

SAFETY DATA SHEET



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CARBON DISULFIDE

SDS No. M0029

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Carbon Disulfide

Synonyms: Carbon Bisulfide; Carbon Disulphide, Dithiocarbonic anhydride; Sulphocarbonic anhydride

Recommended Use: This product is recommended for laboratory and manufacturing use only. It is not recommended for drug, food or household use.

2. HAZARDS IDENTIFICATION



Classification:

Flammable Liquids: GHS Category 2

Skin Irritation: GHS Category 2

Eye Irritation: GHS Category 2A

Reproductive Toxicity: GHS Category 2

Specific Organ Toxicity Repeated Exposure, inhalation: GHS Category 1

Acute Aquatic Toxicity: GHS Category 2

Label Elements

Signal Word: DANGER!

Hazard Statements:

H225 – Highly flammable liquid and vapor.

H315 – Causes skin irritation.

H319 – Causes serious eye irritation.

H332 – Harmful if inhaled.

H336 – May cause drowsiness or dizziness.

H361 – Suspected of damaging fertility or the unborn child.

H401 – Toxic to aquatic life.

Precautionary Statements:

P210 – Keep away from heat/sparks/open flames/hot surfaces – No smoking.

P243 – Take precautionary measures against static discharge.

Clear focus. Consistent results. Complete confidence.

P260 – Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.

P280 – Wear protective gloves/protective clothing/eye protection, and face protection.

P303+P361+P353 – IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

P305+P351+P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P403+P235 – Store in a well-ventilated place. Keep cool.

P405 – Store locked up.

P501 – Dispose of contents/ container to an approved waste disposal plant.

Emergency Overview

Harmful if swallowed, inhaled, or absorbed through the skin. Causes eye, skin, and respiratory tract irritation. Aspiration hazard if swallowed. May cause nervous system effects. May increase risk of cardiovascular disease. Known to cause adverse reproductive effects in animals. Extremely flammable liquid and vapor! May cause flash fire. Static electrical hazard. Target Organs: Cardiovascular system, central nervous system, and reproductive system.

HMIS Rating:

Health – 3 Flammability – 4 Physical Hazard – 0 PPE – User supplied

NOTE: HMIS ratings use a numbering scale that ranges from 0 - 4 to indicate the degree of hazard. A value of zero means the chemical presents no hazard while a value of four indicates a high hazard. These ratings are based on the inherent properties of this chemical under expected conditions of normal use and are not intended to be used in emergency situations. PPE is determined by the user based on their needs and conditions.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

<u>Ingredient</u>	<u>CAS No</u>	<u>Percent</u>	<u>Hazardous</u>
Carbon Disulfide	75-15-0	>99%	Yes

4. FIRST-AID MEASURES

Inhalation: If inhaled, remove to fresh air. If breathing is labored, give supplemental oxygen. If not breathing, begin artificial respiration using a suitable mechanical device and oxygen. Get medical aid. Do not use mouth-to-mouth respiration.

Ingestion: Aspiration hazard. Get medical aid immediately. Do not induce vomiting unless directed by medical personnel. If vomiting begins naturally, have victim lean forward. Never give anything by mouth to an unconscious person.

Skin Contact: Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. Dispose of shoes after making unusable.

Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately. Do not allow victim to rub eyes or keep eyes closed.

Notes to Physician: Effects may be delayed. Observe patient.

5. FIRE FIGHTING MEASURES

Flammability: Highly flammable liquid and vapor (GHS Category 2)

Auto-ignition Temperature: 90° C (194° F)

Flash Point: -30° C (-22° F)

Flammable Limits: Lower Limit – 1 vol %, Upper Limit – 60.0 vol %

Products of Combustion: Will decompose into highly toxic and irritating gases (carbon monoxide, carbon dioxide, and oxides of sulfur) under fire conditions.

Specific Fire Hazards: As in any fire, always wear self-contained breathing apparatus in pressure-demand (MSA/NIOSH approved or equivalent), and full protective gear. Use water spray to keep fire exposed containers cool. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Combustion generates toxic fumes. May be ignited by friction, heat, sparks, or flames. Vapors are heavier than air and may travel to a source of ignition and flash back. May accumulate static electricity. Because of very low autoignition temperature, ignition is easily accomplished by contact with

hot surfaces such as light bulbs, steam pipes, or engine exhaust pipes. Vapors can spread along the ground and collect in low or confined areas.

