



Sulfuric Acid (50%)
Revision: 01
Revised Date:
 November 24, 2008

FOR CHEMICAL EMERGENCY
24 Hours

IN CANADA Call CANUTEC (613) 996-6666
IN the USA Call CHEMTREC (800) 424-9300
CHEMTREC – OUTSIDE USA (703) 527-3887
Chemtrade Emergency Contact: (866) 416-4404

SECTION 01 – CHEMICAL PRODUCT & COMPANY IDENTIFICATION

COMPANY INFORMATION:

Corporate Office

CHEMTRADE LOGISTICS

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Suite 300

Toronto, Ontario M2H 3N5

Prepared by: Chemtrade Logistics Inc.

Date Prepared: 11-16-2008

For MSDS Info: (416) 496-5856

www.chemtradelogistics.com

HAZARD RATINGS:

WHMIS:	CONTROLLED	NFPA	RATING	HMIS	RATING
CLASS	D1A - Very Toxic (acute)	HEALTH	3	HEALTH	*3
	D2A – Very Toxic (chronic)	FLAMMABILITY	0	FLAMMABILITY	0
	E – Corrosive to skin	REACTIVITY	2	PHYSICAL HAZARD	2
		SPECIFIC HAZARD	ACID	PERSONAL PROTECTION[@]	C

@ - The personal protective level of C is the minimum level required. See Section 8 for additional recommended PPE. User should determine the acceptable PPE for their employees.

PRODUCT INFORMATION:

PRODUCT NAME: Sulfuric Acid (50%)

CAS NUMBER: 7664-93-9

FORMULA: H₂SO₄

PRIMARY PRODUCT USE: Used in manufacture of fertilizers, explosives, other acids, metal pickling and petroleum processing.

SYNONYMS: Sulphuric Acid, Hydrogen Sulphate, Oil of Vitriol, Battery Acid

CHEMICAL FAMILY: Inorganic Sulfur compounds

TRADE NAMES: None

SECTION 02 – COMPOSITION/INFORMATION ON INGREDIENTS

No.	COMPONENT	CAS NO.	WT. %	EXPOSURE LIMITS
1.	Sulfuric Acid	7664-93-9	45 – 51	1 mg/m ³ TWA OSHA 0.2 mg/m ³ (T) TWA ACGIH

(T) – indicates applicable to thoracic particulate matter which is deposited anywhere within the lung airways and the gas exchange region.

2.	Water	7732-18-5	49 - 55	
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SECTION 03 – HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

Danger! Corrosive - causes severe burns and eye damage. Harmful if inhaled, exposure to acid mist causes respiratory irritation. Cancer Hazard. Harmful or fatal if swallowed. Non-flammable, but reacts with most metals to form explosive/flammable hydrogen gas. Reacts violently with water. Reaction with many organic materials may cause fire due to the heat of the reaction.

Read the entire MSDS for a more thorough evaluation of the hazards.

(REFER TO SECTION 11 FOR ADDITIONAL INFORMATION)

EXPECTED ROUTE OF ENTRY	
SKIN CONTACT:	X
SKIN ABSORPTION:	
EYE CONTACT:	X
INHALATION:	X
INGESTION:	X

EFFECTS OF EXPOSURE:**SKIN CONTACT:**

Corrosive - causes burns, and brownish or yellow stains. Concentrated solutions may cause second or third degree burns with severe destruction of tissue (necrosis). Prolonged and repeated exposure to dilute solutions may cause irritation, redness, pain and drying and cracking of the skin.

EYE CONTACT:

Corrosive – causes immediate pain, severe burns and corneal damage, which may result in permanent blindness.

INHALATION:

Harmful if inhaled. Inhalation causes respiratory irritation and at high concentrations may cause severe injury, burns, or death. Symptoms may include lung irritation, chest pain, wheezing, and shortness of breath. Effects of exposure may be delayed.

INGESTION:

Corrosive – Harmful or fatal if swallowed. Ingestion may causes severe irritation or burns of the mouth, throat, and esophagus.

CHRONIC

Chronic long term inhalation exposure to sulfuric acid mist may cause cancer.

Repeated exposures to high levels of sulfuric acid mist may cause etching or erosion of teeth.

KNOWN EFFECTS ON OTHER ILLNESSES:

Skin irritation may be aggravated in individuals with existing skin lesions. Breathing of vapors or sprays (mists) may aggravate acute or chronic asthma and chronic pulmonary disease such as emphysema and bronchitis.

