

## Chemical Safety Data Sheet MSDS / SDS

## S-4-chlorobenzyl diethylthiocarbamate SDS

Revision Date:2024-04-25 Revision Number:1

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**SECTION 1: Identification of the substance/mixture and of the company/undertaking****Product identifier**

Product name: S-4-chlorobenzyl diethylthiocarbamate

CAS: 28249-77-6

**Relevant identified uses of the substance or mixture and uses advised against**

Relevant identified uses: For R&amp;D use only. Not for medicinal, household or other use.

Uses advised against: none

**Company Identification**

Company: Chemicalbook.in

Address: 5 vasavi Layout Basaveswara Nilayam Pragathi Nagar Hyderabad, India -500090

Telephone: +91 9550333722

**SECTION 2: Hazards identification****Classification of the substance or mixture**

Acute toxicity - Category 4, Oral

Hazardous to the aquatic environment, short-term (Acute) - Category Acute 1

Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 1

**GHS label elements, including precautionary statements**

Pictogram(s)



Signal word

Warning

**Hazard statement(s)**

H302 Harmful if swallowed

H410 Very toxic to aquatic life with long lasting effects

**Precautionary statement(s)**

**Prevention**

P264 Wash ... thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P273 Avoid release to the environment.

**Response**

P301+P317 IF SWALLOWED: Get medical help.

P330 Rinse mouth.

P391 Collect spillage.

**Storage**

none

**Disposal**

P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

**Other hazards which do not result in classification**

no data available

**SECTION 3: Composition/information on ingredients**

**Substance**

Chemical name:	S-4-chlorobenzyl diethylthiocarbamate
Common names and synonyms:	S-4-chlorobenzyl diethylthiocarbamate
CAS number:	28249-77-6
EC number:	248-924-5
Concentration:	100%

**SECTION 4: First aid measures****Description of necessary first-aid measures****If inhaled**

Move the victim into fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and consult a doctor immediately. Do not use mouth to mouth resuscitation if the victim ingested or inhaled the chemical.

**Following skin contact**

Take off contaminated clothing immediately. Wash off with soap and plenty of water. Consult a doctor.

**Following eye contact**

Rinse with pure water for at least 15 minutes. Consult a doctor.

**Following ingestion**

Rinse mouth with water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a doctor or Poison Control Center immediately.

**Most important symptoms/effects, acute and delayed**

Excerpt from ERG Guide 171 [Substances (Low to Moderate Hazard)]: Inhalation of material may be harmful. Contact may cause burns to skin and eyes. Inhalation of Asbestos dust may have a damaging effect on the lungs. Fire may produce irritating, corrosive and/or toxic gases. Some liquids produce vapors that may cause dizziness or suffocation. Runoff from fire control may cause pollution. (ERG, 2016)

**Indication of immediate medical attention and special treatment needed, if necessary**

Skin decontamination: Skin contamination should be treated promptly by washing with soap and water. Contamination of the eyes should be treated immediately by prolonged flushing of the eyes with large amounts of clean water. If dermal or ocular irritation persists, medical attention should be obtained without delay.

## **SECTION 5: Firefighting measures**

### **Suitable extinguishing media**

Excerpt from ERG Guide 171 [Substances (Low to Moderate Hazard)]: **SMALL FIRE:** Dry chemical, CO<sub>2</sub>, water spray or regular foam. **LARGE FIRE:** Water spray, fog or regular foam. Do not scatter spilled material with high-pressure water streams. Move containers from fire area if you can do it without risk. Dike fire-control water for later disposal. **FIRE INVOLVING TANKS:** Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. **ALWAYS** stay away from tanks engulfed in fire. (ERG, 2016)

### **Specific hazards arising from the chemical**

Excerpt from ERG Guide 171 [Substances (Low to Moderate Hazard)]: Some may burn but none ignite readily. Containers may explode when heated. Some may be transported hot. For UN3508, be aware of possible short circuiting as this product is transported in a charged state. (ERG, 2016)

### **Special protective actions for fire-fighters**

Wear self-contained breathing apparatus for firefighting if necessary.

## **SECTION 6: Accidental release measures**

### **Personal precautions, protective equipment and emergency procedures**

Avoid dust formation. Avoid breathing mist, gas or vapours. Avoid contacting with skin and eye. Use personal protective equipment. Wear chemical impermeable gloves. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

### **Environmental precautions**

Prevent further spillage or leakage if it is safe to do so. Do not let the chemical enter drains. Discharge into the environment must be avoided.

