIII. Avoid contact with skin and eyes. Avoid inhalation and ingestion.
Storage:	Store in unopened container in cool, well ventilated area, away from potential sources of heat and fire. Keep away from combustible materials, strong bases and metals. Large storage tanks should be bermed and electrically grounded. Avoid using unprotected steel containers.

Section VIII – Exposure Controls/ Personal Protection	
Engineering Controls:	Good ventilation should be sufficient to control airborne levels.
Personal Protection:	
Eye Protection:	Wear chemical splash goggles and face shield (ANSI Z87.1 or approved equivalent) when eye and face contact is possible due to splashing or spraying of material.
Protective Clothing:	Where contact is likely, wear chemical-resistant gloves, a chemical suit, rubber boots and chemical safety goggles plus a face shield.
Respiratory Protection:	Wear NIOSH approved respiratory protective equipment when vapor or mists may exceed applicable concentration limits.
Other Protective Clothing or Equipment:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

Section IX – Physical and Chemical Properties

Appearance/Color/Odor:	Clear, colorless liquid with no odor	**Boiling Point:**	158°C (85% H_3PO_4)
Melting Point/Range:	-17.5°C (75% H_3PO_4), 4.6°C (80% H_3PO_4)	**Boiling Point Range:**	121-144°C (65-80% H_3PO_4)
Solubility in Water:	750-850 g/L (high solubility) (75-85% H_3PO_4)	**Vapor Pressure (mmHg):**	11-4 mm Hg @ 25°C (low volatility)
Specific Gravity:	1.5-1.6 @ 25°C/15.5°C	**Molecular Weight:**	98
Vapor Density:	3.4 (air=1)	**% Volatiles:**	Not Applicable
Bulk Density:	13 lbs/gal	**Evaporation Rate:**	Not Applicable
pH:	1-1.5 at 1-10 g/L	**Freezing Point:**	-17.5°C (75% H_3PO_4), 4.6°C (80% H_3PO_4)
Viscosity:	12-33 cp @ 20°C, 7.2-16 cp @ 40°C	**Density:**	1.5-1.6 g/mL @ 25°C

Section X – Stability and Reactivity

Stability:	This product is hygroscopic, but is stable under normal conditions of storage, handling and use.
Hazardous Polymerization:	Will not occur
Conditions to Avoid:	High temperatures
Materials to Avoid (Incompatibles):	Bases, aluminum, copper, mild steel, brass and bronze
Hazardous Decomposition Products:	Phosphorus oxides and/or phosphine from thermal decomposition and hydrogen gas from reaction with metals.

Section XI – Toxicological Information

Significant Routes of Exposure:	Eyes, Skin, Respiratory System, Digestive Tract	
Toxicity to Animals:	**Acute Oral Toxicity:**	(Rat) LD_{50} = 1,530 mg/kg bw.
	Acute Inhalation Toxicity:	(Guinea pig, mouse, rat, rabbit) 1-hr: LC_{50} = 61 – 1,689 mg/m^3 P_2O_5.
	Acute Toxicity: Other Routes:	No data available
	Acute Dermal Toxicity:	(Rabbit) 24–hr: LD_{50} (85-75% H_3PO_4) = >1,260 – >3,160 mg/kg bw.
	Repeated Dose Toxicity:	No data available
	Eye & Skin Irritation/Corrosion:	Eye Irritation/Corrosion: (Rabbit) OECD Guideline 405: Not irritating at 17% solution but severe irritation at higher concentration. Skin Irritation/Corrosion: (Rabbit) 24-hr: Highly irritating to corrosive.
Special Remarks on Toxicity to Animals:	**Developmental Toxicity/Teratogenicity:**	No data available
	Bacterial Genetic Toxicity In-Vitro: Gene Mutation:	(S. *typhimurium*) Bacterial reverse mutation assay: Negative.
	Non-Bacterial Genetic Toxicity In-Vitro: Chromosomal Aberration:	(Sea urchin) Embryo and sperm assays: Aberrations caused at pH 6.5.
	Toxicity to Reproduction:	(Rat) One-generation: 375 mg/kg bw did not affect offspring growth in rats.
	Carcinogenicity:	No data available
Other Effects on Humans:	Inhalation: 10,000 mg/m^3 is immediately dangerous to life (IDLH). Dermal contact: May irritate eyes and skin.	
Special Remarks on Chronic Effects on Humans	No data available	
Special Remarks on Other Effects on Humans:	No data available	

Section XII – Ecological Information

Ecotoxicity	**EPA Ecological Toxicity rating :**	High
	Acute Toxicity to Fish:	(L. *macrochirus* (bluegill sunfish)) 96-hr static: LC_{50} = pH 3.0–3.5.
	Chronic Toxicity to Fish:	Mosquito fish: LC_{50} =138 mg/L; 96 hours
	Acute Toxicity to Aquatic Invertebrates:	(*Daphnia magna*) 12-hr static: EC_{50} = pH 4.6; (*Daphnia pulex*) 12-hr static: EC_{50} = pH 4.1; (*Gammarus pulex*) 12-hr static: LC_{50} = pH 3.4.
	Chronic Toxicity to Aquatic Invertebrates:	No data available
	Acute Toxicity to Aquatic Plants:	Dangerous to aquatic plants at high concentrations.
	Toxicity to Bacteria:	(Activated sludge): EC_{50} = pH 2.55.
	Toxicity to Soil Dwelling Organisms:	No data available
	Toxicity to Terrestrial Plants:	(Peas, beans, beets, rapeseed and weeds) Sprayed with 15-20% solution of H_3PO_4: Foliage was destroyed on all plants.
Environmental Fate:	**Stability in Water:**	Ionic dissociation in water.
	Stability in Soil:	Dissolves some soil material (carbonates).
	Transport and Distribution:	Under acidic soil conditions, sparsely soluble phosphates tend to solubilize and may migrate to water.
Toxicity:	Inorganic phosphates have the potential to increase the growth of freshwater algae, whose eventual death will reduce the available oxygen for aquatic life.	
Degradation Products:	**Biodegradation:**	Under anaerobic conditions, microorganisms may degrade the product to phosphine.
	Photodegradation:	No data available

Section XIII – Disposal Considerations

Product Disposal:	Dispose of waste at an appropriate waste disposal facility according to applicable laws and regulations. Neutralize with lime or other base. Collect in appropriate containers. Dispose of at an appropriate waste disposal facility in accordance with current applicable laws and regulations and product characteristics at time of disposal.
General Comments:	None

Section XIV – Transportation Information

	USDOT	**TDG - Canada**
Proper Shipping Name:	Phosphoric Acid, Solution	Phosphoric Acid, Solution
Hazard Class:	8	8
Identification Number:	UN1805	UN1805
Packing Group (Technical Name):	III	III
Labeling / Placarding:	Corrosive	Corrosive
Authorized Packaging:	Rail: Class DOT 103, 104, 105, 109, 111, 112, 114, 115, or 120 tank car tanks; Class 106 or 110 multi-unit tank car tanks and AAR Class 203W, 206W, and 211W tank car tanks. Truck: DOT specification MC 300, MC 301, MC 302, MC 303, MC 304, MC 305, MC 306, MC 307, MC 310, MC 311, MC 312, MC 330, MC 331, DOT 406, DOT 407, and DOT 412 cargo tank motor vehicles.	
Notes:	TDG Note (Canada): If product exceeds the CERCLA Reportable Quantity, the notation "RQ" shall be added before or after the basic shipping description.	

Section XV – Regulatory Information

UNITED STATES: SARA Hazard Category:	This product has been reviewed according to the EPA Hazard Categories promulgated under Section 311 and 312 of the Superfund Amendment and reauthorization Act of 1986 (SARA title III) and is considered, under applicable definitions, to meet the following categories:									
	Fire:	No	**Pressure Generating:**	No	**Reactivity:**	No	**Acute:**	Yes	**Chronic:**	No
	40 CFR Part 355 - Extremely Hazardous Substances:						None Applicable			
	40 CFR Part 370 - Hazardous Chemical Reporting:						Applicable			
	All intentional ingredients listed on the TSCA inventory.									
SARA Title III Information:	This product contains the following substances subject to the reporting requirements of Title III (EPCRA) of the Superfund amendments and Reauthorization Act of 1986 and 40 CFR Part 372:									

Chemical	CAS NO.	Percent by Weight	CERCLA RQ (lbs)	SARA (1986) Reporting		
				311	312	313
Phosphoric Acid	7664-38-2	65-80	5000	Yes	Yes	No

CERCLA/Superfund, 40 CFR Parts 117, 302:	If this product contains components subject to substances designated as CERCLA reportable Quantity (RQ) Substances, it will be designated in the above table with the RQ value in pounds. If there is a release of RQ Substance to the environment, notification to the National Response Center, Washington D.C. (1-800-424-8802) is required.

CANADA:	**WHMIS Hazard Symbol and Classification:**	This product is WHMIS controlled. Category E
	Ingredient Disclosure List:	This product does contain ingredient(s) on this list.
	Environmental Protection:	All intentional ingredients are listed on the DSL (Domestic Substance List).
EINECS#:	(Phosphoric Acid) 231-633-2	
California: Prop 65:	This is not a chemical known to cause cancer, nor is it listed.	

Section XVI – Other Information

NFPA Hazard Ratings:	**Health:** 3	**Flammability:** 0	**Instability:** 0	**Special Hazards:**
	0 = Insignificant	**1 = Slight**	**2 = Moderate**	**3 = High** **4 = Extreme**
COMMENTS:				
Section(s) changed since last revision:	I, III, IV, V, IX, X, XII, XV, XVI			

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1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Trade name	:	Glycol Ether PM ACETATE
CAS Number:	:	108-65-6
Chemical characterization	:	Propylene Glycol Ether Esters
Chemical name	:	1-Methoxy-2-Propanol Acetate
Synonyms	:	PM Acetate, PMA
Identified uses	:	Solvent

Distributed By:
SAL Chemical
3036 Birch Drive
Weirton, WV 26062
304-748-8200

Company Address
Lyondell Chemical Company
LyondellBasell Tower, Suite 300
1221 McKinney St.
P.O. Box 2583
Houston Texas 77252-2583

Company Telephone
Customer Service 888 777-0232
Product Safety 800 700-0946
product.safety@lyb.com

Emergency telephone
CHEMTREC USA 800-424-9300
LYONDELL 800-245-4532

E-mail address Responsible/issuing person : product.safety@lyb.com

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Flammable liquids Category 3

GHS Classification Scale (1= severe hazard; 4= slight hazard)

Label elements

Hazard symbols :

Signal Word : Warning

Hazard Statements : H226 Flammable liquid and vapor.

Precautionary Statements : **Prevention**
P210 Keep away from open flames/hot surfaces. - No smoking.
P233 Keep container tightly closed.
P243 Take precautionary measures against static discharge.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

Storage
P403 + P235 Store in a well-ventilated place. Keep cool.

Other hazards

No additional information available.

3. Composition/information on ingredients

Substances

Chemical nature : Substance

Ingredients

Chemical name	CAS-No. EC-No.	Weight %	Component Type
1-Methoxy-2-propanol acetate	108-65-6	>= 99.7 %	A
2-Methoxy-1-propanol acetate	70657-70-4	<0.3 %	C
Butylated Hydroxy Toluene	128-37-0	0.005 - 0.007 %	B

Key:
(A) Substance
(B) Stabilizer
(C) Impurity

4. FIRST AID MEASURES

General advice : After adequate first aid, no further treatment is required unless symptoms reappear.
Consult a physician/doctor if necessary.
Take proper precautions to ensure your own health and safety before attempting rescue and providing first aid.
Show this material safety data sheet to the doctor in attendance.

If inhaled : If overcome by exposure, remove victim to fresh air

immediately.
Give oxygen or artificial respiration as needed.
Obtain emergency medical attention.
Prompt action is essential.

In case of skin contact : Remove contaminated clothing as needed.
Wash thoroughly with soap and water.
Flush with lukewarm water for 15 minutes.
If sticky, use waterless cleaner first.
Seek medical attention if discomfort persists.

In case of eye contact : Immediately flush the eyes with large amounts of clean low-pressure water for at least 15 minutes, occasionally lifting the upper and lower lids. If pain or irritation persists, promptly obtain medical attention.

If swallowed : Do not induce vomiting. Risk of damage to lungs exceeds poisoning risk.
Obtain emergency medical attention.

Notes to physician

Symptoms : May cause moderate irritation, including burning sensation, tearing, redness or swelling.
Prolonged overexposure to either vapor or mist may cause coughing, shortness of breath, dizziness and drunkenness.
Ingestion may cause gastrointestinal discomfort with any or all of the following symptoms: nausea, vomiting, lethargy, or diarrhea.
Repeated or prolonged exposure may irritate the mucous membranes.