Specific Explosion Hazards: Vapors may form an explosive mixture with air. Containers may explode in the heat of the fire.

Fire Fighting Media: Use water spray, dry chemical, carbon dioxide, or appropriate foam.

Special Remarks: None

National Fire Protective Association: Health - 3, Flammability - 4, Reactivity - 0

NOTE: NFPA ratings use a numbering scale that ranges from 0 - 4 to indicate the degree of hazard. A value of zero means the chemical presents no hazard while a value of four indicates a high hazard. They are for use by emergency personnel to address the hazards that are presented by short term, acute exposure to this product under fire, spill, or similar emergencies. Ratings involve data and interpretations that may vary from company to company.

6. ACCIDENTAL RELEASE MEASURES

Absorb spilled liquid with sorbent pads, socks, or other inert material such as vermiculite, sand, or earth. Provide ventilation to the affected area and remove all ignition sources. Avoid run-off into storm sewers and ditches that lead to waterways. Approach the spill from upwind and pick up absorbed material and place it in a suitable container. Evacuate unnecessary personnel. Use only non-sparking tools and equipment. Use water spray to cool and disperse vapors. Always use proper personal protective equipment as described in section 8.

7. HANDLING AND STORAGE

Precautions: Always use proper personal protective equipment as described in section 8. Wash thoroughly after handling. Ground and bond containers when transferring material. Avoid contact with eyes, skin, and clothing. Remove contaminated clothing and wash before reuse. Empty containers contain product residue (liquid and vapor) and can be dangerous. Keep container tightly closed and away from heat, spark, and flame. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks, or open flames. Use with adequate ventilation. Avoid breathing vapor.

Storage: Keep in a flammables area away from all sources of ignition and oxidizing materials. Keep in a tightly closed container and store under a nitrogen blanket. Store in a cool, dry, well-ventilated area away from incompatible substances. Store locked up.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Use explosion-proof ventilation equipment. Facilities storing or using the material should be equipped with eyewash station and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Personal Protection: Wear protective chemical goggles or appropriate eye protection. Use butyl rubber gloves and protective clothing to prevent skin exposure. A respiratory protection program that meets OSHA 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever possible. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

Exposure Limits:

ACGIH – 10 ppm TWA; Skin – potential significant contribution to overall exposure by cutaneous route

NIOSH – 1 ppm TWA; 3 mg/m³ TWA; 500 ppm IDLH

OSHA Final PELs – 20 ppm TWA; 30 ceiling

OSHA Vacated PELs – 4 ppm TWA; 12 mg/m³ TWA

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State and Appearance: Clear, colorless to pale yellow liquid.

Odor: Strong, rotten egg-like stench

Odor Threshold: 200+ ppm

Molecular Formula: CS₂

Molecular Weight: 76.13

Auto-ignition Temperature: 90° C (194° F)

Flash Point: -30° C (-22° F)

Flammable Limits: Lower Limit – 1 vol %, Upper Limit – 60.0 vol %

pH: Not available

Boiling Point: 46 °C / 114.8 °F @ 760 mmHg

Freezing/Melting Point: -111 °C / -167.8 °F

Decomposition Temperature: Not available

Specific Gravity (water = 1): 1.262

Evaporation Rate: 22.6 (n-Butyl acetate = 1)

Vapor Density (Air=1): 2.67

Vapor Pressure: 297.5 mm Hg @ 20° C

Viscosity: 0.363 cps 20° C

Solubility: 0.294% @ 20°C

Conductivity: Nonconductive; Conductivity = 7.8×10^{-4} pS/m; Dielectric Constant = 2.6; Relaxation Time Constant = ~100 seconds (dissipation)

10. STABILITY AND REACTIVITY

Stability: Stable under normal temperature and pressure. Exposure to ultraviolet radiation from sunlight may cause carbon disulfide vapor to ignite and explode.

