

SULPHURYL CHLORIDE

GHS Safety Data Sheet

Version No:2.0

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Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

SULPHURYL CHLORIDE

OTHER NAMES

Cl₂-O₂-S, SO₂Cl₂, "sulphuryl chloride", "sulfonyl chloride", "sulfuric oxychloride"

PROPER SHIPPING NAME

SULPHURYL CHLORIDE

PRODUCT USE

Chlorinating and sulfonating or chlorosulfonating agent. Used in the synthesis of chlorophenol and chlorothymol.

SUPPLIER

Company: S D FINE- CHEM LIMITED

Address:

315- 317, T.V. INDUSTRIAL ESTATE,

248, WORLI,

MUMBAI- 400030.INDIA.

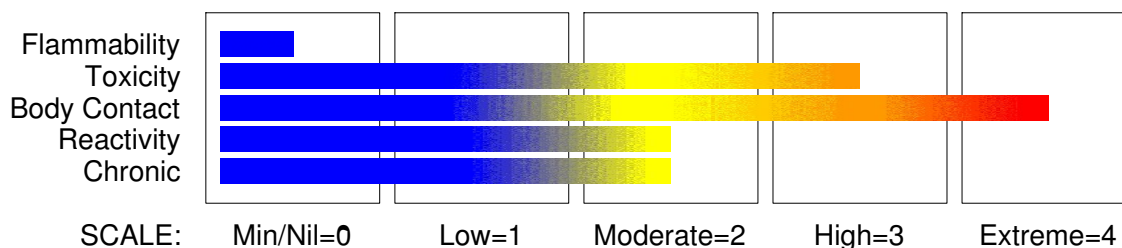
technical@sdfine.com

Telephone: 91- 22- 24959898

Telephone: 91- 22- 24959899

Fax: 91- 22- 24937232

HAZARD RATINGS



Section 2 - HAZARDS IDENTIFICATION

GHS Classification

Acute Toxicity (Inhalation) Category 2

Metal Corrosion Category 1

Skin Corrosion/Irritation Category 1A

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Section 2 - HAZARDS IDENTIFICATION



EMERGENCY OVERVIEW

HAZARD

DANGER

Determined by using GHS criteria:

H330 H290 H314

Fatal if inhaled

May be corrosive to metals

Causes severe skin burns and eye damage

PRECAUTIONARY STATEMENTS

Prevention

Wear respiratory protection.

Use only outdoors or in a well ventilated area.

Do not breathe dust/fume/gas/mist/vapours/spray.

Do not breathe dust or mist.

Wash thoroughly after handling.

Wear protective gloves/clothing and eye/face protection.

Response

Keep container tightly closed.

IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.

If on skin or hair: remove/take off immediately all contaminated clothing. Rinse with water/shower.

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Wash contaminated clothing before reuse.

Absorb spillage to prevent material damage.

Immediately call a POISON CENTER or doctor/physician.

Specific treatment: refer to Label or MSDS.

Storage

Store locked up.

Store in a corrosive resistant container with a resistant inliner.

Disposal

Dispose of contents and container in accordance with relevant legislation.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
sulfuryl chloride	7791-25-5	>98
on prolonged standing forms		
sulfur dioxide		
chlorine		
contact with moist air or water produces		
hydrogen chloride		

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Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

sulfuric acid

Section 4 - FIRST AID MEASURES

SWALLOWED

Rinse mouth out with plenty of water.

For advice, contact a Poisons Information Centre or a doctor.

- If swallowed do NOT induce vomiting.
- If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
- Observe the patient carefully.
- Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious
- Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.
- Seek medical advice.

EYE

If this product comes in contact with the eyes:

- Immediately hold eyelids apart and flush the eye continuously with running water.
- Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
- Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.
- Transport to hospital or doctor without delay.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

If skin or hair contact occurs:

- Immediately flush body and clothes with large amounts of water, using safety shower if available.
- Quickly remove all contaminated clothing, including footwear.
- Wash skin and hair with running water. Continue flushing with water until advised to stop by the Poisons Information Centre.
- Transport to hospital, or doctor.

INHALED

- If fumes or combustion products are inhaled remove from contaminated area.
- Lay patient down. Keep warm and rested.
- Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
- Transport to hospital, or doctor.