LISTED CARCINOGEN (REFER TO SECTION 11 FOR ADDITIONAL INFORMATION):

Agency	Listed	Ranking
OSHA:	Y	Listed by IARC, NTP and ACGIH
NTP:	Y	Known Human Carcinogen
IARC:	Y	Group 1 – Proven Human Carcinogen
ACGIH	Y	Category A2 – Suspected Human Carcinogen

NOTE: Rankings apply to exposure to sulfuric acid mists NOT to sulfuric acid and sulfuric acid solutions.

SECTION 04 – FIRST AID MEASURES**GENERAL:**

Corrosive effects on the skin and eyes may be delayed, and damage may occur without the sensation or onset of pain. Strict adherence to first aid measures following any exposure is essential. **SPEED IS ESSENTIAL. OBTAIN IMMEDIATE MEDICAL ATTENTION.**

FIRST AID FOR EYES:

Immediately flush eyes with running water for a minimum of 20 minutes. Hold eyelids open during flushing. If irritation persists, repeat flushing. Obtain medical attention **IMMEDIATELY**. Do not transport victim until the recommended flushing period is completed unless flushing can be continued during transport.

FIRST AID FOR SKIN:

Flush **IMMEDIATELY** under running water for minimum of 20 minutes. If redness or irritation persists, repeat flushing. Seek **IMMEDIATE** medical attention. Start flushing while removing contaminated clothing. Do not transport victim unless the recommended flushing period is completed or flushing can be continued during transport.

While the patient is being transported to a medical facility, apply compresses of iced water. If medical treatment must be delayed, immerse the affected area in iced water. If immersion is not practical, compresses of iced water can be applied. Avoid freezing tissues.

Discard heavily contaminated clothing and shoes in a manner that limits further exposure. Otherwise, wash clothing separately before reuse.

FIRST AID FOR INHALATION:

NOTE: Do not use mouth-to-mouth method if victim ingested or 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.

Remove subject to fresh air. Seek medical aid if lung irritation persists or if breathing becomes difficult. If breathing stops, begin artificial respiration (rescue breathing). If no breathing and no pulse, begin Cardiopulmonary Resuscitation (CPR). Seek **IMMEDIATE** medical attention.

FIRST AID FOR INGESTION:

If ingested material may cause damage to internal tissues, **IMMEDIATELY** call physician and seek medical attention. Send copy of MSDS to physician.

DO NOT INDUCE VOMITING. If vomiting occurs, have victim lean forward with head down.

If victim is alert and not convulsing, rinse mouth with water or saline solution to dilute material. **NEVER** give anything by mouth to an unconscious person. Do not give oral fluids or attempt to neutralize the ingested material.

NOTE TO PHYSICIAN:

This product contains materials that may cause severe pneumonitis if aspirated. If ingestion has occurred less than 2 hours earlier, carry out careful gastric lavage; use endotracheal cuff if available, to prevent aspiration.

Observe patient for respiratory difficulty from aspiration pneumonitis. Give artificial resuscitation and appropriate chemotherapy if respiration is depressed. Following exposure the patient should be kept under medical review for at least 48 hours as delayed pneumonitis may occur.

DO NOT attempt to neutralize the acid with weak bases since the reaction will produce heat that may extend the corrosive injury

SECTION 05 - FIRE FIGHTING MEASURES**EXTINGUISHING MEDIA:**

WATER:	
ALCOHOL FOAM:	X
CARBON DIOXIDE (CO ₂):	X
DRY CHEMICAL:	X
WATER/FOG SPRAY:	
NO EXTINGUISHING MEDIA:	

FLASH POINT (°F): Not applicable

FLAMMABLE LIMITS:

Lower Explosive Limit (LEL): Not applicable

Upper Explosive Limit (UEL): Not applicable

AUTOIGNITION TEMPERATURE (°F): Not applicable

HAZARDOUS COMBUSTION PRODUCTS:

When heated to decomposition products of combustion will include toxic fumes of oxides of sulfur (e.g., sulfur dioxide and sulfur trioxide).

SPECIAL FIRE FIGHTING PROCEDURES:

Exercise **CAUTION** when fighting any chemical fire. Evacuate non-essential personnel to a safe area. Prevent unauthorized entry to fire area.

Use NIOSH approved positive pressure self-contained breathing apparatus and full protective clothing.

