Sulfuric Acid (93-99%)

Material Safety Data Sheet

PRODUCT AND COMPANY IDENTIFICATION

ct Name: Sulfuric Acid (93-99%)

Number: 10010

yms: H2SO4
Oil of vitriol

acturer/Supplier: Betterbilt Chemical
3430 Union Pacific Ave
Los Angeles, CA 90023

ency Health and Safety Number: Chemtrec: 800-424-9300 (24 Hours)

Information: Phone: 800-804-3978
Email: info@betterbiltchemical.com
Internet: www.betterbiltchemical.com

AZARDS IDENTIFICATION

Emergency Overview

DANGER!

Causes Eye and Skin Burns
Reacts violently with water
May be Corrosive to Metals

NFPA

rance: Clear Viscous
cal Form: Liquid
Acid

tial Health Effects
orrosive. Contact may cause severe irritation, eye burns, and permanent eye damage.

Corrosive. Contact may cause severe irritation, skin burns, and permanent skin damage. No information regarding skin tion, however, corrosivity of material suggests significant skin absorption will occur.

tion (Breathing): Corrosive. Harmful if inhaled. May cause severe irritation and burns of the nose, throat, and respiratory t

ion (Swallowing): Corrosive. May be harmful if swallowed. May cause severe irritation and burns of the mouth, throat, an ve tract.

and Symptoms: Effects of overexposure may include severe irritation and burns of the mouth, nose, throat, respiratory, an ve tract, coughing nausea, vomiting, wheezing, abdominal pain, bronchitis (lung inflammation), chest pain, pneumonitis mation of the lungs), pulmonary edema (accumulation of fluids in the lungs) and perforation of the stomach.

Comments: Prolonged or repeated overexposure to acid mists has been reported to cause erosion of tooth enamel.

isting Medical Conditions: Conditions aggravated by exposure may include skin disorders, eye disorders and respiratory ia-like) disorders.

ection 11 for additional Toxicity Information.

OMPOSITION / INFORMATION ON INGREDIENTS

onent	CASRN	Concentration*
c Acid	7664-93-9	93-99
	7732-18-5	1-7

ncentrations are percent by w eight unless ingredient is a gas. Gas concentrations are in percent by volume.

IRST AID MEASURES

ontact: Immediately move victim away from exposure and into fresh air. If irritation or redness develops, flush eyes with cle and seek immediate medical attention. Remove contact lenses if present and easy to do. For direct contact, immediately ho apart and flush the affected eye(s) with clean water for at least 30 minutes. Seek immediate medical attention.

ontact: Immediately flush affected area(s) with large amounts of water while removing contaminated shoes, clothing, and ctive jewelry. If skin surface is damaged, apply a clean dressing and seek immediate medical attention. If skin surface is nc ed, cleanse the affected area(s) thoroughly by washing with mild soap and water or a waterless hand cleaner. If irritation o s develops, seek immediate medical attention. Wash contaminated clothing before reuse.

tion (Breathing): Immediately move victim away from exposure and into fresh air in a position comfortable for breathing. If tory symptoms or other symptoms of exposure develop, seek immediate medical attention. If victim is not breathing, clear and immediately begin artificial respiration. If breathing difficulties develop, oxygen should be administered by qualified nel. Seek immediate medical attention.

ion (Swallowing): Do not induce vomiting. Corrosive material. If victim has any breathing difficulties, call for emergency hel iately. If victim is conscious and alert, immediately rinse mouth with water and dilute the ingested material by giving one f milk or water to drink; 1/2 glass to children under 5. Call a physician or poison center. If possible, do not leave victim nded.

to Physician: This material is corrosive and may cause acid burns, including gastroesophageal perforation. Late cations of severe acid burns include esophageal, gastric, or pyloric strictures and stenosis.