NOTES TO PHYSICIAN

For acute or short term repeated exposures to strong acids:

- Airway problems may arise from laryngeal edema and inhalation exposure. Treat with 100% oxygen initially.
- Respiratory distress may require cricothyroidotomy if endotracheal intubation is contraindicated by excessive swelling
- Intravenous lines should be established immediately in all cases where there is evidence of circulatory compromise.
- Strong acids produce a coagulation necrosis characterised by formation of a coagulum (eschar) as a result of the dessicating action of the acid on proteins in specific tissues.

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Section 4 - FIRST AID MEASURES

INGESTION:

- Immediate dilution (milk or water) within 30 minutes post ingestion is recommended.
- DO NOT attempt to neutralise the acid since exothermic reaction may extend the corrosive injury.
- Be careful to avoid further vomit since re-exposure of the mucosa to the acid is harmful. Limit fluids to one or two glasses in an adult.
- Charcoal has no place in acid management.
- Some authors suggest the use of lavage within 1 hour of ingestion.

SKIN:

- Skin lesions require copious saline irrigation. Treat chemical burns as thermal burns with non-adherent gauze and wrapping.
- Deep second-degree burns may benefit from topical silver sulfadiazine.

EYE:

- Eye injuries require retraction of the eyelids to ensure thorough irrigation of the conjunctival cul-de-sacs. Irrigation should last at least 20-30 minutes. DO NOT use neutralising agents or any other additives. Several litres of saline are required.
 - Cycloplegic drops, (1% cyclopentolate for short-term use or 5% homatropine for longer term use) antibiotic drops, vasoconstrictive agents or artificial tears may be indicated dependent on the severity of the injury.
 - Steroid eye drops should only be administered with the approval of a consulting ophthalmologist).
- [Ellenhorn and Barceloux: Medical Toxicology].

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

- Dry chemical powder.
- BCF (where regulations permit).
- Carbon dioxide.

DO NOT use water.

FIRE FIGHTING

Alert Fire Brigade and tell them location and nature of hazard.

- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water courses.

Use fire fighting procedures suitable for surrounding area.

Cool fire exposed containers with water spray from a protected location.

If safe to do so, remove containers from path of fire.

Equipment should be thoroughly decontaminated after use.

FIRE/EXPLOSION HAZARD

Non combustible liquid.

Will not burn, but heat produces highly toxic fumes/vapours.

Heating may cause expansion or decomposition leading to violent rupture of containers.

Decomposes on heating and produces toxic fumes of: hydrogen chloride and sulfur oxides (SO_x).

FIRE INCOMPATIBILITY

Reacts with mild steel, galvanised steel / zinc producing hydrogen gas which may form an explosive mixture with air.

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Section 6 - ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES

MINOR SPILLS

DO NOT touch the spill material Clean up all spills immediately.
Wear fully protective PVC clothing and breathing apparatus.
Contain and absorb spill with sand, earth, inert material or vermiculite.
Use soda ash or slaked lime to neutralise.
Collect residues and place in labelled plastic containers with vented lids.

MAJOR SPILLS

DO NOT touch the spill material Clear area of personnel and move upwind.
Alert Fire Brigade and tell them location and nature of hazard.
Shut off all possible sources of ignition and increase ventilation.
· Wear full body protective clothing with breathing apparatus.
· Prevent, by any means available, spillage from entering drains or water courses.
Contain and absorb spill with sand, earth, inert material or vermiculite.
Use soda ash or slaked lime, mixed and sprayed with water, to neutralise.
DO NOT USE WATER OR NEUTRALISING AGENTS INDISCRIMINATELY ON LARGE SPILLS.
If contamination of drains or waterways occurs, advise emergency services.
Collect residues and place in labelled plastic containers with vented lids.
Water spray or fog may be used to disperse vapour.
Collect recoverable product into labelled containers for recycling.