For fighting fires in close proximity to spill or vapors, use acid-resistant personal protective equipment.

Dike area to contain runoff and prevent contamination of water sources. Neutralize runoff with lime, soda ash, magnesium hydroxide or other suitable neutralizing agents.

Use water spray to cool containers that are exposed to flames until fire is out. **DO NOT** use water directly on product, material reacts violently with water.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Product is not flammable but highly reactive. Reacts violently with water with evolution of heat and can react with organic materials explosively.

Reacts with many metals to liberate hydrogen gas which can form explosive mixtures with air. Hydrogen, a highly flammable gas, can accumulate to explosive concentrations inside drums, or any types of steel containers or tanks upon storage. **STAY AWAY** from sealed containers in fire situations. Fight fire from maximum distance possible.

Strong dehydrating agent, which may cause ignition of finely divided combustible materials on contact.

SECTION 06 - ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE OF SPILL OR LEAK:

Isolate spill area. Evacuate non-essential personnel to a safe distance. Personnel responding to spill must be properly trained.

Wear proper personal protective equipment. Avoid inhalation of mists and vapors. Do not touch or walk through spilled material.

Due to potential for generation of hydrogen gas, ventilate area and remove all ignition sources (no smoking, flares, sparks or flames). All equipment should be bonded and grounded. Use spark-proof tools.

If safe to do so, stop discharge and contain spill by forming barriers to minimize contaminated area. Prevent liquid from entering sewers or waterways. Diking and absorbent materials must be non-reactive with corrosive materials.

Contain and recover liquid material when possible. Neutralize with alkaline material such as soda ash, lime or magnesium hydroxide, then absorb with inert material such as DRY earth, sand or other non-combustible material. **DO NOT** use combustible materials, such as saw dust. Use clean non-sparking tools to collect material and place it into loosely covered containers compatible with corrosives for later disposal.

Spills are subject to CERCLA reporting requirements: RQ = 1000 lbs. National Response Center (800-424-8802)

Ensure adequate decontamination of tools and equipment following clean up. Decontaminate tools and equipment by using alkaline neutralizing agent and scrubbing with soap and water. Remove any cleaning wastes and contaminated soil with the recovered material.

Due to corrosivity and potential reactivity, cleaned up material may be a RCRA Hazardous Waste. Generator is responsible for proper characterization of waste material. Dispose waste material at approved waste treatment/disposal facility in accordance with applicable State, Local, Provincial and Federal regulations. See Section 13 for additional information.

SECTION 07 - HANDLING AND STORAGE

HANDLING PROCEDURES:

Corrosive material - people working with this chemical should be properly trained regarding its hazards and its safe use. Observe all warnings and precautions for this product.

Wear appropriate personal protective equipment to avoid contact with eyes and skin. Avoid inhalation of mist and vapors. Do not ingest material.

CAUTION: Hydrogen, a highly flammable gas, can accumulate to explosive concentrations inside drums, or any types of steel containers or tanks upon storage. When opening metal containers, use spark-proof tools. Keep ignition sources away from sulfuric acid storage, handling and transportation equipment.

Locate safety shower and eyewash station close to chemical handling area.

Use **EXTREME** care when diluting with water. **Always add acid to water.**

Containers of this material may be hazardous when empty since they may contain product residues.

STORAGE INFORMATION:

Store in cool, dry ventilated storage area with acid resistant floors and good drainage. Protect from freezing.

Store in tightly closed containers. Metal and, specifically carbon steel, storage tanks must be vented due to potential for release of hydrogen gas.

Corrosion rates increase with elevated temperatures.

SECTION 08 – EXPOSURE CONTROLS/PERSONAL PROTECTION

PERSONAL PROTECTIVE EQUIPMENT:

RECOMMENDED: Chemical safety goggles with face shield. Impervious (i.e., neoprene, PVC) gloves, coveralls, boots and/or other acid resistant protective clothing. Full-face respirator should be utilized when there is potential exposure to acid mist.



A hard hat, and high top steel-toed safety shoes and safety glasses with side shields should also be worn.

RESPIRATORY PROTECTION:

A NIOSH approved fullface air-purifying respirator equipped with acid gas cartridge and N95 or higher particulate filter for concentrations up to 50 times the exposure limit. If oil particles are present, use R or P type filters.

For unknown concentrations, as well as fire-fighting and other emergencies, use NIOSH approved positive pressure, self-contained breathing apparatus.

