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MSDS: Carbonyl Sulfide

PRODUCT INFORMATION

PRODUCT: Carbonyl Sulfide
TRADE NAME: Carbonyl Sulfide
CHEMICAL NAME: Carbonyl Sulfide
SYNONYMS: Carbonyl Oxysulfide
FORMULA: COS
CHEMICAL FAMILY: Nonmetal Carbonyl
SUPPLIER'S NAME: MEGS Inc.
SUPPLIER'S ADDRESS: 2675 De Miniac
Ville St-Laurent, Qc, H4S 1E5
EMERGENCY PHONE NUMBER: (514) 956-7503
MOLECULAR WEIGHT: 60.07
PRODUCT USE: Various
**PRODUCT IDENTIFICATION UN 2204
NUMBER:**

HAZARDOUS INGREDIENTS

CHEMICAL ID	CONCENTRATION	CAS #	LD(50)	LC(50)
Carbonyl Sulfide	99+%	463-58-1	IPR-Rat 23 mg/kg	Inhl-Rat 1400 PPM/75 min

PHYSICAL DATA

PHYSICAL STATE: Liquid and gas under pressure
APPEARANCE: Colorless gas and liquid
ODOR: Slight odor
ODOR THRESHOLD: Unknown
SPECIFIC GRAVITY (H₂O = 1): Liquid @ Boiling Point = 1.18
VAPOR PRESSURE: @ 15°C = 964 kPa

VAPOR DENSITY (air = 1): 2.03

EVAPORATION RATE: Unknown

BOILING POINT: -50.23°C

FREEZING POINT: -138.8°C

pH: Acidic (after hydrolysis)

GAS DENSITY: 2.16 kg/m³ @ 15°C, 101.3 kPa

COEFFICIENT OF WATER/OIL @ 15°C, Bunsen Coefficient = 0.677
DISTRIBUTION:

FIRE OR EXPLOSION HAZARD

CONDITIONS OF FLAMMABILITY:	Flammable in air over a wide range
MEANS OF EXTINCTION:	Water, carbon dioxide, dry chemical. "Stop flow of gas before extinguishing fire".
FLASHPOINT AND METHOD OF DETERMINATION:	Not applicable (gas)
UPPER EXPLOSION LIMIT (% BY VOL):	29
LOWER EXPLOSION LIMIT (% BY VOL):	12
AUTO-IGNITION TEMPERATURE:	Unknown
FLAMMABILITY CLASSIFICATION:	Class 1, Group D
HAZARDOUS COMBUSTION PRODUCTS:	Sulfur dioxide
EXPLOSION DATA:	Forms explosive mixtures with oxygen
SENSITIVITY TO STATIC DISCHARGE:	Unknown

REACTIVITY DATA

CHEMICAL STABILITY:	Stable
INCOMPATIBLE MATERIALS:	Oxidizers
CONDITIONS OF REACTIVITY:	None
HAZARDOUS DECOMPOSITION PRODUCTS:	Sulfur dioxide on combustion

TOXICOLOGICAL PROPERTIES

ROUTES OF ENTRY:

SKIN CONTACT: Irritates mucosal tissues and eyes causing redness, swelling and pain.

SKIN ABSORPTION: None

EYE: See Skin Contact, above

INHALATION: Although the technical literature does not report any cases of carbonyl sulfide poisoning in industry, symptoms should be similar to that of toxic poisoning by hydrogen sulfide. They include headache, dizziness, and nausea for low concentrations. Higher concentrations cause respiratory arrest, coma, unconsciousness and death. Pure carbonyl sulfide has only a faint odor warning quality.

INGESTION: None

ACUTE OVER EXPOSURE EFFECTS: It is believed that it partially decomposes in the lungs and in the blood, liberating hydrogen sulfide which is the poisoning agent that reacts with the enzymes in the blood stream thus inhibiting cell respiration and resulting in pulmonary paralysis, sudden collapse and death.

