

Comet Chemical Company Ltd.

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Materials Safety Data - SULPHURIC ACID

Shipping Name
Transport of Dangerous Goods Class
WHMIS Class
Material Use

UN - 1830

SULPHURIC ACID
Class 8; Packing Group II
D 1A; D 2A; E
fertilisers, dyes, electroplating, explosives, metal pickling, petroleum refining, battery acid, etc.

1. HAZARDOUS INGREDIENTS

	CAS NUMBER	%	TWAEV mg/m ³	LD ₅₀ ORAL	(mg/kg) SKIN	LC ₅₀ mg/m ³ INHALATION
Sulphuric Acid	7664-93-9	92%-98%	1	2140	not known	4.5

NOTE: LC₅₀ varies widely between species. The lowest value is reported.

2. PHYSICAL CHARACTERISTICS

Odour & Appearance	heavy, oily liquid, pale yellow in colour; may have a sharp penetrating odour
Odour Threshold	1mg/m ³ - generally odourless, but SO ₂ odour may be detected occasionally
Vapour Pressure	0.002 mmHg (40°C); 0.3mmHg (25°C)
Vapour Density (air = 1)	3.4
Boiling Range	315°C - 338°C (varies due to loss of SO ₃ on heating above 300°C) <i>NOTE: Boiling point drops by about 50°C as water is lost – (BP of 98% = 327°C; BP of 100% = 274°C)</i>
Freezing Point	-2°C (98% purity); -31°C (93% purity)
Specific Gravity	1.84
Water Solubility	complete (take great care when dissolving - see section 7 below)
pH	below 0.5 (as a 1 molar solution) - strongly acid; aggressive acid

3. FLAMMABILITY & REACTIVITY

Flash Point	not flammable
Autoignition Temperature	not flammable
Flammable Limits	not flammable
Hazardous Combustion Products	corrosive and toxic sulphur dioxide and sulphur trioxide gas
Firefighting Precautions	as for combustible materials supporting fire; firefighters must wear SCBA
Sensitivity to Static Discharge	not sensitive
Sensitivity to Mechanical Impact	not sensitive
Chemical Stability	stable; will not polymerize; decomposes above 340°C into sulphur trioxide & water; may cause polymerisation of allyl chloride & acetaldehyde
Reactive With	chlorates, carbides, fulminates, picrates; reacts with most metals to produce flammable hydrogen gas; generates heat on dilution with water
Dangerous Decomposition Products	in contact with metals, releases flammable hydrogen gas; in contact with certain organic substances, may release acetylene, cyanide, or hydrogen sulphide gas

4. TOXICOLOGY EFFECTS OF ACUTE EXPOSURE

Skin Contact	highly corrosive to skin; severe chemical burns, yellow discolouration; pain
Skin Absorption	not absorbed - destroys skin and other tissue before absorption can occur
Eye Contact	corrosive; rapidly and permanently damages eyes
Inhalation	mist and vapour irritating and corrosive to respiratory tract; cough, constriction, difficult breathing; lung collapse and pulmonary oedema may occur and may be fatal
Ingestion	severe burns; vomiting, diarrhoea, perforation of oesophagus, & stomach may occur

(Sulphuric Acid, cont'd)

EFFECTS OF CHRONIC EXPOSURE

General	prolonged exposure to weak solutions may cause skin cracking and dermatitis prolonged exposure to vapours or mists may cause chronic bronchitis with productive cough, shortness of breath, and eventually emphysema
Sensitising	may give rise to contact dermatitis
Carcinogenic	suspected; no effects documented in humans; rodent mutagen
Reproductive Effect	reproductive effector in rodents; no effects documented in humans
Synergistic With	not known
Estimated LD ₅₀	2140 mg/kg (oral, rat)
Estimated LC ₅₀	inhalation:- 510mg/m ³ (rat), 320mg/m ³ (mouse), 18mg/m ³ / 4.5ppm (guinea pig)

5. PROTECTIVE EQUIPMENT

Hands	butyl rubber, polyethylene, "Saranex", "Barricade", or "Responder" gloves
Eyes	chemical goggles required; face shield recommended
Respirator	for air concentrations exceeding 10 mg/m ³ , a respirator with an acid gas and mist or fume cartridge is required ; however, engineering controls (ventilation) are preferred form of protection
Clothing	neoprene or PVC apron , boots, long sleeves are required for all people handling this product; do not tuck trousers into boots - leave out so splashed material cannot enter boot!

6. ENVIRONMENT

Leak Precaution	dyke to control spillage and prevent environmental contamination
Handling Spill	ventilate contaminated area; recover free liquid with suitable pumps; absorb residue on an inert sorbent (dry sand, earth) and store in closed containers for disposal; if practical, neutralise the spill in situ using sodium carbonate (soda ash) and collect neutralised material for disposal
Waste Disposal	do not flush to sewer ; depending on previous processing & on neutralisation procedure, the residue may be a hazardous waste; consult local authorities as to correct local disposal procedure

7. STORAGE & HANDLING

Carbon steel and stainless steel can be used to contain 93% acid and above. Less concentrated acids attack all metals. Increasing temperature raises reactivity. Many plastics resist sulphuric acid - consult equipment supplier. Always add acid to water when diluting, stirring to avoid local overheating. Avoid all contact with skin and wash work clothes frequently. ***If you splash concentrated acid on your skin, do not panic. Walk - do not run to the nearest water supply and rinse. You have several minutes before it begins to burn!*** An eye bath and safety shower should be available near the workplace.

8. FIRST AID

SKIN:	Wash with soap and plenty of water for 15 minutes. Do not move victim until washing is complete. Remove contaminated clothing and do not reuse until thoroughly cleaned or laundered.
EYES:	Wash eyes with plenty of water, holding eyelids open. Seek medical assistance promptly after washing.
INHALATION:	Remove from contaminated area promptly. CAUTION: Rescuer must not endanger himself! If breathing stops, administer artificial respiration and seek medical aid promptly.
INGESTION:	Give 2 glasses of water to dilute. Do not induce vomiting (NOTE below). Keep victim quiet. If vomiting occurs, keep victim's head below hips to prevent inhalation of vomited material. Seek medical help promptly.

NOTE: Vomiting may cause severe new damage to oesophagus and mouth. The stomach should be emptied under medical supervision, after the installation of an airway to protect the lungs. Do not attempt to neutralise the acid in situ - heat production may cause further damage!

Emergency telephone numbers - weekdays from 8:00 - 5:00 (705) 436-5580
at all other times (800) 567-7455 (Philip Environmental)

The information herein is given in good faith but no warranty, expressed or implied is made.

Prepared for Comet Chemical Co. Ltd., by Nicholas Morgan, November 2002; Revised August 2005

PLEASE ENSURE THAT THIS MSDS IS GIVEN TO AND EXPLAINED TO THE PERSON USING THIS PRODUCT.

<File: sul-acid>