SKIN PROTECTION:

PROTECTIVE GLOVES:

Impervious (i.e., neoprene, PVC) gloves.

EYE PROTECTION:

Tight-fitting chemical goggles and face shield.

OTHER PROTECTIVE EQUIPMENT:

Where there is a danger of spilling or splashing, acid resistant aprons or suits should be worn. Trouser legs should be worn outside (not tucked in) rubber boots.

Eyewash and safety shower must be available in the work area.

ENGINEERING CONTROLS:

Use enclosed processes and local exhaust ventilation to keep airborne contaminants below recommended exposure limits.

Where possible, use mechanized or automated handling procedures to prevent or minimize personal contact with sulfuric acid.

Wash hands and face thoroughly before eating, drinking, using tobacco, or applying cosmetics when working or handling this material.

Smoking should be prohibited in areas in which sulfuric acid is stored or handled.

Electrical installations should be protected against the corrosive action of acid vapors.

EXPOSURE LIMITS:

Refer to **SECTION 2** for Recommended Exposure Limits.

IDLH (IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONCENTRATION):

15 mg/m³

SECTION 09 – PHYSICAL AND CHEMICAL PROPERTIES

CHEMICAL FORMULA:	H ₂ SO ₄
MOLECULAR WEIGHT:	98.08
PHYSICAL STATE:	Liquid
APPEARANCE AND ODOR:	Odorless, clear to amber heavy, oily liquid.
ODOR THRESHOLD:	Not applicable (pungent odor may exist if certain impurities are present in the acid).
pH:	< 1 (1% solution)
SOLUBILITY IN WATER (% IN WATER):	Miscible in all proportions in water.
SPECIFIC GRAVITY:	1.395 @ 60°F (15°C)
VAPOR DENSITY (AIR=1):	No data
BOILING POINT (°F):	221°F (124°C)
MELTING POINT/FREEZING POINT (°F):	-33°F (-36°C)
VAPOR PRESSURE (MM HG):	< 0.11 @ 102°F (25°C)
EVAPORATION RATE:	Not applicable

SECTION 10 – STABILITY AND REACTIVITY

STABILITY:	Stable
CONDITIONS TO AVOID:	Product is corrosive. Contact with metals may produce flammable hydrogen gas. Keep away from heat and sources of ignition. Avoid temperatures, which may have a negative effect on the materials of construction used in equipment. Higher temperatures may increase the corrosion rate.
HAZARDOUS POLYMERIZATION:	Will not occur

INCOMPATIBILITY: Reacts violently with water. When diluting, add acid to water. **DO NOT** add water to the acid

Incompatible with strong oxidizing and reducing agents such as chlorates, perchlorates, and permanganates.

Contact with organic materials (such as alcohol, acrylates, aldehydes, carbides, fulminates and epichlorohydrin,) may cause fire and explosions.

Nitrogen containing compounds (ammonia, acrylonitrile, aliphatic amines, alkanolamines, aromatic amines, and amides)

Compounds with light metals such as sodium, lithium, and potassium.
Corrosive to metals.

Bases, halogens and strong reducing agents.

SECTION 11 - TOXICOLOGICAL INFORMATION

TOXICITY:

Product is corrosive and known to cause severe tissue destruction on contact with skin or eyes.

May be fatal if ingested.

Cancer Hazard.

REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES (RTECS) NUMBER:

WS5600000

TOXICITY

TOXICITY	DESCRIPTION	RESULTS	TESTED ON
ACUTE ORAL			
LD₅₀ (ORAL):	LETHAL DOSE (50%)	2140 mg/kg of body weight	Rat
ACUTE INHALATION			
LC₅₀ (INHALATION):	LETHAL CONCENTRATION (50%)	510 mg/m ³ (2 hours)	Rat
LC₅₀ (INHALATION):	LETHAL CONCENTRATION (50%)	347 ppm (1 hours)	Rat
LC₅₀ (INHALATION):	LETHAL CONCENTRATION (50%)	0.018 – 0.05 mg/L (8 hours)	Guinea Pig

CARCINOGENICITY:

NOTE: Rankings below apply to exposure to sulfuric acid mists NOT to sulfuric acid and sulfuric acid solutions.

No direct link has been established between exposure to sulfuric acid solutions and cancer in man, exposure to any acid mist or aerosol during the use of this product should be avoided.