IRE-FIGHTING MEASURES

704 Hazard Class

: 3 **Flammability:** 0 **Instability:** 2 (0-Minimal, 1-Slight, 2-Moderate, 3-Serious, 4-Severe)

al Fire & Explosion Hazards: This material may ignite combustibles. Water Reactive. Contact with water can generate h mmable gases. Avoid using water for fire fighting. Closed containers exposed to extreme heat can rupture due to pressure).

uishing Media: Dry chemical, soda ash, lime, or sand is recommended. Do not use water.

ghting Instructions: If tank, railcar, or tank truck is involved in a fire, isolate for 1/2 mile in all diirections. Consider initial tion for 1/2 mile in all directions.

nvolving small amount of combustibles may be smothered with suitable dry chemicals. Use water on combustibles burning id using water directly on acid as it results in evolution of heat and causes splattering. Emergency responders in the iate hazard area should wear bunker gear and self contained breathing apparatus. In addition, wear other appropriate ive equipment as conditions warrant (see section 8). For fires beyond the incipient stage, emergency responders in the iate hazard area should wear bunker gear. When the potential chemical hazard is unknown, in enclosed or confined space ontained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions t (see Section 8).

immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done safely. Move undamaged ers from immediate hazard area if it can be done safely. Water spray may be useful in minimizing or dispersing vapors and personnel. Cool equipment exposed to fire with water, if it can be done safely.

dous Combustion Products: Combustion may yield oxides of sulfur.

ection 9 for Flammable Properties including Flash Point and Flammable (Explosive)

CCIDENTAL RELEASE MEASURES

nal Precautions: Stay upwind and away from spill/release. Notify persons down wind of the spill/release, isolate immediate l area and keep unauthorized personnel out. Wear appropriate protective equipment, including respiratory protection, as ons warrant (see Section 8). See Sections 2 and 7 for additional information on hazards and precautionary measures.

nmental Precautions: Stop spill/release if it can be done safely. Prevent spilled material from entering sewers, storm drai nauthorized drainage systems, and natural waterways. If spill/release in excess of EPA reportable quantity (see Section 1 e into the environment, immediately notify the National Response Center (phone number 800-424-8802). Use water gly to minimize environmental contamination and reduce disposal requirements.

ds for Containment and Clean-Up: Notify appropriate federal, state, and local agencies. Immediate cleanup of any spill is mended. Dike far ahead of spill for later recovery or disposal. Absorb spill with inert material such as sand or vermiculite, ace in suitable container for disposal.

ANDLING AND STORAGE

utions for safe handling: Wear eye/face protection. Wear protective gloves/clothing and eye/face protection. Wash thorou andling. Do not breathe vapors or mists. Use good personal hygiene practices and wear appropriate personal protective nent.

enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276 and 29CFR 46. Do not wear contaminated clothing or shoes.

tions for safe storage: Protect container(s) against physical damage and exposure to water. Corrosive to most metals, ally when dilute. To prevent ignition of hydrogen gas generated from contact with metal containers, smoking, open flames, arks should not be permitted in storage areas. Store in corrosion resistant container with a resistant inliner. Keep ner(s) tightly closed. Use and store this material in cool, dry, well-ventilated areas. Store only in approved containers. Keep rom any incompatible material (see Section 10). Protect container(s) against physical damage.

XPOSURE CONTROLS / PERSONAL PROTECTION

Component	US-ACGIH	OSHA	Other
c Acid	TWA: 0.2 mg/m³	TWA: 1 mg/m³	---

State, local or other agencies or advisory groups may have established more stringent limits. Consult an industria nist or similar professional, or your local agencies, for further information.

eering controls: If current ventilation practices are not adequate to maintain airborne concentrations below the established ure limits, additional engineering controls may be required.

ace Protection: The use of gas/vapor tight eye protection that meets or exceeds ANSI Z.87.1 is recommended against pote ntact, irritation, or injury. Depending on conditions of use, a full face respirator may be necessary.

land Protection: The use of gloves impervious to the specific material handled is advised to prevent skin contact. Users check with manufacturers to confirm the breakthrough performance of their products. Depending on exposure and use ons, additional protection may be necessary to prevent skin contact including use of items such as chemical resistant boots , arm covers, hoods, coveralls, or encapsulated suits. Suggested protective materials: Butyl rubber, Viton (fluoroelastomer

atory Protection: Where there is potential for airborne exposure above the exposure limit a NIOSH certified air purifying fu spirator equipped with acid gas cartridges/canisters with P100 filters may be used.

iratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 and ANSI Z88.2 should be followed ver workplace conditions warrant a respirator's use. Air purifying respirators provide limited protection and cannot be used pheres that exceed the maximum use concentration (as directed by regulation or the manufacturer's instructions), in oxyger nt (less than 19.5 percent oxygen) situations, or under conditions that are immediately dangerous to life and health (IDLH).