Hazards : Inhalation may cause CNS symptoms like headache, dizziness, fatigue, muscular, weakness, drowsiness and lack of coordination.

Treatment : Treat symptomatically.
Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : SMALL FIRE: Use dry chemicals, CO_2, water spray or alcohol-resistant foam. LARGE FIRE: Use water spray, water fog or alcohol-resistant foam.

Unsuitable extinguishing media : Do not use solid water stream.

Specific hazards during fire : When heated above the flash point, releases flammable

fighting		vapors. When mixed with air and exposed to ignition source, vapors can burn in open or explode if confined. Vapors may be heavier than air. May travel long distances along the ground before igniting and flashing back to vapor source. Fine sprays/mists may be combustible at temperatures below normal flash point. Fight fire from a safe distance/protected location. Heat may build enough pressure to rupture closed containers/spreading fire/increasing risk of burns/injuries. Use water spray/fog for cooling. Avoid frothing/steam explosion. Burning liquid may float on water. Although water soluble, may not be practical to extinguish fire by water dilution. Notify authorities immediately if liquid enters sewer/public waters.
Special protective equipment for fire-fighters	:	Do not enter fire area without proper protection. Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighter's protective clothing will only provide limited protection.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	:	Eliminate all sources of ignition. Ensure adequate ventilation. Use personal protective equipment.
Environmental precautions	:	If necessary, all contaminated waste water must be treated in a municipal or industrial wastewater treatment plant before release to surface water. Chemical removal by air and water pollution control devices must meet the minimum efficiency requirements needed to reduce exposures to an acceptable level.
Methods for containment / Methods for cleaning up	:	Flammable liquid. Release can cause fire or explosion. Liquids/vapors may ignite. Evacuate/limit access. Equip responders with proper protection. Extinguish all ignition sources. Stop leak if you can do it without risk. Slippery walking/spread granular cover or soak up. Prevent flow to sewer/public waters.

Notify fire and environmental authorities.
Soak up small spills with inert solids.
Use suitable disposal containers.
On water, material is soluble and may float or sink.
Contain/collect rapidly to minimize dispersion.
Disperse residue to reduce aquatic harm.
Report per regulatory requirements.

SECTION 7. HANDLING AND STORAGE

Handling

Advice on safe handling : For industrial use only.
Keep container tightly closed when not in use.
The potential for peroxide formation is enhanced when this solvent is used in processes such as distillation.
Product contains Butylhydroxytoluene (BHT) to prevent peroxide formation
Use only non-sparking tools.
Properly ground containers before beginning transfer.
When transferring propylene glycol ethers with flash points at or below 60 °C (140 °F) into fixed site vessels, the vessel should be purged and inerted prior to transfer.
Propylene glycol ethers may be transferred into air atmospheres if the temperature of the product and the ambient temperature within the shipping container are both at least 16.7 °C (30 °F) less than the product's flash point. After loading, nitrogen blanketing is required if the contents of the transportation container could exceed a temperature of 16.7 °C (30 °F) less than the product flash point during any subsequent transportation activities.
If the product flash point is less than 16.7 °C (30 °F) above either the ambient temperature of the transportation container or the storage temperature of the product, the container should be purged and inerted with nitrogen prior to loading and nitrogen blanketed after loading.
Handle empty containers with care.
Flammable/combustible residue remains after emptying.
The purging of all empty shipping containers, regardless of the flashpoint, is recommended when received with air atmospheres.
Isolate, vent, drain, wash and purge systems or equipment before maintenance or repair.
Use adequate personal protective equipment.
Observe precautions pertaining to confined space entry.

Storage

Requirements for storage : Store only in tightly closed, properly vented containers away

areas and containers	from heat, sparks, open flame and strong oxidizing agents. Storage under nitrogen atmosphere is recommended to minimize possible formation of highly reactive peroxides. Store in properly lined steel/stainless steel to avoid slight discoloration from mild steel/copper. Aluminum (5000 series alloys - U.S. Aluminum Association Standard) showed no corrosion after 30 days contact with PM Acetate, DPM, TPM, PTB, or PM at 71°C (160°F). Some plastics/rubbers are attacked by Glycol Ethers/Ether Esters. This product will absorb water if exposed to air.

8. Exposure controls/personal protection

Control parameters

Ingredients with workplace control parameters

Consult local authorities for acceptable exposure limits.

Exposure controls

Engineering measures

Local exhaust and general ventilation must be adequate to meet exposure limit(s).

Personal protective equipment

Respiratory protection	:	When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. No occupational exposure limits have been developed for this material. Where exposure through inhalation may occur from use, approved respiratory protection equipment is recommended.
Hand protection	:	Wear chemical resistant gloves such as: Neoprene.
Eye and face protection	:	Eye protection such as chemical splash goggles and/or face shield must be worn when possibility exists for eye contact due to splashing or spraying liquid, airborne particles, or vapor.
Skin and body protection	:	Depending on the conditions of use, protective gloves, apron, boots, head and face protection should be worn. The equipment must be cleaned thoroughly after each use.
Hygiene measures	:	Selection of appropriate personal protective equipment should be based on an evaluation of the performance characteristics of the protective equipment relative to the task(s) to be performed, conditions present, duration of use, and the

hazards and/or potential hazards that may be encountered during use.
Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.
Use good personal hygiene practices.
Wash hands before eating, drinking, smoking, or using toilet facilities.
Take off contaminated clothing and wash before reuse.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	liquid
Color	:	Colorless.
Odor	:	Ester-like odor.
Odor Threshold	:	No Data Available.
Flash point	:	~ 45.5 °C at 101.3 hPa (76.0 mm Hg) Method: ASTM D 3278
Lower explosion limit	:	1.5 vol%
Upper explosion limit	:	12 vol%
Flammability (solid, gas)	:	Not applicable
Oxidizing properties	:	Not considered an oxidizing agent.
Autoignition temperature	:	318 °C
Molecular weight	:	132.15 g/mol
Decomposition temperature	:	not determined
pH	:	6.8
Melting point/freezing point	:	-65 °C
Boiling point/boiling range	:	146 °C at 1,013 hPa
Vapor pressure	:	0.0079 hPa at 25 °C
Density	:	~ 0.96 g/cm3 at 25 °C

Water solubility	:	198 g/l 20 °C Soluble in water.
Partition coefficient: n-octanol/water	:	log Pow: 0.36 at 25 °C
Viscosity, dynamic	:	~ 1 mPa.s at 25 °C (Brookfield).
Viscosity, kinematic	:	1.1 mm2/s at 25 °C
Relative vapor density	:	~ 4.6 at 15 - 32 °C (Air = 1.0)
Evaporation rate	:	0.3 (butyl acetate = 1)
Explosive properties	:	Not explosive
Conductivity	:	
Refractive index	:	

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	May react with oxygen to form peroxides.
Chemical stability	:	Stable under recommended storage conditions.
Hazardous reactions	:	Not expected to occur.
Conditions to avoid	:	Extended contact with air or oxygen. The potential for peroxide formation is enhanced when this solvent is used in processes such as distillation. Heat, sparks, open flame, other ignition sources, and oxidizing conditions. Ignition may occur at temperatures below those published in the literature as autoignition or ignition temperatures.
Materials to avoid	:	Strong oxidizing agents. Moisture and humidity. May react with oxygen to form peroxides. However, there is no known evidence that it has nearly the peroxide forming potential as, for example, diethyl ether, etc.
Thermal decomposition	:	Carbon Monoxide and other toxic vapors.

SECTION 11. TOXICOLOGICAL INFORMATION

Product Summary : The below given information is based on the assessment of the product including impurities.

Acute toxicity

Acute oral toxicity : Based on acute toxicity values, not classified.

: LD50: > 5,000 mg/kg
Species: Rat

Acute inhalation toxicity : Based on acute toxicity values, not classified.

: LC0: > 20 mg/l
Exposure time: 6 HOURS
Species: Rat

Acute dermal toxicity : Based on acute toxicity values, not classified.

: LD50: > 5,000 mg/kg
Species: Rabbit

: LD50: > 2,000 mg/kg
Species: Rat

Skin corrosion/irritation : Based on skin irritation values, not classified.

Serious eye damage/eye irritation : Based on eye irritation values, not classified.
May cause moderate irritation, including burning sensation, tearing, redness or swelling.

Respiratory or skin sensitization : Respiratory sensitization
Not classified
No study available.

: Skin sensitization
Not classified
No adverse effect observed.

Chronic toxicity

Carcinogenicity	:	Not classified No adverse effect observed.
Germ cell mutagenicity	:	Not classified No adverse effect observed.
Reproductive toxicity		
Effects on fertility / Effects on or via lactation	:	Not classified No adverse effect observed.
Effects on Development	:	Not classified No adverse effect observed.
Target Organ Systemic Toxicant - Single exposure	:	Based on single exposure toxicity values, not classified.
	:	High concentrations may cause central nervous system depression.
Target Organ Systemic Toxicant - Repeated exposure	:	Based on repeated exposure toxicity values, not classified.
Aspiration hazard	:	Based on physico-chemical values or lack of human evidence, not classified.

12. ECOLOGICAL INFORMATION

Ecotoxicology Assessment

Acute aquatic toxicity	:	Based on acute aquatic toxicity values, not classified.
Chronic aquatic toxicity	:	Not classified, based on readily biodegradability and low acute toxicity.
Toxicity to fish	:	Low acute toxicity to fish
Toxicity to daphnia and other aquatic invertebrates	:	Low acute toxicity to aquatic invertebrates.
Toxicity to algae	:	Low toxicity to algae.

Toxicity to bacteria : Low toxicity to sewage microbes.

Toxicity to fish (Chronic toxicity) : Low chronic toxicity to fish.

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : Low chronic toxicity to aquatic invertebrates.

Persistence and degradability

Biodegradability : >= 83 %
Rapidly degradable.
(After 28 days in a ready biodegradability test)

Bioaccumulative potential

Bioaccumulation : Bioconcentration factor (BCF): 3.16
Method: (QSAR calculated value)
This material is not expected to bioaccumulate.

Mobility in soil

Distribution among environmental compartments : Stability in water
Hydrolytically stable.

: Stability in soil
no data available
Low absorption to soil particulates predicted

Additional advice Environmental fate and pathways : No additional information available.

Results of PBT and vPvB assessment

Not applicable.

Other adverse effects

Additional ecological information : No additional information available.

SECTION 13. DISPOSAL CONSIDERATIONS

Further information : Contaminated product, soil, or water may be hazardous waste.
(See 40 U.S. Code of Federal Regulations (CFR) 261 and 29 CFR 1910).

Landfill solids at permitted sites.
Use registered transporters.
Burn concentrated liquids.
Avoid flame-outs.
Assure emissions comply with applicable regulations.
Dilute aqueous waste may biodegrade.
Avoid overloading/poisoning plant biomass.
Assure effluent complies with applicable regulations.

SECTION 14. TRANSPORT INFORMATION

CFR_ROAD

UN number	:	3272
Description of the goods	:	ESTERS N.O.S.
Class	:	3
Packing group	:	III
Labels	:	3

CFR_RAIL

UN number	:	3272
Description of the goods	:	ESTERS N.O.S.
Class	:	3
Packing group	:	III
Labels	:	3

IMDG

UN number	:	3272
Description of the goods	:	ESTERS N.O.S. (1-METHOXY-1-METHYLETHYL-ACETATE)
Class	:	3
Packing group	:	III
Labels	:	3
EmS Number 1	:	F-E
EmS Number 2	:	S-D
Marine pollutant	:	no
Environmentally hazardous	:	no

SECTION 15. REGULATORY INFORMATION

If identified components of this product are listed under the TSCA 12(b) Export Notification rule, they will be listed below. All components of this product are listed or are exempt from listing on the TSCA 8(b) inventory.

SARA 302/304

This product contains no known chemicals regulated under SARA 302/304.

SARA 311/312

Based upon available information, this material is classified as the following health and/or physical hazards according to Section 311 & 312:

Fire Hazard.
Immediate (Acute) Health Hazard.

SARA 313

This product contains no known chemicals regulated under SARA 313.

State Reporting

This material is not known to contain a chemical substance known to the State of California to cause cancer, reproductive, or developmental toxicity under California Proposition 65. However, LyondellBasell has not tested for the presence of listed chemical substances.

This product contains no known chemicals regulated by New Jersey's Worker and Community Right to Know Act.

No components are subject to the Massachusetts Right to Know Act.

This product contains no known chemicals regulated by Pennsylvania's Right to Know Act.

Other international regulations

Global Inventory Status

The ingredients of this product are compliant with the following chemical inventory requirements or exemptions.

*Additional Explanatory Status Statements follow the table, as necessary.