The International Agency for Research on Cancer (IARC) has concluded that occupational exposure to strong inorganic acid mists containing sulfuric acid is carcinogenic to man, causing cancer of the larynx (the voice box).

The American Conference of Governmental Industrial Hygienists (ACGIH) has classified occupational exposure to strong inorganic acid mists containing sulfuric acid as a Category A2 – Suspected Human Carcinogen.

The National Toxicology Program (NTP) classifies strong inorganic acid mists containing sulfuric acid as known human carcinogens.

REPRODUCTIVE EFFECTS:

In developmental toxicity study, no significant effects were observed in mice and rabbits exposed to sulfuric acid aerosol at 5 and 20 mg/m³ for 7 hrs/day during gestation. NOAEL = 20 mg/m³ (rabbit/mice).

MUTAGENICITY DATA:

Sulfuric acid has been shown to be without effect in genotoxicity studies *in vitro* in the Ames test using various strains of *S. typhimurium* and *E. coli* with and without metabolic activation.

Sulfuric acid has been shown to cause chromosomal aberrations in Chinese hamster ovary cells and in a non-standard assay in developing sea urchin embryos. Both studies were conducted with and without metabolic activation.

TERATOGENICITY DATA:

This product is **NOT** known or reported to have any teratogenic effects in mice and rabbits.

SYNERGISTIC MATERIALS:

None known

SECTION 12 - ECOLOGICAL INFORMATION**ECOTOXICITY:**

Product may be toxic to aquatic life. Toxicity depends on the resulting pH (< 5.0), hardness of the water and species exposed.

Product is very mobile in soil. Mobility increases with dilution.

Due to high mobility, product may reach ground water. Sulfuric acid will ultimately react with calcium and magnesium in water to form sulfate salts.

ENVIRONMENTAL TOXICITY:

SPECIES	TEST TYPE	ENDPOINT	DURATION (hours)	DESCRIPTION	RESULT (mg/L)
ACUTE TOXICITY					
<i>BRACHYDANIO RERIO</i> (fresh water fish)	Static	Lethal Concentration (50%)	24	LC ₅₀	82
	Static	Lethal Concentration (50%)	96	LC ₅₀	> 500
<i>CARASSIUS AURATUS</i> (fresh water fish)	Not specified	Lethal Concentration (0%)	96	LC ₀	17
	Not specified	Lethal Concentration (100%)	96	LC ₁₀₀	138
<i>CRANGON CRANGON</i> (crustacea)	Renewal	Lethal Concentration (50%)	48	LC ₅₀	70-80
<i>DAPHNIA MAGNA</i> (crustacea)	Not specified	Effective Concentration (50%)	24	EC ₅₀ inhibition of mobility	29
ACTIVATED SLUDGE	Aquatic	Effective Concentration (50%)	120	EC ₅₀ Respiration inhibition	58

SPECIES	TEST TYPE	ENDPOINT	DURATION (hours)	DESCRIPTION	RESULT (mg/L)
CHRONIC TOXICITY					
<i>CYPRINUS CARPIO</i> <i>CARPIO</i> (fresh water fish)	pH	Effective Concentration (50%)	96	EC ₅₀ Reproduction rate	4.5 – 5.1

BIOACCUMULATION POTENTIAL: Negative

BIOLOGICAL OXYGEN DEMAND (BOD5): Sulfuric acid does not cause a biological oxygen demand.

SECTION 13 – DISPOSAL CONSIDERATIONS

WASTE DISPOSAL INFORMATION:

If this product becomes a waste, it may become a Hazardous Waste as defined by the Resource Conservation and Recovery Act (RCRA) due to the characteristics of corrosivity (D002) and reactivity (D003).

DO NOT flush to surface water or sanitary sewer system.

Containers of this material may be hazardous when empty since they may contain product residues.

Generator of the waste material is responsible for the proper characterization and disposal of the material. Dispose of material in accordance with ALL applicable State, Local, Provincial, and Federal regulations at approved waste management site.