Personal Protective Equipment advice is contained in Section 8 of the MSDS.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

Avoid generating and breathing mist and vapour.
Avoid breathing vapours and contact with skin and eyes.
Avoid physical damage to containers.
Use in a well-ventilated area.
Wear protective clothing and gloves when handling containers.
Handle and open container with care.
WARNING: To avoid violent reaction, ALWAYS add material to water and NEVER water to material.
When handling, DO NOT eat, drink or smoke.
Always wash hands with soap and water after handling. Work clothes should be laundered separately.
Use good occupational work practice. Observe manufacturer's storing and handling recommendations.
Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

SUITABLE CONTAINER

Packaging as recommended by manufacturer.
· Check that containers are clearly labelled.
Glass container or Plastic carboy or Polylined drum.

STORAGE INCOMPATIBILITY

Segregate from alkalies, oxidising agents and chemicals readily decomposed by acids, i.e. cyanides, sulfides, carbonates.
Violently reactive on contact with alkalies.

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Section 7 - HANDLING AND STORAGE

Avoid contact with metals.

Incompatible with methyl sulfoxide, dimethylformamide (DMF), lead dioxide, phosphorus, dinitrogen pentoxide, ether (especially if peroxides are present).

STORAGE REQUIREMENTS

Floors should be covered or coated with acid resistant material.

- Keep dry.
- Store in original containers.
- Keep containers securely sealed.
- No smoking, naked lights or ignition sources.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials.
- Protect containers against physical damage.
- Check regularly for leaks.
- Observe manufacturer's storing and handling recommendations.

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS



+: May be stored together

O: May be stored together with specific precautions

X: Must not be stored together

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

The following materials had no OELs on our records

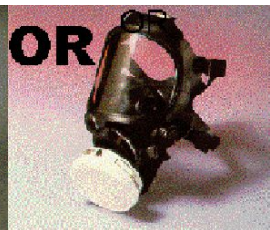
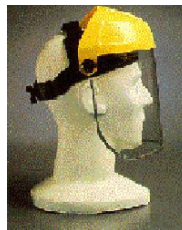
- sulfuryl chloride:

CAS:7791- 25- 5

MATERIAL DATA

None assigned. Refer to individual constituents.

PERSONAL PROTECTION



EYE

- Chemical goggles.
- Full face shield.
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59].

HANDS/FEET

- Barrier cream and Neoprene gloves or Elbow length PVC gloves.
- Nitrile gloves.
- PVC boots or PVC safety gumboots.

OTHER

Operators should be trained in procedures for safe use of this material.

- Acid-resistant overalls or PVC apron or PVC protective clothing.
- Eyewash unit.

Ensure there is ready access to an emergency shower.

RESPIRATOR

Selection of the Class and Type of respirator will depend upon the level of breathing zone contaminant and the chemical nature of the contaminant. Protection Factors (defined as the ratio of contaminant outside and inside the mask) may also be important.

Breathing Zone Level ppm (volume)	Maximum Protection Factor	Half- face Respirator	Full- Face Respirator
1000	10	BE- AUS P	-
1000	50	-	BE- AUS P
5000	50	Airline *	-
5000	100	-	BE- 2 P
10000	100	-	BE- 3 P
	100+		Airline**

* - Continuous Flow

** - Continuous-flow or positive pressure demand.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required.
For further information consult your
Occupational Health and Safety Advisor.

ENGINEERING CONTROLS

Use in a well-ventilated area and Local exhaust ventilation may be required for safe working, i.e. to keep exposures below required standards, otherwise PPE is required. If risk of inhalation or overexposure exists, wear SAA approved respirator or work in fume hood.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Colourless mobile liquid with very pungent odour; slowly decomposed by water. Yellows on standing as a result of the formation of SO₂ and Cl₂. Forms the hydrate (SO₂Cl₂.15H₂O) in ice-cold water which in appearance resembles camphor. Mixes with benzene, toluene, ether, glacial acetic acid and other organic solvents.

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Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL PROPERTIES

Liquid.
Corrosive.
Acid.
Toxic or noxious vapours/gas.
Reacts violently with water.