Protective Equipment: Eye wash and quick-drench shower facilities should be available in the work area. Thoroughly clea and wash contaminated clothing before reuse.

stions provided in this section for exposure control and specific types of protective equipment are based on readi ble information. Users should consult with the specific manufacturer to confirm the performance of their protectiv

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HYSICAL AND CHEMICAL PROPERTIES

Unless otherwise stated, values are determined at 20 °C (68°F) and 760 mm Hg (1 atm). Data represent typical values ar t intended to be specifications.

Appearance:	Clear Viscous
Physical Form:	Liquid
Odor:	Acrid
Odor Threshold:	No data
pH:	1-2
Vapor Pressure:	1 mm HG @146 °F / 63°C
Vapor Density (air=1):	3.4
Boiling Point/Range:	599-640 °F / 315-338 °C
Melting/Freezing Point:	No data
Solubility in Water:	100%
Partition Coefficient (n-octanol/water) (Kow):	No data
Specific Gravity:	1.82-1.84 @ 68ºF (20ºC)
Bulk Density:	15.2 lbs/gal
Percent Volatile:	Negligible
Evaporation Rate (nBuAc=1):	<1
Flash Point:	Not applicable
LEL (vol % in air):	No data
UEL (vol % in air):	No data
Autoignition Temperature:	No data

STABILITY AND REACTIVITY

ty: Water reactive. Contact with water can cause violent reaction. Corrosive to metal. Can react with common metals ting hydrogen gas.

tions to Avoid Avoid contact with water or moisture. Heat will increase overall reactivity.

als to Avoid (Incompatible Materials): Highly reactive and capable of igniting finely divided combustible materials on cont ely hazardous in contact with many materials, particularly carbides, chlorates, fulminates, nitrates, picrates, powdered , and other combustible materials. Contact with hypochlorites (e.g., chlorine bleach), sulfides, or cyanides will produce toxi Water reactive. Reacts violently with water, alkaline materials, or organic materials with evolution of heat. Corrosive to Attacks many metals, releasing hydrogen gas (see Section 5).

dous Decomposition Products: Sulfuric acid can release toxic and irritating sulfur oxide fumes when heated.

dous Polymerization: Not known to occur.

TOXICOLOGICAL INFORMATION

ic Data:

ic Acid

Carcinogenicity: The International Agency for Research on Cancer (IARC) classified "strong inorganic acid mists contair sulfuric acid" as a Category I carcinogen (known human carcinogen) based upon epidemiology studies demonstrating excess pharyngeal and lung cancer in chronically exposed workers.

Data:

onent	Oral LD50	Dermal LD50	Inhalation LC50
c Acid	2140 mg/kg (Rat)	No data	510 mg/m ³ 2 Hr. (Rat
	Not Hazardous	Not Hazardous	Not Hazardous

ECOLOGICAL INFORMATION

gical Information: Not evaluated.

DISPOSAL CONSIDERATIONS

enerator of a waste is always responsible for making proper hazardous waste determinations and needs to consider state cal requirements in addition to federal regulations.

aterial, if discarded as produced, would not be a federally regulated RCRA "listed" hazardous waste. However, it would lik ntified as a federally regulated RCRA hazardous waste for the following characteristic(s) shown below. See Sections 7 and rmation on handling, storage and personal protection and Section 9 for physical/chemical properties. It is possible that the al as produced contains constituents which are not required to be listed in the MSDS but could affect the hazardous waste ination. Additionally, use which results in chemical or physical change of this material could subject it to regulation as a ous waste.

ner contents should be completely used and containers should be emptied prior to discard. Container residues and es could be considered to be hazardous wastes.

EPA Waste Number(s)
‡ D002 - Corrosivity characteristic
‡ D003 - Reactivity characteristic

TRANSPORTATION INFORMATION

epartment of Transportation (DOT)

ng Description:	Sulfuric acid, 8, UN1830, II, RQ *
ulk Package Marking:	Sulfuric acid, UN1830
ulk Package Labeling:	Corrosive
ackage/Placard Marking:	Corrosive / 1830
ging - References:	49 CFR 173.154; 173.202; 173.242
	(Exceptions; Non-bulk; Bulk)
dous Substance:	See Section 15 for RQ`s
ency Response Guide:	137

**** Omit "RQ" if the amount in a single packaging is less than the EPA Reportable Q amount shown in Section 15 for the hazardous substance.***

Shipping description may be modified by placing the UN or NA number as the first element. This order becomes mandatory on January 1, 2013.