CHRONIC OVER EXPOSURE EFFECTS: None known

EXPOSURE LIMITS: No TWA listed. Should be considered similar to hydrogen sulfide. Hydrogen sulfide has a TWA of 10 molar ppm and an STEL of 15 molar ppm

IRRITANCY OF PRODUCT: See Skin Contact.

SENSITIZATION TO MATERIAL: Not known

CARCINOGENICITY, REPRODUCTIVE EFFECTS: None known

TERATOGENICITY, MUTAGENICITY: None known

TOXICOLOGICALLY SYNERGISTIC PRODUCTS: None known

PREVENTIVE MEASURES

PERSONAL PROTECTIVE EQUIPMENT: Plastic or rubber gloves. Safety goggles or glasses. Safety shoes, safety shower and eyewash "fountain".

SPECIFIC ENGINEERING CONTROLS: Anhydrous carbonyl sulfide may be used at normal temperatures with most metals. Water or moisture slowly decomposes carbonyl sulfide to hydrogen sulfide and carbon dioxide which cause corrosion problems. Moist COS should be handled in 316 stainless steel, 18-8 chromium-nickel steels or aluminum alloys 25 and 35. Teflon®, Kel-F®, Viton A® and Nylon® are the preferred gasketing materials.

LEAK AND SPILL PROCEDURES: EVACUATE ALL PERSONNEL FROM AFFECTED AREA.

Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. If leak is on container or container valve, contact the closest MEGS location.

WASTE DISPOSAL: Do not attempt to dispose of waste or unused quantities. Return in the shipping container properly labeled, with any valve outlet plugs or caps secured and valve protection cap in place to MEGS for proper disposal. For emergency disposal, contact the closest MEGS location.

HANDLING PROCEDURES AND EQUIPMENT: USE ONLY IN WELL-VENTILATED AREAS.

Valve protection caps must remain in place unless container is secured with valve outlet piped to the point of use. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when connecting cylinder to lower pressure piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder. Do not tamper with (valve) safety device. Close valve after each use and when empty.

STORAGE REQUIREMENTS: Protect cylinders from physical damage. Store in cool, dry, well-ventilated area of non combustible construction away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 52°C. Cylinders must be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in - first out" inventory system to prevent full cylinders being stored for excessive periods of time. Post "No Smoking or Open Flames" signs in the storage or use area. There should be no sources of ignition in the storage or use area.

TDG CLASSIFICATION: 2.3 (2.1)

WHMIS CLASSIFICATION: A, B, D1

SPECIAL SHIPPING INFORMATION: Always secure cylinders in an upright position before transporting them. NEVER transport cylinders in trunks of vehicles, enclosed vans, truck cabs or in passenger compartments. Transport cylinders secured in open flatbed or in open pick-up type vehicles.

FIRST AID MEASURES

SPECIFIC FIRST AID PROCEDURES: PROMPT MEDICAL ATTENTION IS

MANDATORY IN ALL CASES OF OVEREXPOSURE TO CARBONYL SULFIDE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS AND BE COGNIZANT OF EXTREME FIRE AND EXPLOSION HAZARD.

INHALATION: Move affected person to an uncontaminated area. If breathing has stopped, give assisted respiration. Oxygen or a mixture 5% carbon dioxide in oxygen should be administered by a qualified person. Keep the victim warm and calm. Seek immediate medical assistance. Continued treatment should be symptomatic and supportive.

EYE CONTACT: PERSONS WITH POTENTIAL EXPOSURE TO CARBONYL SULFIDE SHOULD NOT WEAR CONTACT LENSES.

Flush contaminated eye(s) with copious quantities of water. Part eyelids with fingers to assure complete flushing. Continue for a minimum of 15 minutes.

SKIN CONTACT: Flush affected area with copious quantities of water. Remove affected clothing as rapidly as possible.

PREPARATION INFORMATION

PREPARED BY: Safety Department

DATE PREPARED: 01/01/1999

LAST REVISION DATE: 05/21/2002

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