### **Methods and materials for containment and cleaning up**

Do not contaminate /downstream/ water when disposing of equipment washwaters. Bolero 8 EC Herbicide

## **SECTION 7: Handling and storage**

### **Precautions for safe handling**

Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

### **Conditions for safe storage, including any incompatibilities**

Do not contaminate water, food or feed by storage ... Keep pesticide in original container. Do not put concentrate or dilute into food or drink containers. Store in cool, dry place. Protect from excessive heat. Bolero 8 EC Herbicide

## **SECTION 8: Exposure controls/personal protection**

### **Control parameters**

#### **Occupational Exposure limit values**

no data available

#### **Biological limit values**

no data available

### **Appropriate engineering controls**

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

### **Individual protection measures, such as personal protective equipment (PPE)**

#### **Eye/face protection**

Wear tightly fitting safety goggles with side-shields conforming to EN 166(EU) or NIOSH (US).

#### **Skin protection**

Wear fire/flame resistant and impervious clothing. Handle with gloves. Gloves must be inspected prior to use. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived

from it.

### Respiratory protection

If the exposure limits are exceeded, irritation or other symptoms are experienced, use a full-face respirator.

### Thermal hazards

no data available

## SECTION 9: Physical and chemical properties and safety characteristics

Physical state:	Thiobencarb is a pale yellow to brownish yellow liquid. Non corrosive. Used as an herbicide.
Colour:	Clear, colorless liquid
Odour:	Slight aromatic odor
Melting point/freezing point:	3.3°C
Boiling point or initial boiling point and boiling range:	126-129°C
Flammability:	no data available
Lower and upper explosion limit/flammability limit:	no data available
Flash point:	165.8°C
Auto-ignition temperature:	no data available
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	no data available

Solubility:	In water, 28.0 mg/L at 25 deg C
Partition coefficient n-octanol/water:	log Kow = 3.40
Vapour pressure:	4.38E-05mmHg at 25° C
Density and/or relative density:	1.179 g/cm3
Relative vapour density:	no data available
Particle characteristics:	no data available

## SECTION 10: Stability and reactivity

### Reactivity

Thio and dithiocarbamates slowly decompose in aqueous solution to form carbon disulfide and methylamine or other amines. Such decompositions are accelerated by acids.

### Chemical stability

Stable under acid and moderately alkaline conditions.

### Possibility of hazardous reactions

THIOBENCARB is a thiocarbamate. Flammable gases are generated by the combination of thiocarbamates and dithiocarbamates with aldehydes, nitrides, and hydrides. Thiocarbamates and dithiocarbamates are incompatible with acids, peroxides, and acid halides.

### Conditions to avoid

no data available

### Incompatible materials

no data available

### **Hazardous decomposition products**

When heated to decomposition it emits very toxic fumes of /hydrogen chloride, nitrogen oxides, and sulfur oxides/.

## **SECTION 11: Toxicological information**

### **Acute toxicity**

Oral: LD50 Rat oral 1300 mg/kg

Inhalation: LC50 Rat inhalation > 42.8 mg/L (1 hour)

Dermal: LD50 Rat percutaneous 2900 mg/kg

### **Skin corrosion/irritation**

no data available

### **Serious eye damage/irritation**

no data available

### **Respiratory or skin sensitization**

no data available

### **Germ cell mutagenicity**

no data available

### **Carcinogenicity**

Cancer Classification: Group D Not Classifiable as to Human Carcinogenicity

### **Reproductive toxicity**

no data available

### **STOT-single exposure**

no data available



**STOT-repeated exposure**

no data available

**Aspiration hazard**

no data available

**SECTION 12: Ecological information****Toxicity**

Toxicity to fish: LC50; Species: *Lepomis macrochirus* (Bluegill) weight 0.6 g; Conditions: static bioassay without aeration, 20 deg C, pH 7.2-7.5, water hardness 40-50 mg/L as calcium carbonate and alkalinity of 30-35 mg/L. Concentration: 2.5 mg/L for 96 hr /95% confidence interval 1.7-3.7 mg/L) wt 0.6 g in a /liquid 95.5%

Toxicity to daphnia and other aquatic invertebrates: EC50; Species: *Daphnia magna* (Water Flea) age <24 hr; Conditions: freshwater, flow through; Concentration: 9 ug/L for 21 days (95% confidence interval: 5-15 ug/L); Effect: intoxication, immobilization /95% purity formulation

Toxicity to algae: EC50; Species: *Chlorella vulgaris* (Green Algae) 1X10<sup>4</sup> cells/mL, CCAP 211/11B; Conditions: freshwater, static, 25-28 deg C; Concentration: 3277 ug/L for 72 hr (95% confidence interval: 2565-4185 ug/L); Effect: population changes, general /99.5% purity