ational Maritime Dangerous Goods (IMDG)

ng Description:	UN1830, Sulfuric acid, 8, II
ulk Package Marking:	Sulphuric acid, UN1830
s:	Corrosive
ds/Marking (Bulk):	Corrosive / 1830
ging - Non-Bulk:	P001
	F-A, S-B

U.S. DOT compliance requirements may apply. See 49 CFR 171.22, 23 & 25.

ational Civil Aviation Org. / International Air Transport Assoc. (ICAO/IATA)

#:	UN1830
r Shipping Name:	Sulphuric acid
d Class/Division:	8
diary risk:	None
g Group:	II
ulk Package Marking:	Sulphuric acid, UN1830
s:	Corrosive
ode:	8L

U.S. DOT compliance requirements may apply. See 49 CFR 171.22, 23 & 24.

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TRANSPORTATION INFORMATION

	LTD. QTY	Passenger Aircraft	Cargo Aircraft Only
Packaging Instruction #:	Y809	809	813
lax. Net Qty. Per Package:	0.5 L	1 L	30 L

REGULATORY INFORMATION

LA/SARA - Section 302 Extremely Hazardous Substances and TPQs (in pounds):
aterial contains the following chemicals subject to the reporting requirements of SARA 302 and 40 CFR 372:

Component	TPQ	EPCRA RQ
Sulfuric Acid	1000 lb	1000 lb

LA/SARA - Section 311/312 (Title III Hazard Categories)

Acute Health:	Yes
Chronic Health:	No
Fire Hazard:	No
Pressure Hazard:	No
Reactive Hazard:	Yes

LA/SARA - Section 313 and 40 CFR 372:
aterial contains the following chemicals subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR

Component	Concentration*	de minimis
Sulfuric Acid	93-99	1.0%

ERCLA) Reportable Quantity (in pounds):
aterial does not contain any chemicals with CERCLA Reportable Quantities. This material contains the following chemicals t to the reporting requirements of 40 CFR 302.4:

Component	RQ
Sulfuric Acid	1000 lb

rnia Proposition 65:
g: This material may contain detectable quantities of the following chemicals, known to the State of California to cause , birth defects or other reproductive harm, and which may be subject to the requirements of California Proposition 65 (CA & Safety Code Section 25249.5):

Component	Type of Toxicity
Strong Inorganic Acid Mists containing Sulfuric Acid	Cancer

lian Regulations:
oduct has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSI is all the information required by the Regulations.

WHMIS Hazard Class
D1A
E - Corrosive Material

al Chemical Inventories:
ponents are either listed on the US TSCA Inventory, or are not regulated under TSCA.
ponents are either on the DSL, or are exempt from DSL listing requirements.

xport Control Classification Number: EAR99

OTHER INFORMATION

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OTHER INFORMATION

:	Final
us Issue Date:	21-April-2006
ed Sections or Basis for on:	Format change Review and update
Number:	10010

Legend:

= American Conference of Governmental Industrial Hygienists; ADR = Agreement on Dangerous Goods by Road; CASRN = Chemic cts Service Registry Number; CEILING = Ceiling Limit (15 minutes); EINECS - European Inventory of Existing Commercial Chemical nces; EPA = [US] Environmental Protection Agency; Germany-TRGS = Technical Rules for Dangerous Substances; IARC = tional Agency for Research on Cancer; ICAO/IATA = International Civil Aviation Organization / International Air Transport Association = International Maritime Dangerous Goods; Ireland-HSA = Ireland's National Health and Safety Authority; LEL = Low er Explosive Lim Not Applicable; N/D = Not Determined; NIOSH = National Institute for Occupational Safety and Health; NTP = [US] National ogy Program; OSHA = [US] Occupational Safety and Health Administration; PEL = Permissible Exposure Limit; RID = Regulations ning the International Transport of Dangerous Goods by Rail; STEL = Short Term Exposure Limit (15 minutes); TLV = Threshold Lim TWA = Time Weighted Average (8 hours); UEL = Upper Explosive Limit; UK-EH40 = United Kingdom EH40/2005 Workplace Exposu

imer of Expressed and implied Warranties:

formation presented in this Material Safety Data Sheet is based on data believed to be accurate as of the date this Material Data Sheet was prepared. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR OSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR LETENESS OF THE INFORMATION PROVIDED ABOVE, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS MATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE. No resp imed for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices. The ation provided above, and the product, are furnished on the condition that the person receiving them shall make their own ination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their n addition, no authorization is given nor implied to practice any patented invention without a license.