Molecular Weight: 134.98
Melting Range (°C): - 54.1
Solubility in water (g/L): Reacts
pH (1% solution): Not available
Volatile Component (%vol): 100
Relative Vapour Density (air=1): 4.65
Lower Explosive Limit (%): Not applicable
Autoignition Temp (°C): Not available
State: Liquid

Boiling Range (°C): 69.3
Specific Gravity (water=1): 1.6674
pH (as supplied): Not available
Vapour Pressure (kPa): 13.3 @ 17.8 C
Evaporation Rate: Not available
Flash Point (°C): None
Upper Explosive Limit (%): Not applicable
Decomposition Temp (°C): Not available

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

Contact with alkaline material liberates heat.
Presence of incompatible materials.
Product is considered stable under normal handling conditions.
Hazardous polymerisation will not occur.

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

The material can produce chemical burns within the oral cavity and gastrointestinal tract following ingestion.
Considered an unlikely route of entry in commercial/industrial environments.
Ingestion may result in nausea, abdominal irritation, pain and vomiting.
Ingestion of acidic corrosives may produce circumoral burns with a distinct discolouration of the mucous membranes of the mouth, throat and oesophagus. Immediate pain and difficulties in swallowing and speaking may also be evident. Oedema of the epiglottis may produce respiratory distress and possibly, asphyxia. Nausea, vomiting, diarrhoea and a pronounced thirst may occur. More severe exposures may produce a vomitus containing fresh or dark blood and large shreds of mucosa. Shock, with marked hypotension, weak and rapid pulse, shallow respiration and clammy skin may be symptomatic of the exposure. Circulatory collapse may, if left untreated, result in renal failure. Severe cases may show gastric and oesophageal perforation with peritonitis, fever and abdominal rigidity. Stricture of the oesophageal, gastric and pyloric sphincter may occur as within several weeks or may be delayed for years. Death may be rapid and often results from asphyxia, circulatory collapse or aspiration of even minute amounts. Delayed deaths may be due to peritonitis, severe nephritis or pneumonia. Coma and convulsions may be terminal.

EYE

The material can produce chemical burns to the eye following direct contact. Vapours or mists may be extremely irritating.
When applied to the eye(s) of animals, the material produces severe ocular lesions which

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SULPHURYL CHLORIDE

Section 11 - TOXICOLOGICAL INFORMATION

are present twenty-four hours or more after instillation.

Eye contact is extremely painful and may cause rapid corneal damage.

Direct eye contact with acid corrosives may produce pain, lachrymation, photophobia and burns. Mild burns of the epithelia generally recover rapidly and completely. Severe burns produce long-lasting and possible irreversible damage. The appearance of the burn may not be apparent for several weeks after the initial contact. The cornea may ultimately become deeply vascularised and opaque resulting in blindness.

The material may produce severe irritation to the eye causing pronounced inflammation.

Repeated or prolonged exposure to irritants may produce conjunctivitis.

SKIN

The material can produce chemical burns following direct contact with the skin.

Bare unprotected skin should not be exposed to this material.

The material may accentuate any pre-existing skin condition.

Skin contact with acidic corrosives may result in pain and burns; these may be deep with distinct edges and may heal slowly with the formation of scar tissue.

The material may produce severe skin irritation after prolonged or repeated exposure, and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) thickening of the epidermis.

Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis. Prolonged contact is unlikely, given the severity of response, but repeated exposures may produce severe ulceration.

INHALED

Evidence shows, or practical experience predicts, that the material produces irritation of the respiratory system in a substantial number of individuals following inhalation.

Inhalation hazard is increased at higher temperatures.

Acidic corrosives produce respiratory tract irritation with coughing, choking and mucous membrane damage. Symptoms of exposure may include dizziness, headache, nausea and weakness. In more severe exposures, pulmonary oedema may be evident either immediately or after a latent period of 5-72 hours. Symptoms of pulmonary oedema include a tightness in the chest, dyspnoea, frothy sputum and cyanosis. Examination may reveal hypotension, a weak and rapid pulse and moist rates. Death, due to anoxia, may occur several hours after onset of the pulmonary oedema.

The material may produce respiratory tract irritation. Symptoms of pulmonary irritation may include coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and a burning sensation.

Unlike most organs, the lung can respond to a chemical insult or a chemical agent, by first removing or neutralising the irritant and then repairing the damage (inflammation of the lungs may be a consequence).