Country/Region	Inventory	Status Description
Australia	AICS	Compliant
Canada	DSL	Compliant
China	IECSC	Compliant
Europe	REACH	See REACH Compliance Statement
Japan	ENCS	Compliant
Korea	KECI	Compliant
New Zealand	NZIoC	Compliant
Philippines	PICCS	Compliant
United States of America	TSCA	Compliant
Taiwan	TCSCA	Compliant

REACh status

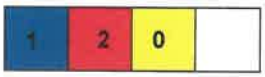
If the product has been purchased from any company of the LyondellBasell group of companies registered in the European Union, we confirm that the chemical substance in this product has been pre-registered or, where required under REACh, registered, and that we have the intention to proceed with any required registration in accordance with the deadlines set forth in REACh. (Regulation (EU) No. 1907/2006)

Contact product.safety@lyb.com for additional global inventory information.

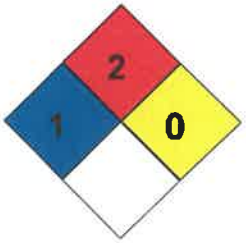
SECTION 16. OTHER INFORMATION

Further information

HMIS Classification : Health Hazard: 1
Flammability: 2
Physical hazards: 0



NFPA Classification : Health Hazard: 1
Fire Hazard: 2
Instability: 0



Other Information
HMIS rating scale (0 = minimal hazard; 4 = severe hazard)
NFPA rating scale (0 = minimal hazard; 4 = severe hazard)

Material safety datasheet sections which have been updated:
Revised Section(s): 14 Revision Date March 8 2016

Disclaimer

This document is generated for the purpose of distributing health, safety, and environmental data.
Information is correct to the best of our knowledge at the date of the SDS publication.
It is not a specification sheet nor should any displayed data be construed as a specification.
Before using a product sold by a company of the LyondellBasell family of companies, users should make their own independent determination that the product is suitable for the intended use and can be used safely and legally.
SELLER MAKES NO WARRANTY; EXPRESS OR IMPLIED (INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY WARRANTY) OTHER THAN AS SEPARATELY AGREED TO BY THE PARTIES IN A CONTRACT.
Users should review the applicable Safety Data Sheet before handling the product.
This product(s) may not be used in the manufacture of any of the following, without prior written approval by Seller for each specific product and application:
(i) U.S. FDA Class I or II Medical Devices; Health Canada Class I, II or III Medical Devices; European Union Class I or II Medical Devices;
(ii) film, overwrap and/or product packaging that is considered a part or component of one of

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the aforementioned medical devices;
(iii) packaging in direct contact with a pharmaceutical active ingredient and/or dosage form that is intended for inhalation, injection, intravenous, nasal, ophthalmic (eye), digestive, or topical (skin) administration;
(iv) tobacco related products and applications, electronic cigarettes and similar devices.

The product(s) may not be used in:
(i) U.S. FDA Class III Medical Devices; Health Canada Class IV Medical Devices; European Class III Medical Devices;
(ii) applications involving permanent implantation into the body;
(iii) life-sustaining medical applications.

All references to U.S. FDA, Health Canada, and European Union regulations include another country's equivalent regulatory classification.
In addition to the above, LyondellBasell may further prohibit or restrict the use of its products in certain applications. For further information, please contact a LyondellBasell representative.

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Language Translations
The information presented in this document has been translated from English by a vendor LyondellBasell believes to be reliable. LyondellBasell and its vendor have made a good-faith effort to verify the accuracy of the translation, but assume no liability or other responsibility for any errors that may have occurred. Please refer to our web site (www.lyondellbasell.com) for the original document written in English.

MATERIAL SAFETY DATA SHEET
PRODUCT: SODIUM BISULFITE SOLUTION

SECTION 1 - MANUFACTURER INFORMATION

MANUFACTURER/DISTRIBUTOR:

PVS CHEMICAL SOLUTIONS, INC.
55 Lee Street
Buffalo, New York 14210
(716) 825-5762 (for product information)
(716) 825-6454 (fax)

Distributed By:
SAL Chemical
3036 Birch Drive
Weirton, WV 26062
304-748-8200

FOR TRANSPORTATION EMERGENCY ONLY - DAY OR NIGHT
CALL CHEMTREC, 1-800-424-9300

PREPARATION/REVISION DATE: 12/15/09
CONTACT: EHS&S Manager

SECTION 2 -- PRODUCT IDENTITY/HAZARDOUS INGREDIENTS INFORMATION

Product name: Sodium Bisulfite Solution
Chemical name/synonyms: Sodium Bisulfite, Aqueous Solution; Sodium Acid Sulfite; Sodium Hydrogen Sulfite
Chemical formula: $NaHSO_3$
CAS number: 7631-90-5
Product Code: N/A

HAZARDOUS INGREDIENTS: Yes

Component	CAS No.	% by wt.
Sodium Bisulfite	7631-90-5	27-42%
Exposure limits:		
	ACGIH TLV:	5 mg/m^3, 8-hr TWA
	OSHA PEL:	None
	IDLH	None

NON-HAZARDOUS INGREDIENTS: Yes

Component	CAS No.	% by wt.
Water	7732-18-5	Balance

OSHA 29 CFR 1910.1200 EVALUATION: Hazardous

MSDS, SODIUM BISULFITE:

SECTION 3 -- PHYSICAL/CHEMICAL CHARACTERISTICS

APPEARANCE AND ODOR:	Clear, yellow liquid with an odor of sulfur dioxide.
BOILING POINT:	>100 ^{0}C
MELTING POINT:	no information
VAPOR PRESSURE (REID):	78 mm Hg @ 37.7 ^{0}C
VAPOR DENSITY (AIR = 1):	no information
SPECIFIC GRAVITY (WATER = 1):	1.26 to 1.37 @ 25 ^{0}C
PERCENT VOLATILE BY VOL@ 55 ^{0}C:	no information
EVAPORATION RATE (BUTYL ACETATE = 1):	<1
pH:	3 to 5
SOLUBILITY IN WATER:	Complete

SECTION 4 -- FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (CLOSED CUP METHOD): N/A
FLAMMABLE LIMITS IN AIR, % BY VOLUME: N/A LOWER: N/A UPPER: N/A

EXTINGUISHING MEDIA: Use water, foam, dry chemical, or CO_2 fire extinguishers as appropriate to fight surrounding fires. Do not allow water run-off to enter sewers or watercourses.

SPECIAL FIRE FIGHTING PROCEDURES: Wear protective clothing and protective equipment as appropriate for surrounding fire. Keep storage tanks or containers cool. Flood with water. Wear self contained breathing apparatus for major exposure when release of SO_2 gas is possible.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Releases sulfur dioxide gas when heated.

SECTION 5 -- REACTIVITY DATA

STABILITY: Stable

HAZARDOUS POLYMERIZATION: will not occur

INCOMPATIBILITY (CONDITIONS AND MATERIALS TO AVOID): Material is stable when properly handled. Reacts with acids, oxidizing agents, and with heat to form toxic sulfur dioxide (SO_2) gas. Avoid sources of heat.

HAZARDOUS DECOMPOSITION PRODUCTS: Decomposes with heat or oxidizing agents to release toxic SO_2 gas.

MSDS, SODIUM BISULFITE:

SECTION 6 -- HEALTH HAZARD DATA

PRIMARY ROUTES OF ENTRY: Inhalation, ingestion, direct contact

HEALTH EFFECTS (ACUTE AND CHRONIC):

GENERAL: A skin, eye and mucous membrane irritant. Only moderately toxic by ingestion but may cause a severe allergic reaction in some asthmatics and others who are hypersensitive to sulfites. Hazards are largely those from acute exposure or direct contact rather than chronic or repeated low level exposure. The potential for exposure to sulfur dioxide must always be considered as well, particularly when the solution may become overheated.

INHALATION: Inhalation will irritate and may damage upper respiratory tract and lungs.

INGESTION: May irritate gastrointestinal tract. Concentrated solutions may cause burns to the digestive tract.

DIRECT CONTACT: Direct skin contact with the solution will cause slight to moderate skin irritation with discomfort, rash and, rarely, an allergic reaction.

EYE CONTACT: Exposure to mists or aerosols of this solution will cause eye irritation with possible discomfort, tearing, or blurring of vision. If left untreated the solution may cause burns and some eye tissue damage.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: May cause a severe allergic reaction in some asthmatics and others who are hypersensitive to sulfites.

CARCINOGENS (NTP, IARC, OR OSHA): No

SECTION 7 -- FIRST AID

INHALATION: Remove victim to fresh air. If not breathing, perform artificial respiration and get medical attention.

INGESTION: Drink copious quantities of water or milk. Do not induce vomiting. Get immediate medical attention.

DIRECT CONTACT: Wipe off excess. Flush immediately with water for at least 15 minutes while removing contaminated clothing. Get immediate medical attention. Wash clothing before re-use. Destroy contaminated shoes.

DIRECT EYE CONTACT: Flush immediately with water for at least 15 minutes. Forcibly hold eyelids apart to ensure complete irrigation of eye/lid tissue. Get immediate medical attention.

SECTION 8 -- PRECAUTIONS FOR SAFE STORAGE, HANDLING AND USE

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Keep storage tanks and containers out of the sun and away form sources of heat and ignition to prevent decomposition and release of SO_2 gas. Containers should be kept tightly closed to prevent oxidation of the product. In cold weather, store product at temperatures above

50 ^{0}F to avoid crystallization. Do not strike containers or fittings with tools or hard objects. Emptied container retains vapor and product residue.

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Contain spill in order to prevent contamination of sewage system or waterway. If possible, neutralize on a dry basis with sodium carbonate or sodium bicarbonate; then flush with water in accordance with applicable regulations.

WASTE DISPOSAL METHODS: Dispose of spilled, neutralized, or waste product, contaminated soil and other contaminated materials in licensed landfill or treatment facility in accordance with all local, state and federal regulations.

SECTION 9 -- EXPOSURE CONTROL INFORMATION

VENTILATION: Provide ventilation to control exposure levels below airborne exposure limits. Use local exhaust ventilation. Reference NFPA Standard 91 for design of exhaust systems.

RESPIRATORY PROTECTION: Use NIOSH/MSHA approved, full-face respirator with canister approved for sulfuric acid/sulfur trioxide vapor and mist. Consult respirator manufacturer to determine appropriate equipment. If concentrations are high or unknown, use self-contained breathing apparatus.

PROTECTIVE GLOVES: Wear impervious rubber gloves.

EYE PROTECTION: Wear splash proof chemical safety goggles. Eyewash fountains recommended in all storage and handling areas. Do not wear contact lenses.

OTHER PROTECTIVE EQUIPMENT: Wear protective clothing to prevent skin contact. Full face shield and rubber footwear should be used. Acid resistant hood and full body suit recommended. Safety shower recommended in all storage and handling areas.

WORK/HYGIENIC PRACTICES: Avoid breathing mist. Use gloves when handling.

OTHER PRECAUTIONS: None

SECTION 10 -- REGULATORY INFORMATION

USDOT & TRANSPORT CANADA:

Proper shipping name:	Bisulfites, aqueous solutions, n.o.s. (sodium bisulfite solution)
Hazard Class:	8
Identification Number:	UN2693
Packing Group:	PGIII
Marine Pollutant:	No
IMO Classification	Class 8

SARA TITLE III 311/312 HAZARD CLASSIFICATIONS:

ACUTE:	Yes
CHRONIC:	No
FIRE:	No
REACTIVITY:	No
PRESSURE:	No

SARA TITLE III 313 HAZARD CLASSIFICATIONS:
This product does not contain any toxic chemicals subject to the Toxic Release reporting requirements.

OTHER RATINGS: (hazard index key: 4=severe, 3=serious, 2=moderate, 1=slight, 0=minimal)
HMIS: Health=1, Flammability=0, Reactivity=1, CORROSIVE (COR)
NFPA: Health=1, Flammability=0, Reactivity=1

OTHER INFORMATION:

CERCLA HAZARDOUS SUBSTANCE:	YES, RQ=5000 lbs.
RCRA 261.33:	No
TSCA 8(d):	Reported/Included
AQUATIC TOXICITY:	Corrosive 96 hr LC50 (mosquito/fish) = 240 ppm. This solution is mildly acidic and has a high chemical oxygen demand (COD). Either the solution itself or water run-off from the material could pose a threat to nearby watercourses.
WHMIS:	Class E – Corrosive Material
CANADA DSL:	Yes
CALIFORNIA PROP. 65:	Not Listed

MSDS, SODIUM BISULFITE:

SAFETY DATA SHEET

Distributed by:
SAL Chemical
3036 Birch Drive,
Weirton, WV 26062
304.748.8200 - Phone
304.797.8751 - Fax

1. Identification

Product identifier	**Sodium Hypochlorite Solution 5-17%**
Other means of identification	None.
Recommended use	Swimming pool chlorinator, hard surface cleaner, mildecide, Water treatment chemical, Biocides, bleach solutions and bleach fixer solutions
Recommended restrictions	None known.