Conditions to Avoid: Ignition sources, friction, heat, extreme temperatures, confined spaces, direct sunlight.

Incompatibility with Various Substances: Strong oxidizing agents, strong reducing agents, alkali metals, amines, halogens, azides, chemically active metals, air rust.

Hazardous Decomposition Products: Carbon monoxide, oxides of sulfur, carbon, dioxide.

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Routes of Entry: Inhalation, skin absorption, skin contact

Acute Exposure Hazards:

INHALATION HAZARD: Intoxication can involve all parts of the central and peripheral nervous systems, including damage to the nerves from paresthesia, muscle weakness, unsteady gait, and tremors. Exposure may accelerate the development or worsen coronary heart disease.

INGESTION HAZARD: May cause disturbances of the digestive tract. May cause effects similar to those of inhalation exposure. Aspiration into lungs may cause chemical pneumonitis, which may be fatal. May cause central nervous system damage. Ingestion may cause convulsions, seizures, and possible coma.

SKIN CONTACT HAZARD: Causes skin irritation. May be absorbed through the skin in harmful amounts. Prolonged or repeated skin contact may produce severe irritation or dermatitis. Dermatitis and vesiculation from skin contact with vapor and liquid. Dermal contact with concentrated solution may cause burning pain, erythema, and exfoliation.

EYE CONTACT HAZARD: May cause severe eye irritation.

Chronic Exposure Hazards: Prolonged or repeated exposure can cause psychic abnormalities, such as anxiety, depression, and excitability. May cause reproductive and fetal effects. Chronic exposure may cause visual disturbances. Repeated exposure may cause central and peripheral nervous damage and digestive tract disturbances. Chronic exposure may cause coronary heart disease. Chronic toxicity of carbon disulfide includes marked psychic disturbances ranging from extreme irritability to mania with hallucinations, tremors, auditory and visual disturbances, weight loss, and blood dyscrasias.

Animal Toxicity:

Inhalation, mouse: LC50 = 10 gm/m³/2H;

Inhalation, mouse: LC50 = 10,000 gm/m³;

Inhalation, rat: LC50 = 25 mg/m³/2H;

Inhalation, rat: LC50 = 25,000 mg/m³;

Inhalation, rat: LC50 = 1000 mg/m³;

Oral, mouse: LD50 = 2780 mg/kg;

Oral, rabbit: LD50 = 2550 mg/kg;

Oral, rat: LD50 = 1200 mg/kg;

Carcinogenicity: Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65

Epidemiology: Based on the results of studies of workers exposed to carbon disulfide and supporting data from animal studies, the nervous system appears to be the critical target for carbon disulfide induced toxicity, manifested most often as reduced conduction velocity in the peripheral nerves and impaired performance in psychomotor testing. Other effects for which there is considerable weight of evidence for humans exposed to carbon disulfide alteration in serum lipids and blood pressure that are associated with increase risk of cardiovascular disease, systemic ophthalmological effects, including those on color vision and damage to the blood vessels of the retina, and (with higher exposures) increased mortality from heart disease.

Teratogenicity: Animal studies have indicated behavioral effects and reduced weight gain by rat inhalation. Premature fetal death and stunted fetuses were shown by rat inhalation and the oral route. Specific developmental abnormalities included craniofacial abnormalities including the nose and tongue by rat inhalation, effects on the eyes, ears, and homeostatic by rat inhalation, and other unspecified abnormalities by the oral route in rabbits.

Reproductive Effects: Hypospermia, abnormal sperm morphology, menstrual cycle irregularities and pain have been reported in humans. Effects on fertility and paternal effects have been reported in animal studies by oral and inhalation routes. These included effects on the prostate, seminal vesicle, Cowper gland, urethra, and spermatogenesis. Some studies have found no adverse effects.

Mutagenicity: Sister Chromatid Exchange: human lymphocyte 10,200 ug/L.

Neurotoxicity: Neurotoxic effects have occurred in experimental animals. Neurotoxic effects have occurred in humans.