SECTION 14 - TRANSPORT INFORMATION

U.S. DOT REGULATED:	REGULATED
SHIPPING NAME:	Sulfuric Acid (with not more than 51% acid)
UN/NA NUMBER:	2796
HAZARD CLASS:	8
PACKAGING GROUP:	II
SPECIAL PROVISIONS (refer to 49 CFR 172.102):	A3,A7,B2,B15, IB2, N6, N34, T8, TP2, TP12
NON-BULK:	49 CFR 173.202
BULK:	49 CFR 173.242
PASSENGER AIRCRAFT/RAIL:	1 L (CARGO AIRCRAFT – 30L)
VESSEL STOWAGE:	CATEGORY B (refer to 49 CFR 172.101(k))
ER GUIDE:	137

CANADIAN TRANSPORT REGULATION:	REGULATED
SHIPPING NAME:	SULFURIC ACID
UN/NA NUMBER:	2796
HAZARD CLASS:	8
PACKAGING GROUP:	II
SPECIAL PROVISIONS:	None
LIMITED QUANTITY:	1 L
ERAP:	No
PASSENGER CARRYING SHIP/RAIL:	1 L (Rail)

INTERNATIONAL AIR TRANSPORTATION REGULATIONS: REGULATED
SHIPPING NAME: Sulfuric Acid (with 51% or less acid)
UN/NA NUMBER: 2796
HAZARD CLASS: 8
PACKAGING GROUP: II

INTERNATIONAL MARITIME DANGEROUS GOODS REGULATION: REGULATED
SHIPPING NAME: Sulfuric Acid (with not more than 51% acid)
UN/NA NUMBER: 2796
HAZARD CLASS: 8
PACKAGING GROUP: II

SECTION 15 - REGULATORY INFORMATION

OSHA:
 Meets criteria for hazardous material as defined by the Occupational Safety and Health Administration (OSHA) in 29 CFR 1910.1200.

TSCA:
 We certify that all components of this product are registered under the regulations of the Toxic Substances Control Act (TSCA).

SARA (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT):

SARA (SECTION 311/312):		SARA (SECTION 302):	RQ
REACTIVE HAZARD:	Y	EXTREMELY HAZARDOUS SUBSTANCE:	Y 1000 lbs. (TPQ)
PRESSURE HAZARD:	N	CERCLA HAZARDOUS SUBSTANCE:	Y 1000 lbs.
FIRE HAZARD:	N		
IMMEDIATE/ACUTE:	Y	SARA (SECTION 304):	
DELAYED/CHRONIC:	Y	RELEASE NOTIFICATION	Y 1000 lbs.

SARA (SECTION 313 - TOXIC CHEMICAL): Sulfuric acid is listed for aerosol forms only

CLEAN WATER ACT – PRIORITY POLLUTANTS: This product contains no known priority pollutants at concentrations greater than 0.1%

CLEAN AIR ACT:
VOLATILE ORGANIC COMPOUNDS (VOC) (EPA METHOD 24/24a): None expected

SECTION 112(r) – Risk Management Plan Sulfuric acid is not listed

CERCLA – COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT: **(FOR COMPONENTS LISTED IN SECTION 2)**
SULFURIC ACID RQ = 1000 lbs

RCRA (RESOURCE CONSERVATION & RECOVERY ACT):

Product may become Hazardous Waste. Generator is responsible for proper characterization and disposal of waste.

RCRA #:

D001 – Corrosive; D003 - Reactivity

FDA:

This product is **NOT** registered with the Food and Drug Administration (FDA).

USDA:

This product is **NOT** registered with the U.S. Department of Agriculture (USDA).

CANADIAN REGULATORY INFORMATION:**CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA):**

This product conforms to the CEPA regulations.

LISTED ON DOMESTIC SUBSTANCE LIST (DSL):

Listed

LISTED AS PRIORITY SUBSTANCE:

Components are **NOT** listed.

LISTED AS TOXIC SUBSTANCE:

Components are **NOT** listed.

EXPORT CONTROL LIST:

NOT listed.

LISTED ON NON-DOMESTIC SUBSTANCES LIST (NDSL):

Components are **NOT** listed.

NATIONAL POLLUTANT RELEASE INVENTORY (NPRI):

Product components are subject to NPRI reporting.

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

WORKPLACE HAZARDOUS INFORMATION SYSTEM (WHMIS): CONTROLLED**CLASS:**

Class D1A - Very Toxic – immediate and serious effects
Class D2A – Very Toxic - chronic
Class E – Corrosive to skin

WHMIS Health Effects Index:

D1A - Acute Lethality - very toxic – immediate
D2A – Chronic toxicity – very toxic – other
E - Corrosive to animal skin

WHMIS Ingredient Disclosure List:

Meets criteria for disclosure at 1% or greater.