Manufacturer/Importer/Supplier/Distributor information

Company name	KA Steel Chemicals, Inc	
Address	1001 W. 31st Street Downers Grove, IL 60515	
Telephone	630-257-3900	
E-mail	http://www.kasteelchemicals.com/	
Contact person	SDS Review Group	
Emergency phone number	CHEMTREC	(US) 1-800-424-9300 (Canada) 1-800-567-7455

2. Hazard(s) identification

Physical hazards	Corrosive to metals	Category 1
Health hazards	Skin corrosion/irritation	Category 1
	Serious eye damage/eye irritation	Category 1
	Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 1
	Hazardous to the aquatic environment, long-term hazard	Category 2
OSHA defined hazards	Not classified.	

Label elements

Signal word	Danger
Hazard statement	May be corrosive to metals. Causes severe skin burns and eye damage. May cause respiratory irritation. Very toxic to aquatic life. Toxic to aquatic life with long lasting effects.
Precautionary statement	
Prevention	Wear protective gloves/protective clothing/eye protection/face protection. Do not breathe mist or vapor. Use only outdoors or in a well-ventilated area. Wash thoroughly after handling. Keep only in original container. Avoid release to the environment.
Response	If swallowed: Rinse mouth. Do NOT induce vomiting. If inhaled: Remove person to fresh air and keep comfortable for breathing. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. Wash contaminated clothing before reuse. Absorb spillage to prevent material damage. Collect spillage.
Storage	Store in a well-ventilated place. Keep container tightly closed. Store locked up. Store in corrosive resistant container with a resistant inner liner.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	None known.

Supplemental information

Contact with acids liberates toxic gas.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Sodium hypochlorite	7681-52-9	5-17
Sodium hydroxide	1310-73-2	0.3-5

4. First-aid measures

Inhalation
Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact
Take off immediately all contaminated clothing. Wash off IMMEDIATELY with plenty of water for at least 15-20 minutes. Get medical attention immediately. Wash contaminated clothing before reuse. Call a physician or poison control center immediately.

Eye contact
Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

Ingestion
Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

Most important symptoms/effects, acute and delayed
Corrosive effects. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.

Indication of immediate medical attention and special treatment needed
Treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. With eye exposure, continue flushing during transport to hospital.

General information
Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. Fire-fighting measures

Suitable extinguishing media
Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable extinguishing media
Do not use water jet as an extinguisher, as this will spread the fire. Do not use dry extinguishing media that contains ammonium compounds.

Specific hazards arising from the chemical
During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters
Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions
In case of fire and/or explosion do not breathe fumes. Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards
No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures
Keep unnecessary personnel away. Wear appropriate personal protective equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Absorb spillage to prevent material damage. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see Section 8 of the SDS.

Methods and materials for containment and cleaning up
Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills in original containers for re-use. For waste disposal, see Section 13 of the SDS.

Environmental precautions
Do not discharge into drains, water courses or onto the ground. Environmental manager must be informed of all major releases.

7. Handling and storage

Precautions for safe handling
Wear appropriate personal protective equipment. Do not get in eyes, on skin, on clothing. Use with adequate ventilation. Observe good industrial hygiene practices. Do not apply heat or direct sunlight. Temperature and product concentration affect product quality and decomposition rates.

Conditions for safe storage, including any incompatibilities Keep container tightly closed. Store in a cool and well-ventilated place. Store in a corrosive resistant container. Consult container manufacturer for additional guidance. Store away from and do not mix with incompatible materials such as acids, oxidizers, organics, reducing agents, and all metals except titanium.

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	PEL	2 mg/m3

US. ACGIH Threshold Limit Values

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3

US. Workplace Environmental Exposure Level (WEEL) Guides

Components	Type	Value
Sodium hypochlorite (CAS 7681-52-9)	STEL	2 mg/m3

Biological limit values No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles) and a face shield. Wear a full-face respirator, if needed.

Skin protection

Hand protection Wear appropriate chemical resistant gloves.

Other Wear appropriate chemical resistant clothing. Reports indicate that sodium hypochlorite can react with various fabrics usually increasing with concentration. Reactions vary significantly depending on strength of chemical, material, fabric treatment and color of dyes. FRC treated cotton has a stronger response than plain cotton. Poly blend fabrics and meta aramid fabric have a weaker response than natural fibers. Contact the Personal Protective Equipment manufacturer for specific information about their products.

Respiratory protection If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.

Thermal hazards Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Physical state Liquid.

Form Liquid.

Color Not available.

Odor Pungent.

Odor threshold 0.9 mg/m³

pH 12 - 14 (25 °C/77 °F)

Melting point/freezing point	-4 °F (-20 °C) (7% solution)
Initial boiling point and boiling range	Not available.
Flash point	Not applicable.
Evaporation rate	No data available
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not applicable.
Flammability limit - upper (%)	Not applicable.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	12 mm Hg (20°C/68°F)
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Completely miscible
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not applicable.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Bulk density	Not applicable.
Molecular formula	NaOCl
Molecular weight	74.5 g/mol

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Contact with incompatible materials. Avoid ultraviolet (UV) light sources. Excessive heat. Reacts violently with strong acids. Acid contact will produce chlorine gas. Amine contact will produce chloramines.
Incompatible materials	Strong oxidizing agents. Acids. Metals. Organic compounds. Ammonia.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Vapors and spray mist may irritate throat and respiratory system and cause coughing.
Skin contact	Causes skin burns.
Eye contact	Causes eye burns.
Ingestion	Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Ingestion may produce burns to the lips, oral cavity, upper airway, esophagus and possibly the digestive tract.
Symptoms related to the physical, chemical and toxicological characteristics	Corrosive effects. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.

Information on toxicological effects

Acute toxicity	Occupational exposure to the substance or mixture may cause adverse effects.

Product	Species	Test Results
Sodium Hypochlorite Solution 5-17% (CAS Mixture)		
Acute		
Dermal		
LD50	Rabbit	> 2 g/kg
Oral		
LD50	Rat	3 - 5 g/kg

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation Causes severe skin burns and eye damage.

Serious eye damage/eye irritation Causes serious eye damage.

Respiratory or skin sensitization

Respiratory sensitization This product is not expected to cause respiratory sensitization.

Skin sensitization This product is not expected to cause skin sensitization.

Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

IARC Monographs. Overall Evaluation of Carcinogenicity

Sodium hypochlorite (CAS 7681-52-9) 3 Not classifiable as to carcinogenicity to humans.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure May cause respiratory irritation.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard Not classified, however droplets of the product may be aspirated into the lungs through ingestion or vomiting and may cause a serious chemical pneumonia.

Chronic effects Prolonged or repeated overexposure causes lung damage.

Further information Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity Very toxic to aquatic life. Toxic to aquatic life with long lasting effects.

Product		Species	Test Results
Sodium Hypochlorite Solution 5-17%			
Aquatic			
Crustacea	LC50	Daphnia	1 mg/l
Fish	LC50	Bluegill (Lepomis macrochirus)	0.6 mg/l, 48 hours

* Estimates for product may be based on additional component data not shown.

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential No data available for this product.

Mobility in soil Not available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous waste. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

UN number	UN1791
UN proper shipping name	Hypochlorite solutions
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Label(s)	8
Packing group	III
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling. Read safety instructions, SDS and emergency procedures before handling.
Special provisions	IB3, N34, T4, TP2, TP24
Packaging exceptions	154
Packaging non bulk	203
Packaging bulk	241

IATA

UN number	UN1791
UN proper shipping name	Hypochlorite solution
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Label(s)	8
Packing group	III
Environmental hazards	Yes
ERG Code	8L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling. Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number	UN1791
UN proper shipping name	HYPOCHLORITE SOLUTION
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Label(s)	8
Packing group	III
Environmental hazards	
Marine pollutant	Yes
EmS	F-A, S-B
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling. Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

15. Regulatory information

US federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

CERCLA Hazardous Substance: Sodium Hypochlorite, CAS # 7681-52-9, RQ = 100 lbs

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

CERCLA Hazardous Substance List (40 CFR 302.4)

Sodium hydroxide (CAS 1310-73-2)	LISTED
Sodium hypochlorite (CAS 7681-52-9)	LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations

US. Massachusetts RTK - Substance List

Sodium hydroxide (CAS 1310-73-2)
Sodium hypochlorite (CAS 7681-52-9)

US. New Jersey Worker and Community Right-to-Know Act

Sodium hydroxide (CAS 1310-73-2)
Sodium hypochlorite (CAS 7681-52-9)

US. Pennsylvania Worker and Community Right-to-Know Law

Sodium hydroxide (CAS 1310-73-2)
Sodium hypochlorite (CAS 7681-52-9)

US. Rhode Island RTK

Sodium hydroxide (CAS 1310-73-2)
Sodium hypochlorite (CAS 7681-52-9)

US. California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date	29-April-2014
Revision date	10-June-2015
Version #	02
List of abbreviations	LD50: Lethal Dose, 50%. LC50: Lethal Concentration, 50%. EC50: Effective concentration, 50%. TWA: Time weighted average.
References	EPA: AQUIRE database HSDB® - Hazardous Substances Data Bank US. IARC Monographs on Occupational Exposures to Chemical Agents IARC Monographs. Overall Evaluation of Carcinogenicity ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices
Disclaimer	This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.

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ExxonMobil

SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: **AROMATIC 100 FLUID** AKA: Solvent 100
Product Description: Aromatic Hydrocarbon

Intended Use: Solvent

COMPANY IDENTIFICATION

Supplier: **EXXONMOBIL CHEMICAL COMPANY**
Chemicals PS&RA – SDSs
Mail Code: N1.1A.505
P.O. BOX 3272
HOUSTON, TX. 77253-3272 USA

24 Hour Health Emergency	(800) 726-2015
Transportation Emergency Phone	(800) 424-9300 or (703) 527-3887 CHEMTREC
Product Technical Information	(832) 624-8500
Supplier General Contact	(832) 624-8500

SECTION 2 HAZARDS IDENTIFICATION

This material is hazardous according to regulatory guidelines (see (M)SDS Section 15).

CLASSIFICATION:

Flammable liquid: Category 3.
Carcinogen: Category 2. Specific target organ toxicant (central nervous system): Category 3. Specific target organ toxicant (respiratory irritant): Category 3. Aspiration toxicant: Category 1.

LABEL:
Pictogram:

Signal Word: Danger

Hazard Statements:

H226: Flammable liquid and vapor. H304: May be fatal if swallowed and enters airways. H335: May cause respiratory irritation. H336: May cause drowsiness or dizziness. H351: Suspected of causing cancer.

Precautionary Statements:
P201: Obtain special instructions before use. P202: Do not handle until all safety precautions have been read and understood. P210: Keep away from heat/sparks/open flames/hot surfaces. -- No smoking. P233: Keep container tightly closed. P240: Ground / bond container and receiving equipment. P241: Use explosion-proof electrical, ventilating, and lighting equipment. P242: Use only non-sparking tools. P243: Take precautionary measures against static discharge. P261: Avoid breathing mist / vapours. P271: Use only outdoors or in a well-ventilated area. P273: Avoid release to the environment. P280: Wear protective gloves/protective clothing/eye protection/face protection.P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. P303 + P361 + P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. P304 + P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing. P308 + P313: IF exposed or concerned: Get medical advice/ attention. P312: Call a POISON CENTER or doctor/physician if you feel unwell. P331: Do NOT induce vomiting. P332 + P313: If skin irritation occurs: Get medical advice/ attention. P370 + P378: In case of fire: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish. P391: Collect spillage.P403 + P235: Store in a well-ventilated place. Keep cool. P405: Store locked up.P501: Dispose of contents and container in accordance with local regulations.

Contains: SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC

Other hazard information:

HAZARD NOT OTHERWISE CLASSIFIED (HNOC): None as defined under 29 CFR 1910.1200.

PHYSICAL / CHEMICAL HAZARDS

Material can accumulate static charges which may cause an ignition. Material can release vapors that readily form flammable mixtures. Vapor accumulation could flash and/or explode if ignited.

HEALTH HAZARDS

May be irritating to the respiratory tract - effects are reversible. Repeated exposure may cause skin dryness or cracking. Mildly irritating to skin. May be irritating to the eyes, nose, throat, and lungs. May cause central nervous system depression.

ENVIRONMENTAL HAZARDS

Expected to be toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

NFPA Hazard ID:	Health:	1	Flammability:	2	Reactivity:	0
HMIS Hazard ID:	Health:	1*	Flammability:	2	Reactivity:	0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

This material is defined as a complex substance.