12. ECOLOGICAL INFORMATION

Ecotoxicity: Mosquito fish (fresh water) TLm=35 ppm/48H; Sunfish LC100=100 ug/L/H; Trout LC100=500 ug/L/0.1H

Environmental Fate: When released to soil, substance volatilizes, leaches, and may biodegrade. The product is expected to be harmful to aquatic life. In water, substance volatilizes. In air, substance biodegrades by reaction with atomic oxygen and hydroxyl radicals. Substance does not have potential to bioconcentrate. Soil mobility is predicted to be high.

13. DISPOSAL CONSIDERATIONS

Material that cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Processing, use or contamination of this product may change the waste management options. Waste generators must decide if discarded material is a hazardous waste. State and local disposal regulations may differ from federal disposal definitions found in 40 CFR 261.3. Dispose of container and unused contents in accordance with federal, state and local requirements. This material is listed as P022 under 40 CFR 261.

14. TRANSPORT INFORMATION

DOT (US):

UN number: 1131 Class: 3 (6.1) Packing group: I

Proper shipping name: Carbon disulfide

Reportable Quantity (RQ): 100 lbs

Poison Inhalation Hazard: No

IMDG:

UN number: 1131 Class: 3 (6.1) Packing group: I EMS-No: F-E, S-D

Proper shipping name: CARBON DISULPHIDE

IATA:

IATA UN number: 1131 Class: 3 (6.1)

Proper shipping name: Carbon disulphide

IATA Passenger: Not permitted for transport

IATA Cargo: Not permitted for transport

Canada TDG

Additional Information: Flashpoint -30 C

15. REGULATORY INFORMATION

US Federal Regulations:

TSCA: CAS# 75-15-0 is listed on the TSCA Inventory.

Health and Safety Reporting List: CAS# 75-15-0 is not listed.

Chemical Test Rules: CAS# 75-15-0 Testing required by manufactures and processors

Section 12b: CAS# 75-15-0 Section 4.

TSCA Significant New Use Rule: Does not have an SNUR under TSCA.

CERCLA Hazardous Substances: CAS# 75-15-0 – 100 lb final RQ; 45.4 kg final RQ

SARA Section 302: 10,000 lb TPQ

SARA Codes: CAS# 75-15-0– immediate, delayed, fire

Section 313: Carbon Disulfide (CAS# 75-15-0) is subject to SARA Title III Section 313 and 40 CFR 373 reporting requirements.

Clean Air Act: CAS# 75-15-0 is listed as a hazardous air pollutant (HAP). It is not a Class 1 Ozone Depleter. It is not a Class 2 Ozone Depleter.

Clean Water Act: CAS# 75-15-0 is listed as a Hazardous Substance. It is not a Priority Pollutant. It is not a Toxic Pollutant.

OSHA: Not considered highly hazardous by OSHA.

US State Regulations:

CAS# 75-15-0 is on the following state right-to-know lists: California, New Jersey, Pennsylvania, Minnesota, and Massachusetts

California Prop 65: The following statement is made in order to comply with the California State Drinking Water Act:

Warning: This product contains Carbon disulfide, a chemical known to the state of California to cause male reproductive toxicity.

California No Significant Risk Level: Not listed

Canada:

DSL/NDL: CAS# 75-15-0 is listed on Canada's DSL list.

WHMIS: This product has a WHMIS classification of B2, D1B, D2A, D2B. This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and this MSDS contains all the information required by those regulations.

Ingredient Disclosure List: CAS# 75-15-0 is listed on Canada's Ingredient Disclosure List.

DSCL (EEC):

Hazard Symbols: T; F

Risk Phrases: R11 – Highly Flammable; R36/38 – Irritating to eyes and skin; R48/23 – Toxic: danger of serious damage to health by prolonged exposure through inhalation; R62 - Possible risk of impaired fertility; R6s – Possible risk of harm to the unborn child.

Safety Phrases: S16 – Keep away from sources of ignition-no smoking; S33 – Take precautionary measures against static discharge; S36/37 – Wear suitable protective clothing and gloves; S45 – In case of accident, or if you feel unwell, seek medical advice immediately (shoe label where possible).

WGK (Water Danger/protection): CAS# 75-15-0: 2

16. OTHER INFORMATION

Originally Prepared: 10/24/2006

Last Revised: 07/22/2020 – updated hazard and precautionary statements.

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