EUROPEAN/INTERNATIONAL REGULATIONS:**EUROPEAN INVENTORY OF EXISTING COMMERCIAL SUBSTANCES (EINECS) NUMBER:** 231-639-5**EUROPEAN PRIORITY LISTS:**

Chemical components are not listed in a priority list (as foreseen under Council Regulation (EEC) No 793/93 on the evaluation and control of the risks of existing substances) and are not listed in annex I of council regulation no. (EC) 304/2003.

HAZARD SYMBOLS:	C – Corrosive
RISK PHRASES (for hydrogen sulfide):	R35 – Causes severe burns
SAFETY PHRASES (for hydrogen sulfide):	S26 – In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S30 – Never add water to this product S36 – Wear suitable protective clothing. S45 – In case of accident or if you feel unwell, seek medical advice immediately.

SECTION 16 – OTHER INFORMATION

OTHER PRECAUTIONS:	None Known
STATE REGULATORY INFORMATION:	
MASSACHUSETTS SUBSTANCES LIST:	Listed (Extraordinarily Hazardous)
NEW JERSEY RIGHT TO KNOW (RTK) SUBSTANCE NUMBER:	1761
NEW YORK LIST OF HAZARDOUS SUBSTANCES:	Listed (RQ _{air} = 1000 lbs, RQ _{land/water} = 100 lbs.)
PENNSYLVANIA HAZARDOUS SUBSTANCE LIST:	Listed (Environmental Hazard)
RHODE ISLAND HAZARDOUS SUBSTANCE LIST:	Listed (T - ACGIH, F – NFPA)
CALIFORNIA PROPOSITION 65:	Listed as carcinogen
LABEL INFORMATION:	
LABEL HAZARDS:	
DANGER!	Corrosive - causes severe burns and eye damage.
DANGER!	Harmful or fatal if swallowed.
WARNING!	Harmful if inhaled. Cancer Hazard. Avoid inhalation of mists.
WARNING!	Reacts violently with water. Always add acid to water.
LABEL PRECAUTIONS:	Wear appropriate personal protective equipment to avoid contact with eyes and skin. Reacts with most metals to form flammable hydrogen gas. Use with adequate ventilation. Use caution when opening closed containers.
MAIN REFERENCES:	
1.	“2008 Threshold Limit Values and Biological Exposure Indices”, American Conference of Government Industrial Hygienists, 2008.
2.	“Dangerous Properties of Industrial Materials”, Sax, N.I., .8 th Edition, 1992.
3.	NIOSH POCKET GUIDE TO CHEMICAL HAZARDS, U.S. Department of Health and Human Services, National Institute for Occupational Safety and Health, June 1997.

4. IUCLID Datasheet for sulphuric acid, European Chemicals Bureau, dated February 19, 2000.
<http://ecb.jrc.ec.europa.eu/esis>
5. Toxicological Profile for Sulfuric Trioxide and Sulfuric Acid, Agency for Toxic Substances and Disease Registry (ASTDR), U.S. Dept. of Health and Human Services, December 1998.
6. Screening Information Data Sets (SIDS), Initial Assessment Report for 11th SIAM, Organization for Economic Co-operation and Development, January 2001.

ACRONYMS:

ACGIH – American Conference of Governmental Industrial Hygienists
CAS – Chemical Abstract Service
CERCLA – Comprehensive Environmental Response, Compensation and Liability Act
DOT – Department of Transportation (U.S.)
EC – Effective Concentration (where desired endpoint observed)
EEC – European Economic Community
EPA – Environmental Protection Agency
g/m³ – grams per cubic meter
HMIS - Hazardous Materials Identification System
IARC - International Agency for Research on Cancer
LC – Lethal Concentration
LD – Lethal Dose
mg/m³ – milligrams per cubic meter
mg/kg – milligrams per kilogram
mg/L – milligrams per liter
NIOSH – National Institute for Occupational Safety and Health
MSDS – Material Safety Data Sheet
NOAEL – No Observed Adverse Effect Level
NOEC – No Observed Effect Concentration
NTP – National Toxicology Program
OSHA – Occupational Safety and Health Administration
RCRA – Resource Conservation and Recovery Act
RQ – Reportable Quantity
SARA – Superfund Amendments and Reauthorization Act
TWA – Time weighted average (8-hour)
UN/NA – United Nations/North America
WHMIS – Workplace Hazardous Materials Information System (Canada)
WT. % - Weight Percent

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