Hazardous Substance(s) or Complex Substance(s) required for disclosure

Name	CAS#	Concentration*	GHS Hazard Codes
SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC	64742-95-6	100%	H226, H304, H335, H336, H351, H316, H401, H411

Hazardous Constituent(s) Contained in Complex Substance(s) required for disclosure

Name	CAS#	Concentration*	GHS Hazard Codes
CUMENE	98-82-8	< 1.1%	H226, H304, H335, H351, H401, H411
PSEUDOCUMENE (1,2,4-TRIMETHYLBENZENE)	95-63-6	< 32%	H226, H332, H335, H315, H319(2A), H401, H411
XYLENES	1330-20-7	< 2.2%	H226, H304, H312, H332, H335, H315, H320(2B), H373, H401

* All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume. Concentration values may vary.

As per paragraph (i) of 29 CFR 1910.1200, formulation is considered a trade secret and specific chemical identity and exact percentage (concentration) of composition may have been withheld. Specific chemical identity and exact percentage composition will be provided to health professionals, employees, or designated representatives in accordance with applicable provisions of paragraph (i).

SECTION 4 FIRST AID MEASURES

INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

SKIN CONTACT

Wash contact areas with soap and water. Remove contaminated clothing. Launder contaminated clothing before reuse.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

Seek immediate medical attention. Do not induce vomiting.

NOTE TO PHYSICIAN

If ingested, material may be aspirated into the lungs and cause chemical pneumonitis. Treat appropriately.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO_2) to extinguish flames.

Inappropriate Extinguishing Media: Straight Streams of Water

FIRE FIGHTING

Fire Fighting Instructions: Evacuate area. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Unusual Fire Hazards: Vapors are flammable and heavier than air. Vapors may travel across the ground and reach remote ignition sources causing a flashback fire danger. Hazardous material. Firefighters should consider protective equipment indicated in Section 8.

Hazardous Combustion Products: Incomplete combustion products, Oxides of carbon, Smoke, Fume

FLAMMABILITY PROPERTIES

Flash Point [Method]: 46°C (115°F) [ASTM D-56]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 6.2
Autoignition Temperature: 485°C (905°F)

SECTION 6 ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. US regulations require reporting releases of this material to the environment which exceed the applicable reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The National Response Center can be reached at (800)424-8802.

PROTECTIVE MEASURES

Avoid contact with spilled material. Warn or evacuate occupants in surrounding and downwind areas if required due to toxicity or flammability of the material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

For emergency responders: Respiratory protection: half-face or full-face respirator with filter(s) for organic vapor and, when applicable, H2S, or Self Contained Breathing Apparatus (SCBA) can be used depending on the size of spill and potential level of exposure. If the exposure cannot be completely characterized or an oxygen deficient atmosphere is possible or anticipated, SCBA is recommended. Work gloves that are resistant to aromatic hydrocarbons are recommended. Note: gloves made of polyvinyl acetate (PVA) are not water-resistant and are not suitable for emergency use. Chemical goggles are recommended if splashes or contact with eyes is possible. Small spills: normal antistatic work clothes are usually adequate. Large spills: full body suit of chemical resistant, antistatic material is recommended.

SPILL MANAGEMENT

Land Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do it without risk. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Prevent entry into waterways, sewer, basements or confined areas. A vapor suppressing foam may be used to reduce vapors. Use clean non-sparking tools to collect absorbed material. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Large Spills: Water spray may reduce vapor; but may not prevent ignition in closed spaces. Recover by pumping

or with suitable absorbent.

Water Spill: Stop leak if you can do it without risk. Eliminate sources of ignition. Warn other shipping. If the Flash Point exceeds the Ambient Temperature by 10 degrees C or more, use containment booms and remove from the surface by skimming or with suitable absorbents when conditions permit. If the Flash Point does not exceed the Ambient Air Temperature by at least 10C, use booms as a barrier to protect shorelines and allow material to evaporate. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Dike far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7 HANDLING AND STORAGE

HANDLING

Avoid breathing mists or vapors. Avoid all personal contact. Potentially toxic/irritating fumes/vapors may be evolved from heated or agitated material. Use only with adequate ventilation. Do not enter storage areas or confined spaces unless adequately ventilated. Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source). Use proper bonding and/or ground procedures. However, bonding and grounds may not eliminate the hazard from static accumulation. Consult local applicable standards for guidance. Additional references include American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practice on Static Electricity) or CENELEC CLC/TR 50404 (Electrostatics - Code of practice for the avoidance of hazards due to static electricity).

Loading/Unloading Temperature: [Ambient]

Transport Temperature: [Ambient]
Transport Pressure: [Ambient]

Static Accumulator: This material is a static accumulator. A liquid is typically considered a nonconductive, static accumulator if its conductivity is below 100 pS/m (100x10E-12 Siemens per meter) and is considered a semiconductive, static accumulator if its conductivity is below 10,000 pS/m. Whether a liquid is nonconductive or semiconductive, the precautions are the same. A number of factors, for example liquid temperature, presence of contaminants, anti-static additives and filtration can greatly influence the conductivity of a liquid.

STORAGE

The container choice, for example storage vessel, may effect static accumulation and dissipation. Keep container closed. Handle containers with care. Open slowly in order to control possible pressure release. Store in a cool, well-ventilated area. Storage containers should be grounded and bonded. Fixed storage containers, transfer containers and associated equipment should be grounded and bonded to prevent accumulation of static charge.
Storage Temperature: [Ambient]
Storage Pressure: [Ambient]

Suitable Containers/Packing: Railcars; Tank Trucks; Barges; Drums; Tankers

Suitable Materials and Coatings (Chemical Compatibility): Carbon Steel; Stainless Steel; Copper Bronze; Inorganic Zinc Coatings; Epoxy Phenolic; Polyamide Epoxy; Amine Epoxy; Viton
Unsuitable Materials and Coatings: Vinyl Coatings; Butyl Rubber; Natural Rubber; Ethylene-proplyene-diene monomer (EPDM); Polyethylene; Polystyrene; Polypropylene; PVC; Polyacrylonitrile

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMIT VALUES

Exposure limits/standards (Note: Exposure limits are not additive)

Substance Name	Form	Limit / Standard			NOTE	Source
CUMENE		TWA	245 mg/m3	50 ppm	Skin	OSHA Z1
CUMENE		TWA	50 ppm		N/A	ACGIH
PSEUDOCUMENE (1,2,4-TRIMETHYLBENZENE)		TWA	25 ppm		N/A	ACGIH
SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC	Vapor.	RCP - TWA	19 ppm	100 mg/m3	Total Hydrocarbons	ExxonMobil
XYLENES		TWA	435 mg/m3	100 ppm	N/A	OSHA Z1
XYLENES		STEL	150 ppm		N/A	ACGIH
XYLENES		TWA	100 ppm		N/A	ACGIH

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

Biological limits

Substance	Specimen	Sampling Time	Limit	Determinant	Source
XYLENES	Creatinine in urine	End of shift	1.5 g/g	Methylhippuric acids	ACGIH BELs (BEIs)

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

Adequate ventilation should be provided so that exposure limits are not exceeded. Use explosion-proof ventilation equipment.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

Half-face filter respirator

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode.

Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

Chemical resistant gloves are recommended.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

Chemical/oil resistant clothing is recommended.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

ENVIRONMENTAL CONTROLS

Comply with applicable environmental regulations limiting discharge to air, water and soil. Protect the environment by applying appropriate control measures to prevent or limit emissions.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

GENERAL INFORMATION

Physical State: Liquid
Form: Clear
Color: Colorless
Odor: Aromatic
Odor Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15.6 °C): 0.874
Density (at 15 °C): 873 kg/m³ (7.29 lbs/gal, 0.87 kg/dm³)
Flammability (Solid, Gas): N/A
Flash Point [Method]: 46°C (115°F) [ASTM D-56]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 6.2
Autoignition Temperature: 485°C (905°F)
Boiling Point / Range: 161°C (322°F) - 171°C (340°F)
Decomposition Temperature: N/D
Vapor Density (Air = 1): 4.2 at 101 kPa
Vapor Pressure: 0.269 kPa (2.02 mm Hg) at 20 °C | 0.815 kPa (6.13 mm Hg) at 38°C
Evaporation Rate (n-butyl acetate = 1): 0.27
pH: N/A

Log Pow (n-Octanol/Water Partition Coefficient): N/D
Solubility in Water: Negligible
Viscosity: 0.75 cSt (0.75 mm2/sec) at 40 °C | 0.9 cSt (0.9 mm2/sec) at 25°C
Oxidizing Properties: See Hazards Identification Section.

OTHER INFORMATION

Freezing Point: -14°C (7°F)
Melting Point: N/D
Molecular Weight: 121
Hygroscopic: No
Coefficient of Thermal Expansion: 0.00085 V/VDEGC

SECTION 10 STABILITY AND REACTIVITY

REACTIVITY: See sub-sections below.

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Avoid heat, sparks, open flames and other ignition sources.

MATERIALS TO AVOID: Strong oxidizers, Nitric acid, Sulfuric acid

HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

POSSIBILITY OF HAZARDOUS REACTIONS: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS

Hazard Class	Conclusion / Remarks
Inhalation	
Acute Toxicity: (Rat) 4 hour(s) LC50 > 6193 mg/m3 (Max attainable vapor conc.)	Minimally Toxic. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 403
Irritation: No end point data for material.	May be irritating to the respiratory tract. The effects are reversible. Based on assessment of the components.
Ingestion	
Acute Toxicity (Rat): LD50 3492 mg/kg	Minimally Toxic. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 401
Skin	
Acute Toxicity (Rabbit): LD50 > 3160 mg/kg	Minimally Toxic. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 402
Skin Corrosion/Irritation: Data available.	Mildly irritating to skin with prolonged exposure. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 404
Eye	
Serious Eye Damage/Irritation: Data available.	May cause mild, short-lasting discomfort to eyes. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 405
Sensitization	
Respiratory Sensitization: No end point data for material.	Not expected to be a respiratory sensitizer.

Skin Sensitization: Data available.	Not expected to be a skin sensitizer. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 406
Aspiration: Data available.	May be fatal if swallowed and enters airways. Based on physico-chemical properties of the material.
Germ Cell Mutagenicity: Data available.	Not expected to be a germ cell mutagen. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 471 475 476 479
Carcinogenicity: No end point data for material.	Caused cancer in laboratory animals, but the relevance to humans is uncertain. Based on assessment of the components.
Reproductive Toxicity: Data available.	Not expected to be a reproductive toxicant. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 414 416
Lactation: No end point data for material.	Not expected to cause harm to breast-fed children.
Specific Target Organ Toxicity (STOT)	
Single Exposure: No end point data for material.	May cause drowsiness or dizziness. May be irritating to the respiratory tract. Based on assessment of the components.
Repeated Exposure: Data available.	Not expected to cause organ damage from prolonged or repeated exposure. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 408 452

OTHER INFORMATION

For the product itself:

Vapor/aerosol concentrations above recommended exposure levels are irritating to the eyes and respiratory tract, may cause headaches, dizziness, anesthesia, drowsiness, unconsciousness and other central nervous system effects including death.
Prolonged and/or repeated skin contact with low viscosity materials may defat the skin resulting in possible irritation and dermatitis.
Small amounts of liquid aspirated into the lungs during ingestion or from vomiting may cause chemical pneumonitis or pulmonary edema.
Contains:
CUMENE: Repeated inhalation exposure of cumene vapor produced damage in the kidney of male rats only. These effects are believed to be species specific and are not relevant to humans.

The following ingredients are cited on the lists below:

Chemical Name	CAS Number	List Citations
CUMENE	98-82-8	2, 5

--REGULATORY LISTS SEARCHED--

1 = NTP CARC	3 = IARC 1	5 = IARC 2B
2 = NTP SUS	4 = IARC 2A	6 = OSHA CARC

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY

Material -- Expected to be toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

MOBILITY

Material -- Highly volatile, will partition rapidly to air. Not expected to partition to sediment and wastewater solids.

PERSISTENCE AND DEGRADABILITY

Biodegradation:

Material -- Expected to be readily biodegradable.

Hydrolysis:

Material -- Transformation due to hydrolysis not expected to be significant.

Photolysis:

Material -- Transformation due to photolysis not expected to be significant.

Atmospheric Oxidation:

Material -- Expected to degrade rapidly in air

OTHER ECOLOGICAL INFORMATION

VOC (EPA Method 24): 7.294 lbs/gal

ECOLOGICAL DATA

Ecotoxicity

Test	Duration	Organism Type	Test Results
Aquatic - Acute Toxicity	48 hour(s)	Daphnia magna	EL50 3.2 mg/l: data for similar materials
Aquatic - Acute Toxicity	72 hour(s)	Pseudokirchneriella subcapitata	ErL50 2.9 mg/l: data for similar materials
Aquatic - Acute Toxicity	72 hour(s)	Pseudokirchneriella subcapitata	NOELR 1 mg/l: data for similar materials
Aquatic - Acute Toxicity	96 hour(s)	Oncorhynchus mykiss	LL50 9.2 mg/l: data for similar materials

Persistence, Degradability and Bioaccumulation Potential

Media	Test Type	Duration	Test Results
Water	Ready Biodegradability	28 day(s)	Percent Degraded 78 : material

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products.