The repair process (which initially developed to protect mammalian lungs from foreign matter and antigens) may, however, cause further damage to the lungs (fibrosis for example) when activated by hazardous chemicals. Often, this results in an impairment of gas exchange, the primary function of the lungs. Therefore prolonged exposure to respiratory irritants may cause sustained breathing difficulties.

CHRONIC HEALTH EFFECTS

Principal routes of exposure are usually by skin contact / eye contact with the liquid and inhalation of vapour.

Repeated or prolonged exposure to acids may result in the erosion of teeth, inflammatory and ulcerative changes in the mouth and necrosis (rarely) of the jaw. Bronchial irritation, with cough, and frequent attacks of bronchial pneumonia may ensue.

Gastrointestinal disturbances may also occur. Chronic exposures may result in dermatitis and/or conjunctivitis.

TOXICITY AND IRRITATION

unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

TOXICITY

IRRITATION

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Section 11 - TOXICOLOGICAL INFORMATION

Inhalation (rat) LC50: 131 ppm/1h male *
Inhalation (rat) LC50: 242 ppm/1h female* *
[Sigma/Aldrich]

Nil Reported

Section 12 - ECOLOGICAL INFORMATION

No data for sulfuryl chloride.

Section 13 - DISPOSAL CONSIDERATIONS

Recycle wherever possible. Consult manufacturer for recycling options.
Consult State Land Waste Management Authority for disposal.
Treat and neutralise at an effluent treatment plant.
Bury residue in an authorised landfill.
Decontaminate empty containers with a lime slurry.
Return empty containers to supplier or bury empty containers at an authorised landfill.
For small quantities:

- Neutralise an aqueous solution of the material.
- Filter solids for disposal to approved land fill.
- Flush solution to sewer (subject to local regulation)
- Heat and fumes evolved during reaction may be controlled by rate of addition.

WASTE DISPOSAL PROCEDURES

- Collect and package recoverable quantities of sulfuryl chloride in labelled containers for recycling or disposal. For small quantities of sulfuryl chloride wear nitrile rubber gloves, protective clothing and eye protection to control personal contact. Work in a well ventilated area and pour the sulfuryl chloride into a large evaporating dish. Cover and contain the sodium chloride with excess solid soda ash or calcium carbonate. Once the reaction is complete add the mixture to a container of cold water. Allow to stand for 24 hours. Test the pH of the solution and neutralise sodium carbonate. Empty the solution into the drain [Armour 1996].

SPILLAGE DISPOSAL

- Wear nitrile rubber gloves, protective clothing and eye protection to control personal contact from sulfuryl chloride, where a self contained breathing apparatus if required. Cover and contain the spill with a 1:1:1 mixture by weight of sodium carbonate or calcium carbonate, bentonite and sand. Once the sulfuryl chloride has been absorbed, scoop into a container. Transfer to a well ventilated area. Add to a container of cold water. Allow to stand for 24 hours and if necessary neutralise with sodium carbonate. Empty the solution into the drain. Treat the solid as normal refuse [Armour 1996].

Section 14 - TRANSPORTATION INFORMATION



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Section 14 - TRANSPORTATION INFORMATION

Labels Required: CORROSIVE
HAZCHEM: 4WE

UNDG:

Dangerous Goods Class:	8	Subrisk:	None
UN Number:	1834	Packing Group:	I
Shipping Name:SULPHURYL CHLORIDE			

Maritime Transport IMDG:

IMDG Class:	8	IMDG Subrisk:	None
UN Number:	1834	Packing Group:	I
EMS Number:	F- A, S- B	Special provisions:	None
Shipping Name: SULPHURYL CHLORIDE			

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS:IATA

Section 15 - REGULATORY INFORMATION

REGULATIONS

sulfuryl chloride (CAS: 7791-25-5) is found on the following regulatory lists;
International Council of Chemical Associations (ICCA) - High Production Volume List
OECD Representative List of High Production Volume (HPV) Chemicals
WHO Guidelines for Drinking-water Quality - Chemicals for which guideline values have not been established

Section 16 - OTHER INFORMATION

The above information is believed to be accurate and represent the best information currently available to us, but does not represent any warranty expressed or implied of the properties of the product. User should make their own investigation to determine the suitability of the information for their particular purpose.

Issue Date: 12-May-2018