REGULATORY DISPOSAL INFORMATION

RCRA Information: Disposal of unused product may be subject to RCRA regulations (40 CFR 261). Disposal of the used product may also be regulated due to ignitability, corrosivity, reactivity or toxicity as determined by the Toxicity Characteristic Leaching Procedure (TCLP). Potential RCRA characteristics: IGNITABILITY.

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

SECTION 14 TRANSPORT INFORMATION

LAND (DOT)

Proper Shipping Name: PETROLEUM DISTILLATES, N.O.S. (1,2,4-trimethylbenzene)
Hazard Class & Division: 3
ID Number: 1268
Packing Group: III
Marine Pollutant: Yes
Product RQ: 4545.45 LBS - XYLENES
ERG Number: 128
Label(s): 3
Transport Document Name: UN1268, PETROLEUM DISTILLATES, N.O.S. (1,2,4-trimethylbenzene), 3, PG III, MARINE POLLUTANT, RQ (xylenes)

LAND (TDG)

Proper Shipping Name: PETROLEUM DISTILLATES, N.O.S.
Hazard Class & Division: 3
UN Number: 1268
Packing Group: III
Marine Pollutant: Yes

Footnote: Marine Pollutant designation is applicable only if shipped over water.

SEA (IMDG)

Proper Shipping Name: PETROLEUM DISTILLATES, N.O.S. (1,2,4-trimethylbenzene)
Hazard Class & Division: 3
EMS Number: F-E, S-E
UN Number: 1268
Packing Group: III
Marine Pollutant: Yes
Label(s): 3
Transport Document Name: UN1268, PETROLEUM DISTILLATES, N.O.S. (1,2,4-trimethylbenzene), 3, PG III, (46°C c.c.), MARINE POLLUTANT

AIR (IATA)

Proper Shipping Name: PETROLEUM DISTILLATES, N.O.S.

Hazard Class & Division: 3
UN Number: 1268
Packing Group: III
Label(s) / Mark(s): 3
Transport Document Name: UN1268, PETROLEUM DISTILLATES, N.O.S., 3, PG III

SECTION 15 REGULATORY INFORMATION

OSHA HAZARD COMMUNICATION STANDARD: This material is considered hazardous in accordance with OSHA HazCom 2012, 29 CFR 1910.1200.

Listed or exempt from listing/notification on the following chemical inventories: AICS, DSL, ENCS, IECSC, KECI, PICCS, TSCA

EPCRA SECTION 302: This material contains no extremely hazardous substances.

CERCLA:

Chemical Name	CAS Number	Typical Value	Component RQ	Product RQ
CUMENE	98-82-8	< 1.1%	5000 LBS	454545.45 LBS
XYLENES	1330-20-7	< 2.2%	100 LBS	4545.45 LBS

CWA / OPA: This product is classified as an oil under Section 311 of the Clean Water Act (40 CFR 110) and the Oil Pollution Act of 1990. Discharge or spills which produce a visible sheen on either surface water, or in waterways/sewers which lead to surface water, must be reported to the National Response Center at 800-424-8802.

SARA (311/312) REPORTABLE HAZARD CATEGORIES: Fire. Immediate Health. Delayed Health.

SARA (313) TOXIC RELEASE INVENTORY:

Chemical Name	CAS Number	Typical Value
CUMENE	98-82-8	< 1.1%
PSEUDOCUMENE (1,2,4-TRIMETHYLBENZENE)	95-63-6	< 32%
XYLENES	1330-20-7	< 2.2%

The following ingredients are cited on the lists below:

Chemical Name	CAS Number	List Citations
CUMENE	98-82-8	1, 4, 10, 13, 16, 17, 18, 19
PSEUDOCUMENE (1,2,4-TRIMETHYLBENZENE)	95-63-6	1, 13, 16, 17, 18, 19
XYLENES	1330-20-7	1, 4, 13, 15, 16, 17, 18, 19

--REGULATORY LISTS SEARCHED--

1 = ACGIH ALL	6 = TSCA 5a2	11 = CA P65 REPRO	16 = MN RTK
2 = ACGIH A1	7 = TSCA 5e	12 = CA RTK	17 = NJ RTK
3 = ACGIH A2	8 = TSCA 6	13 = IL RTK	18 = PA RTK

4 = OSHA Z	9 = TSCA 12b	14 = LA RTK	19 = RI RTK
5 = TSCA 4	10 = CA P65 CARC	15 = MI 293	

Code key: CARC=Carcinogen; REPRO=Reproductive

SECTION 16 OTHER INFORMATION

This warning is given to comply with California Health and Safety Code 25249.6 and does not constitute an admission or a waiver of rights. This product contains a chemical known to the State of California to cause cancer.

N/D = Not determined, N/A = Not applicable

KEY TO THE H-CODES CONTAINED IN SECTION 3 OF THIS DOCUMENT (for information only):
H226: Flammable liquid and vapor; Flammable Liquid, Cat 3
H304: May be fatal if swallowed and enters airways; Aspiration, Cat 1
H312: Harmful in contact with skin; Acute Tox Dermal, Cat 4
H315: Causes skin irritation; Skin Corr/Irritation, Cat 2
H316: Causes mild skin irritation; Skin Corr/Irritation, Cat 3
H319(2A): Causes serious eye irritation; Serious Eye Damage/Irr, Cat 2A
H320(2B): Causes eye irritation; Serious Eye Damage/Irr, Cat 2B
H332: Harmful if inhaled; Acute Tox Inh, Cat 4
H335: May cause respiratory irritation; Target Organ Single, Resp Irr
H336: May cause drowsiness or dizziness; Target Organ Single, Narcotic
H351: Suspected of causing cancer; GHS Carcinogenicity, Cat 2
H373: May cause damage to organs through prolonged or repeated exposure; Target Organ, Repeated, Cat 2
H401: Toxic to aquatic life; Acute Env Tox, Cat 2
H411: Toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 2

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:
Revision Changes:
Section 05: Hazardous Combustion Products information was modified.
Section 14: Transport Document Name information was modified.
Section 14: Transport Document Name information was modified.
Section 15: SARA (313) TOXIC RELEASE INVENTORY - Table information was modified.
Section 12: Environmental tox table in section 12 information was modified.
Section 14: Marine Pollutant information was modified.
Composition: Component Table information was modified.
GHS Precautionary Statements - Response information was modified.
Section 14: DOT Technical Name - All information was added.
Section 14: Marine Pollutant - Header information was added.
Section 14: Marine Pollutant information was added.
Section 14: Marine Pollutant - Header information was added.
Section 14: Marine Pollutant information was added.
Section 14: DOT Technical Name - Open parenthesis information was added.
Section 14: DOT Technical Name - Close parenthesis information was added.
Section 14: IMO Technical Name - All information was added.
Section 14: IMO Technical Name - Close parenthesis information was added.
Section 14: IMO Technical Name - Open parenthesis information was added.
Section 14: TDG Footnote information was added.
Section 14: IMDG Footnote information was deleted.

Section 16: Revision Information - Implementation of GHS requirements phrase. information was deleted.

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MHC: 1A, 0, 0, 0, 2, 2

DGN: 4400142HUS (1007446)

Distributed By:
SAL Chemical
3036 Birch Drive
Weirton, WV 26062
304-748-8200

MATERIAL SAFETY DATA SHEET
PRODUCT: SULFURIC ACID

SECTION 1 - MANUFACTURER INFORMATION

Distributed By: PVS NOLWOOD CHEMICALS, INC. 10900 Harper Avenue Detroit, MI. 48213 (313) 925-0300	
PVS ITEM #	PVS MSDS #
MULTI	0738

MANUFACTURER/DISTRIBUTOR:

PVS CHEMICAL SOLUTIONS, INC.
55 Lee Street
Buffalo, New York 14210
Telephone: (716) 825-5762 (product information and emergencies)
Fax: (716) 825-6454

FOR TRANSPORTATION EMERGENCY ONLY, DAY OR NIGHT, CALL
CHEMTREC, 1-800-424-9300

PREPARATION/REVISION DATE: 02/22/07
CONTACT: Manager of Environmental Affairs

SECTION 2 -- PRODUCT IDENTITY/HAZARDOUS INGREDIENTS INFORMATION

Product name:	Sulfuric Acid
Chemical name/synonyms:	Sulphuric Acid, Oil of Vitriol
Chemical formula:	H_2SO_4
CAS number:	7664-93-9
Product Code:	N/A

HAZARDOUS INGREDIENTS: Yes

Component	CAS No.	% by wt.
Sulfuric Acid	7664-93-9	75-100%

Exposure limits:

OSHA PEL:	1 mg/m^3, 8-hr TWA
ACGIH TLV:	1 mg/m^3, 8-hr TWA
	3 mg/m^3, STEL
NIOSH	15 mg/m^3, IDLH

NON-HAZARDOUS INGREDIENTS: Yes

Component	CAS No.	% by wt.
Water	7732-18-5	1-25%

OSHA 29 CFR 1910.1200 EVALUATION: Hazardous

SECTION 3 -- PHYSICAL/CHEMICAL CHARACTERISTICS

APPEARANCE AND ODOR:	Clear to slightly cloudy, oily liquid; Odorless to slightly pungent.
BOILING POINT:	77.7% = 193 ^{0}C; 93% = 279 ^{0}C; 96% = 308 ^{0}C; 98% = 327 ^{0}C; 99% = 310 ^{0}C
FREEZING POINT:	77.7% = -11.4 ^{0}C; 93% = -29 ^{0}C; 96% = -14 ^{0}C; 98% = -1 ^{0}C; 99% = 4.4 ^{0}C
VAPOR PRESSURE (REID):	93.2% = 0.0016 mm Hg; 98% = 0.002 mm Hg
VAPOR DENSITY (AIR = 1):	3.4
SPECIFIC GRAVITY (WATER = 1):	77.7% = 1.706; 93.2% = 1.835; 96% = 1.843; 98% = 1.844; 99% = 1.842
PERCENT VOLATILE BY WEIGHT:	no information
EVAPORATION RATE (BUTYL ACETATE = 1):	<1
pH:	<1
SOLUBILITY IN WATER:	Completely miscible, liberates heat

SECTION 4 -- FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (CLOSED CUP METHOD): Not flammable. May ignite combustible materials.

FLAMMABLE LIMITS IN AIR, % BY VOLUME: N/A LOWER: N/A UPPER: N/A

EXTINGUISHING MEDIA: Use dry chemical or CO_2 fire extinguishers to fight surrounding fire. Do not use water on acid itself. Apply from farthest possible distance.

SPECIAL FIRE FIGHTING PROCEDURES: Wear self-contained breathing apparatus and full protective clothing. Cool exterior of storage tanks.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Violent reaction with water. Evolution of explosive hydrogen gas on contact with most metals. Will react with organic material with evolution of heat and dense white fumes.

SECTION 5 -- REACTIVITY DATA

STABILITY: Stable under ordinary conditions

HAZARDOUS POLYMERIZATION: will not occur

INCOMPATIBILITY (CONDITIONS AND MATERIALS TO AVOID): Material is stable when properly handled. Reactive with materials such as metals, metal oxides, hydroxides, nitrates, amines, carbonates and other alkaline materials. Reacts with cyanides and sulfides to form poisonous hydrogen cyanide and hydrogen sulfide respectively. Reactions can generate a great deal of heat as does the dilution of acid with water. Concentrated

acid is a strong oxidizing agent. May cause ignition of combustible materials on contact with generation of sulfur dioxide fumes. Avoid open flames or sparks.
HAZARDOUS DECOMPOSITION PRODUCTS: Explosive hydrogen gas is generated by the action of acid on most metals and may accumulate in metal containers. Releases Sulfur Dioxide at extremely high temperatures.

SECTION 6 -- HEALTH HAZARD DATA

PRIMARY ROUTES OF ENTRY: Inhalation, ingestion, direct contact

HEALTH EFFECTS (ACUTE AND CHRONIC):

INHALATION: Inhalation of concentrated vapor or mist may damage respiratory tract.
INGESTION: Swallowing may be fatal.
DIRECT CONTACT: Contact with liquid, mist, or vapor can cause immediate irritation or corrosive burns to all human tissue. Severity of the burn is generally determined by the concentration of the solution and duration of exposure.
EYE CONTACT: Contact with eyes may result in permanent visual loss unless removed quickly by thorough irrigation with water.
TOXICITY DATA (ANIMAL):

Oral LD_{50}, rat: 2140 mg/kg
Skin and eye irritation (rabbit): (FHSA) Corrosive
Inhalation 1 hour LC_{50}, rat: 347 ppm

The International Agency of Research on Cancer (IARC) has classified "strong inorganic acid mists containing sulfuric acid" as a Category 1 carcinogen, a substance that is "carcinogenic to humans". This classification is for inorganic acid mists only and does not apply to sulfuric acid or sulfuric acid solutions.

CARCINOGENS (NTP, IARC, OR OSHA): None of the components of this material is listed by IARC, NTP, OSHA, or ACGIH as a carcinogen.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Repeated skin contact with dilute solutions may cause dermatitis. May cause dental erosion.

SECTION 7 -- FIRST AID

INHALATION: Remove victim to fresh air. If not breathing, perform artificial respiration. Get medical attention.
INGESTION: Drink copious amounts of water or milk. Do not induce vomiting. Get immediate medical attention. Never give anything by mouth to an unconscious person.
DIRECT CONTACT: Wipe off excess. Flush immediately with water for at least 15 minutes while removing contaminated clothing. Get immediate medical attention. Wash clothing before re-use. Destroy contaminated shoes.

DIRECT EYE CONTACT: Flush immediately with water for at least 15 minutes. Forcibly hold eyelids apart to ensure complete irrigation of eye/lid tissue. Get immediate medical attention.

SECTION 8 -- PRECAUTIONS FOR SAFE STORAGE, HANDLING AND USE

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Store away from sources of ignition. Do not add water to concentrated acid. When diluting, slowly add acid to water while stirring, to avoid spattering, boiling, and eruption. Keep container closed and protect from contact with water. Protect container from physical damage. Do not strike containers or fittings with tools. Wash thoroughly after handling. Emptied container will retain vapor and product residue.

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Utilize full protective clothing, including boots and protective equipment. Contain spill in order to prevent contamination of sewage system or waterway. Pump into marked containers for reclamation or disposal. If possible, neutralize on a dry basis with suitable alkali such as lime or soda ash; then flush with water in accordance with applicable regulations.

WASTE DISPOSAL METHODS: Dispose of spilled, neutralized, or waste product, contaminated soil and other materials in accordance with all local, state and federal regulations.

SECTION 9 -- EXPOSURE CONTROL INFORMATION

VENTILATION: Provide ventilation to control exposure levels below airborne exposure limits. Use local exhaust ventilation. Reference NFPA Standard 91 for design of exhaust systems.

RESPIRATORY PROTECTION: Use NIOSH/MSHA approved, full face respirator with canister approved for sulfuric acid vapor and mist. Consult respirator manufacturer to determine appropriate equipment. If concentrations are high or unknown, use self-contained breathing apparatus.

PROTECTIVE GLOVES: Wear impervious rubber gloves.

EYE PROTECTION: Wear splash proof chemical safety goggles. Eyewash fountains recommended in all storage and handling areas. Do not wear contact lenses.

OTHER PROTECTIVE EQUIPMENT: Wear protective clothing to prevent skin contact. Full face shield and rubber footwear should be used. Acid-resistant hood and full body suit recommended. Safety shower recommended in all storage and handling areas.

WORK/HYGIENIC PRACTICES: Avoid breathing fumes. Use gloves when handling. Remove and change contaminated clothing immediately.

OTHER PRECAUTIONS: None

SECTION 10 -- REGULATORY INFORMATION

USDOT:

Proper shipping name:	Sulfuric acid
Hazard Class:	8
UN Number:	UN1830
Packing Group:	II

SARA TITLE III HAZARD CLASSIFICATIONS:

ACUTE:	Yes
CHRONIC:	Yes
FIRE:	No
PRESSURE:	No
REACTIVITY:	Yes

Sulfuric Acid (aerosol forms only) is a toxic chemical subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372. Sulfuric Acid is an Extremely Hazardous Substance as listed in 40 CFR 355, SARA Title III Section 302.

OTHER RATINGS:
(hazard index key: 4=severe, 3=serious, 2=moderate, 1=slight, 0=minimal)
HMIS: Health=3, Flammability=0, Reactivity=2
NFPA: Health=3, Flammability=0, Reactivity=2

OTHER INFORMATION:
RCRA 261.33: No
TSCA 8(d): Yes
SULFURIC ACID, CERCLA: RQ = 1000 lbs.
SULFURIC ACID, SARA Sec. 302 (EHS): TPQ = 1000 lbs.
WHMIS Classification: Class E – Corrosive, Class D1A – Very Toxic

PVS Chemical Solutions provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. PVS CHEMICAL SOLUTIONS MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS. ACCORDINGLY, PVS CHEMICAL SOLUTIONS WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING FROM USE OF OR RELIANCE UPON THIS INFORMATION.

SAFETY DATA SHEET

Toledo Refining Company

Distributed by:
SAL Chemical
3036 Birch Drive,
Weirton, WV 26062
304.748.8200 - Phone
304.797.8751 - Fax

1. Identification

Product identifier	**Xylene**
Other means of identification	
Product code	R0000006000
Recommended use	Solvent.
Recommended restrictions	None known.
Manufacturer/Importer/Supplier/Distributor information	
	Toledo Refining Company, LLC 1819 Woodville Road Oregon, OH 43616
Telephone number	419-698-6600
Emergency telephone number	Chemtrec 800-424-9300

2. Hazard(s) identification

Physical hazards	Flammable liquids	Category 3
Health hazards	Acute toxicity, dermal	Category 4
	Acute toxicity, inhalation	Category 4
	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 2
	Carcinogenicity	Category 2
	Reproductive toxicity	Category 2
	Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation
	Specific target organ toxicity, repeated exposure	Category 2 (central nervous system, kidney, liver)
	Aspiration hazard	Category 1
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 2
OSHA defined hazards	Not classified.	

Label elements

Signal word	Danger
Hazard statement	Flammable liquid and vapor. May be fatal if swallowed and enters airways. Harmful in contact with skin. Causes skin irritation. Causes serious eye irritation. Harmful if inhaled. May cause respiratory irritation. Suspected of causing cancer. Suspected of damaging fertility or the unborn child. May cause damage to organs (central nervous system, kidney, liver) through prolonged or repeated exposure. Toxic to aquatic life.
Precautionary statement	
Prevention	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Do not breathe mist or vapor. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection.

Response	If swallowed: Immediately call a poison center/doctor. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If skin irritation occurs: Get medical advice/attention. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. If exposed or concerned: Get medical advice/attention. Call a poison center/doctor if you feel unwell. Take off contaminated clothing and wash before reuse. In case of fire: Use appropriate media to extinguish.
Storage	Keep cool. Store in a well-ventilated place. Keep container tightly closed. Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	Static accumulating flammable liquid can become electrostatically charged even in bonded and grounded equipment.
Supplemental information	None.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
m-Xylene	108-38-3	35 - 46
p-Xylene	106-42-3	10 - 20
Ethylbenzene	100-41-4	10 - 19
o-Xylene	95-47-6	5 - 15
Toluene	108-88-3	0 - 0.5

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Provide oxygen, if available, or artificial respiration, if needed. Call a POISON CENTER or doctor/physician if you feel unwell.
Skin contact	Remove contaminated clothing and shoes. Wash off immediately with soap and plenty of water. Get medical attention if irritation develops or persists. Get medical attention if irritation develops and persists. Wash clothing separately before reuse. Destroy or thoroughly clean contaminated shoes.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops or persists.
Ingestion	Call a physician or poison control center immediately. Rinse mouth thoroughly. DO NOT INDUCE VOMITING. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
Most important symptoms/effects, acute and delayed	Abdominal pain. Nausea, vomiting. Aspiration may cause pulmonary edema and pneumonitis. Jaundice. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause respiratory irritation. Skin irritation. May cause redness and pain. Edema. Prolonged exposure may cause chronic effects.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Thermal burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim warm. Keep victim under observation. Symptoms may be delayed. This material, if aspirated into the lungs, may cause chemical pneumonitis; treat the affected person appropriately.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media	Foam. Dry chemical powder. Carbon dioxide (CO_2). Water may be an ineffective extinguishing medium.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	Vapor may cause flash fire. Vapor is denser than air – flashback may be possible over considerable distances. The product can accumulate electrostatic charges, which may cause an electrical spark (ignition source).

Special protective equipment and precautions for firefighters	Firefighters must use full bunker gear including NIOSH-approved (or equal), full-face, self-contained breathing apparatus (SCBA) operated in positive pressure mode. Firefighters' protective clothing will provide only limited protection against liquid contact.
Fire fighting equipment/instructions	Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Move containers from fire area if you can do it without risk. Water spray should be used to cool structures and vessels. Use compatible foam to minimize vapor generation as needed. Withdraw immediately in case of rising sound from venting safety devices or any discoloration of tanks due to fire. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn. Water runoff can cause environmental damage.
General fire hazards	Flammable liquid and vapor.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Keep unnecessary personnel away. Keep upwind. Keep out of low areas. Ventilate closed spaces before entering. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. See Section 8 of the SDS for Personal Protective Equipment.
Methods and materials for containment and cleaning up	ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Extinguish all flames in the vicinity. Keep combustibles (wood, paper, oil, etc.) away from spilled material. Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Vapors may be controlled using a water fog. Remove with vacuum trucks or pump to storage/salvage vessels. Use explosion proof electric equipment. Small Spills: Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Use clean non-sparking tools to collect absorbed material. Clean surface thoroughly to remove residual contamination. Retain all contaminated water for removal and treatment.
Environmental precautions	Contain spillages with sand, earth or any suitable adsorbent material. Prevent entry into waterways, sewer, basements or confined areas. Do not allow material to contaminate ground water system. Reporting of releases to appropriate regulatory agencies may be required.

7. Handling and storage

Precautions for safe handling	Do not handle until all safety precautions have been read and understood. Consult with applicable standards such as NFPA 30, 'Flammable and Combustible Liquids Code'. Use only with adequate ventilation. Wear personal protective equipment. Do not breath gas/vapor/spray. Avoid contact with eyes, skin, and clothing. Do not taste or swallow. Avoid prolonged exposure. When using, do not eat, drink or smoke. Wash thoroughly after handling. The product is highly flammable, and explosive vapor/air mixtures may be formed. Before entering storage tanks and commencing any operation in a confined area, check the atmosphere for oxygen content and flammability. Keep away from all ignition sources including heat, sparks and flame. Use non-sparking tools and explosion-proof equipment as applicable. This material is a static accumulator. Avoid accumulation of static charges during transfers in metallic systems. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. These alone may be insufficient to remove static electricity. Avoid release to the environment.
Conditions for safe storage, including any incompatibilities	Flammable liquid storage. Do not handle or store near an open flame, heat or other sources of ignition. This material can accumulate static charge which may cause spark and become an ignition source. The pressure in sealed containers can increase under the influence of heat. Keep away from food, drink and animal feedingstuffs.

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Ethylbenzene (CAS 100-41-4)	PEL	435 mg/m3 100 ppm
m-Xylene (CAS 108-38-3)	PEL	435 mg/m3 100 ppm
o-Xylene (CAS 95-47-6)	PEL	435 mg/m3

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
		100 ppm
p-Xylene (CAS 106-42-3)	PEL	435 mg/m3
		100 ppm

US. OSHA Table Z-2 (29 CFR 1910.1000)

Components	Type	Value
Toluene (CAS 108-88-3)	Ceiling	300 ppm
	TWA	200 ppm

US. ACGIH Threshold Limit Values

Components	Type	Value
Ethylbenzene (CAS 100-41-4)	TWA	20 ppm
m-Xylene (CAS 108-38-3)	STEL	150 ppm
	TWA	100 ppm
o-Xylene (CAS 95-47-6)	STEL	150 ppm
	TWA	100 ppm
p-Xylene (CAS 106-42-3)	STEL	150 ppm
	TWA	100 ppm
Toluene (CAS 108-88-3)	TWA	20 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Ethylbenzene (CAS 100-41-4)	STEL	545 mg/m3
		125 ppm
	TWA	435 mg/m3
		100 ppm
m-Xylene (CAS 108-38-3)	STEL	655 mg/m3
		150 ppm
	TWA	435 mg/m3
		100 ppm
o-Xylene (CAS 95-47-6)	STEL	655 mg/m3
		150 ppm
	TWA	435 mg/m3
		100 ppm
p-Xylene (CAS 106-42-3)	STEL	655 mg/m3
		150 ppm
	TWA	435 mg/m3
		100 ppm
Toluene (CAS 108-88-3)	STEL	560 mg/m3
		150 ppm
	TWA	375 mg/m3
		100 ppm

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Determinant	Specimen	Sampling Time
Ethylbenzene (CAS 100-41-4)	0.15 g/g	Sum of mandelic acid and phenylglyoxylic acid	Creatinine in urine	*
m-Xylene (CAS 108-38-3)	1.5 g/g	Methylhippuric acids	Creatinine in urine	*

ACGIH Biological Exposure Indices

Components	Value	Determinant	Specimen	Sampling Time
o-Xylene (CAS 95-47-6)	1.5 g/g	Methylhippuric acids	Creatinine in urine	*
p-Xylene (CAS 106-42-3)	1.5 g/g	Methylhippuric acids	Creatinine in urine	*
Toluene (CAS 108-88-3)	0.3 mg/g	o-Cresol, with hydrolysis	Creatinine in urine	*
	0.03 mg/l	Toluene	Urine	*
	0.02 mg/l	Toluene	Blood	*

* - For sampling details, please see the source document.

Exposure guidelines

US - California OELs: Skin designation

Toluene (CAS 108-88-3) — Can be absorbed through the skin.

US - Minnesota Haz Subs: Skin designation applies

Toluene (CAS 108-88-3) — Skin designation applies.

Appropriate engineering controls — Provide adequate general and local exhaust ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation of vapors and spray mist. Provide eyewash station and safety shower.

Individual protection measures, such as personal protective equipment

Eye/face protection — Wear safety glasses. If splash potential exists, wear full face shield and/or chemical goggles.

Skin protection

Hand protection — Chemical resistant gloves are recommended. Be aware that the liquid may penetrate the gloves. Frequent change is advisable. Suitable gloves can be recommended by the glove supplier.

Other — Wear chemical-resistant gloves, footwear and protective clothing appropriate for risk of exposure. Contact chemical protective clothing manufacturer for specific information. Flame retardant protective clothing is recommended.

Respiratory protection — Use a NIOSH/MSHA approved air purifying respirator as needed to control exposure. Consult with respirator manufacturer to determine respirator selection, use, and limitations. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection. Follow respirator protection program requirements (OSHA 1910.134 and ANSI Z88.2) for all respirator use. Protection provided by air-purifying respirators is limited and should not be used in atmospheres deficient in oxygen or where airborne concentrations are immediately dangerous to life or health.

Thermal hazards — Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations — Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Appearance

Physical state — Liquid.

Form — Liquid.

Color — Colorless.

Odor — Sweet, Pleasant.

Odor threshold — Not available.

pH — No data

Melting point/freezing point — -53 °F (-47.22 °C)

Initial boiling point and boiling range — 278 - 290 °F (136.67 - 143.33 °C)

Flash point — 79.0 °F (26.1 °C)

Evaporation rate — Not available.

Flammability (solid, gas) — Not applicable.

Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	1.1 %
Flammability limit - upper (%)	6.6 %
Vapor pressure	9 mm Hg @ 25°C
Vapor density	Not available.
Relative density	0.87 g/cm3
Solubility(ies)	
Solubility (water)	Insoluble
Partition coefficient (n-octanol/water)	No data
Auto-ignition temperature	870 °F (465.56 °C)
Decomposition temperature	Not available.
Viscosity	0.59 cP
Viscosity temperature	68 °F (20 °C)
Other information	
Percent volatile	100 % by weight

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials.
Incompatible materials	Strong acids. Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Harmful if inhaled. May cause damage to organs through prolonged or repeated exposure by inhalation. Inhalation of vapors may cause irritation to respiratory tract.
Skin contact	Harmful in contact with skin. Causes skin irritation.
Eye contact	Causes serious eye irritation.
Ingestion	Swallowing or vomiting of the liquid may result in aspiration into the lungs. Droplets of the product aspirated into the lungs through ingestion or vomiting may cause a serious chemical pneumonia.
Symptoms related to the physical, chemical and toxicological characteristics	Abdominal pain. Nausea, vomiting. Swallowing or vomiting of the liquid may result in aspiration into the lungs. Aspiration may cause pulmonary edema and pneumonitis. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause respiratory irritation. Skin irritation. May cause redness and pain. Edema.

Information on toxicological effects

Acute toxicity	May be fatal if swallowed and enters airways. Harmful if inhaled. Harmful in contact with skin. May cause respiratory irritation.

Components	**Species**	**Test Results**
Toluene (CAS 108-88-3)		
Acute		
Inhalation		
LC50	Rat	8000 mg/l, 4 Hours
Oral		
LD50	Rat	2.6 g/kg

Skin corrosion/irritation	Causes skin irritation.

Serious eye damage/eye irritation	Causes serious eye irritation.
Respiratory or skin sensitization	
Respiratory sensitization	No data available.
Skin sensitization	No data available.
Germ cell mutagenicity	No data available.
Carcinogenicity	Suspected of causing cancer.

IARC Monographs. Overall Evaluation of Carcinogenicity

Ethylbenzene (CAS 100-41-4)	2B Possibly carcinogenic to humans.
m-Xylene (CAS 108-38-3)	3 Not classifiable as to carcinogenicity to humans.
o-Xylene (CAS 95-47-6)	3 Not classifiable as to carcinogenicity to humans.
p-Xylene (CAS 106-42-3)	3 Not classifiable as to carcinogenicity to humans.
Toluene (CAS 108-88-3)	3 Not classifiable as to carcinogenicity to humans.

NTP Report on Carcinogens

Not listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

Reproductive toxicity	Suspected of damaging fertility or the unborn child.
Specific target organ toxicity - single exposure	May cause irritation to the respiratory system.
Specific target organ toxicity - repeated exposure	May cause damage to organs (central nervous system, kidney, liver) through prolonged or repeated exposure.
Aspiration hazard	May be fatal if swallowed and enters airways.
Chronic effects	Prolonged inhalation may be harmful. Prolonged exposure may cause chronic effects. Long term exposures may affect liver, kidneys, and central nervous system.
Further information	No other specific acute or chronic health impact noted.

12. Ecological information

Ecotoxicity	Toxic to aquatic life.
Persistence and degradability	No data is available on the degradability of this product.
Bioaccumulative potential	No data available on bioaccumulation.

Partition coefficient n-octanol / water (log Kow)

Ethylbenzene (CAS 100-41-4)	3.15
Toluene (CAS 108-88-3)	2.73
m-Xylene (CAS 108-38-3)	3.2
o-Xylene (CAS 95-47-6)	3.12
p-Xylene (CAS 106-42-3)	3.15

Mobility in soil	The product is insoluble in water.
Other adverse effects	Oil spills are generally hazardous to the environment. The product contains volatile organic compounds which have a photochemical ozone creation potential.

13. Disposal considerations

Disposal instructions	Do not allow this material to drain into sewers/water supplies. Recover and recycle, if practical. Product is suitable for burning in an enclosed, controlled burner for fuel value or disposal by supervised incineration. Such burning may be limited pursuant to the Resource Conservation and Recovery Act.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	D001: Waste Flammable material with a flash point <140 F D018: Waste Benzene
Waste from residues / unused products	Recover and recycle, if practical.
Contaminated packaging	Not applicable.

14. Transport information

DOT

UN number	UN1307
UN proper shipping name	Xylenes

Transport hazard class(es)	
Class	3
Subsidiary risk	-
Label(s)	3
Packing group	III
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Special provisions	B1, 1B3, T2, TP1.
Packaging exceptions	150
Packaging non bulk	203
Packaging bulk	242

IATA

UN number	UN1307
UN proper shipping name	Xylenes
Transport hazard class(es)	
Class	3
Subsidiary risk	-
Packing group	III
Environmental hazards	No.
ERG Code	3L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number	UN1307
UN proper shipping name	XYLENES
Transport hazard class(es)	
Class	3
Subsidiary risk	-
Packing group	III
Environmental hazards	
Marine pollutant	No.
EmS	F-E, S-D
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable. However, this product is a liquid and if transported in bulk covered under MARPOL 73/78, Annex I.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Ethylbenzene (CAS 100-41-4)	LISTED
m-Xylene (CAS 108-38-3)	LISTED
o-Xylene (CAS 95-47-6)	LISTED
p-Xylene (CAS 106-42-3)	LISTED
Toluene (CAS 108-88-3)	LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - Yes
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical No

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
m-Xylene	108-38-3	35 - 46
p-Xylene	106-42-3	10 - 20
Ethylbenzene	100-41-4	10 - 19
o-Xylene	95-47-6	5 - 15

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Ethylbenzene (CAS 100-41-4)
m-Xylene (CAS 108-38-3)
o-Xylene (CAS 95-47-6)
p-Xylene (CAS 106-42-3)
Toluene (CAS 108-88-3)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number

Toluene (CAS 108-88-3) 6594

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

Toluene (CAS 108-88-3) 35 %WV

DEA Exempt Chemical Mixtures Code Number

Toluene (CAS 108-88-3) 594

US state regulations

US. Massachusetts RTK - Substance List

Ethylbenzene (CAS 100-41-4)
m-Xylene (CAS 108-38-3)
o-Xylene (CAS 95-47-6)
p-Xylene (CAS 106-42-3)
Toluene (CAS 108-88-3)

US. New Jersey Worker and Community Right-to-Know Act

Ethylbenzene (CAS 100-41-4)
m-Xylene (CAS 108-38-3)
o-Xylene (CAS 95-47-6)
p-Xylene (CAS 106-42-3)
Toluene (CAS 108-88-3)

US. Pennsylvania Worker and Community Right-to-Know Law

Ethylbenzene (CAS 100-41-4)
m-Xylene (CAS 108-38-3)
o-Xylene (CAS 95-47-6)
p-Xylene (CAS 106-42-3)
Toluene (CAS 108-88-3)

US. Rhode Island RTK

Ethylbenzene (CAS 100-41-4)
m-Xylene (CAS 108-38-3)
o-Xylene (CAS 95-47-6)
p-Xylene (CAS 106-42-3)
Toluene (CAS 108-88-3)

US. California Proposition 65

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

Benzene (CAS 71-43-2)
Ethylbenzene (CAS 100-41-4)
Toluene (CAS 108-88-3)

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 22-April-2015

Revision date 12-November-2015

Version # 03

NFPA ratings

Disclaimer

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ATTACHMENT E

SUPPORTING CALCULATIONS

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ATTACHMENT E - SUPPORTING CALCULATIONS

HAZARDOUS AIR POLLUTANTS (HAPs)			
REGULATED AIR POLLUTANT EMISSIONS:	Daily Max Pounds	Daily Max Hours	HOURLY PTE (LB/HR)
Ethylene Glycol (VOC)	802	8	100.25
Hydrochloric Acid 31%	2,212	8	276.50
Hydrofluoric Acid 49%	540	8	67.50
Methanol (VOC)	1,854	8	231.75
Methyl Ethyl Ketone (VOC)	106	8	13.25
Methyl Isobutyl Ketone (VOC)	139	8	17.38
Xylene (VOC)	105	8	13.13
		HAPs HOURLY PTE TOTAL	719.75

VOLATILE ORGANIC COMPOUNDS (VOCs)			
REGULATED AIR POLLUTANT EMISSIONS:	Daily Max Pounds	Daily Max Hours	HOURLY PTE (LB/HR)
Ethylene Glycol (VOC)	802	8	100.25
Methanol (VOC)	1,854	8	231.75
Methyl Ethyl Ketone (VOC)	106	8	13.25
Methyl Isobutyl Ketone (VOC)	139	8	17.38
Xylene (VOC)	105	8	13.13
		VOCs HOURLY PTE TOTAL	375.75

HAZARDOUS AIR POLLUTANTS (HAPs)			
REGULATED AIR POLLUTANT EMISSIONS:	Annual Max Tons	Annual Max Hours	YEARLY PTE (TON/YR)
Ethylene Glycol (VOC)	146	2,920	0.05
Hydrochloric Acid 31%	404	2,920	0.14
Hydrofluoric Acid 49%	99	2,920	0.03
Methanol (VOC)	338	2,920	0.12
Methyl Ethyl Ketone (VOC)	19	2,920	0.01
Methyl Isobutyl Ketone (VOC)	25	2,920	0.01
Xylene (VOC)	19	2,920	0.01
		HAPs YEARLY PTE TOTAL	0.36

VOLATILE ORGANIC COMPOUNDS (VOCs)			
REGULATED AIR POLLUTANT EMISSIONS:	Annual Max Tons	Annual Max Hours	YEARLY PTE (TON/YR)
Ethylene Glycol (VOC)	146	2,920	0.05
Methanol (VOC)	338	2,920	0.12
Methyl Ethyl Ketone (VOC)	19	2,920	0.01
Methyl Isobutyl Ketone (VOC)	25	2,920	0.01
Xylene (VOC)	19	2,920	0.01
		VOCs YEARLY PTE TOTAL	0.19