Toxicity to microorganisms: no data available

**Persistence and degradability**

AEROBIC: In soil studies, (14)C-benethiocarb was degraded to about 20 compounds detectable by TLC. In addition to unchanged benthocarb, desethyl benthocarb, benthocarb sulfoxide, 4-chlorobenzoic acid, 2-hydroxybenthocarb, 4-chlorobenzyl methyl sulfone, 4-chlorobenzyl methyl sulfoxide, and 4-chlorobenzyl alcohol, were observed. Under oxidative conditions, benthocarb was rapidly degraded and (14)CO<sub>2</sub> was released from (14)C ring-labeled benthocarb. Degradation was much slower under reductive flooded conditions.

**Bioaccumulative potential**

Using a continuous-flow water system and a 14-day exposure period, a thiobencarb BCF of 170 was measured in a freshwater fish (topmouth gudgeon, *Pseudorasbora parva*)(1). Using a continuous-flow water system and a 14 day exposure period, a thiobencarb BCF of 66 was measured in a freshwater fish (willow shiner, *Gnathopogon caeruleus*)(2). Average BCFs of 209 and 523 were calculated for pale chub (*Zacco platypus*) and ayu sweetfish (*Plecoglossus altivelis*), respectively, collected from Japanese rivers by measuring the water concentration and the concentration in fish(3). Thiobencarb residues accumulated in juvenile bluegill sunfish

(*Lepomis macrochirus*) exposed to 14C-thiobencarb at 0.05 mg/L, with maximum bioconcentration factors of 128, 639, and 411 for edible (muscle) tissue, nonedible tissue, and whole fish, respectively(4); by day 3 of the depuration period, 93-95% of the accumulated 14C residues were eliminated from the tissues(4). Pale chub, ayu sweetfish, and dark chub (*Zacco temminckii*) collected in rivers flowing into Lake Biwa, Japan between 1992-1994 had field BCFs of 68, 56, and 248, respectively(5). Willow shiner, topmouth gudgeon, and killifish (*Pryzias latipes*) had laboratory BCFs of 65, 170 and 382, respectively(5). In a laboratory experiment, /bighead carp/ *Aristichthys nobilis* had BCFs of 714 and 1772 (calculated using homogenized tissue) for initial thiobencarb concentration of 88 and 9 umol/L, respectively(6). According to a classification scheme(7), these BCFs suggest the potential for bioconcentration in aquatic organisms is moderate to high(SRC).

### **Mobility in soil**

Koc values of 309 and 1043 were measured for thiobencarb in two Japanese soils (respective organic carbon contents of 1.35 and 4.24%)(1). The US Dept of Agric's Pesticide Properties Database has selected a recommended thiobencarb Koc value of 900 based on multiple reported Koc values(2). An average Koc of 5000 was measured in four different soil types (organic carbon content of 0.2-6.8%)(3). Using three Florida soils, Koc values of 765, 539 and 1195 were measured in Pahokee muck (48.6% organic carbon), Everglades muck (34.1% organic carbon) and Immokalee sand (1.1% organic carbon) respectively(4). According to a suggested classification scheme(5), Koc values ranging from 309-5000 suggest that thiobencarb is expected to have moderate to slight mobility in soil. In laboratory and greenhouse mobility studies using these soils, more than 93% of all applied thiobencarb remained in the upper 1 cm after leaching during unsaturated flow(6). In lysimeter leaching studies using a mineral alluvial soil and a humic volcanic ash soil, thiobencarb did not leach below the 15 cm level(7); greater than 60% of applied thiobencarb remained in the upper 5 cm level(7). In greenhouse studies using flooded Australian rice growing soils, 65-70% of applied thiobencarb was recovered from the 0-1 cm layer of soil while less than 2% was recovered from each layer down to 10 cm(8). A field study in a paddy in India found that no leaching or percolation of thiobencarb occurred from the 6-12 inch soil layer(9).

### **Other adverse effects**

no data available

## **SECTION 13: Disposal considerations**

### **Disposal methods**

#### **Product**

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

#### **Contaminated packaging**

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be

punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

## SECTION 14: Transport information

### UN Number

ADR/RID: Not dangerous goods. (For reference only, please check.)

IMDG: Not dangerous goods. (For reference only, please check.)

IATA: Not dangerous goods. (For reference only, please check.)

### UN Proper Shipping Name

ADR/RID: Not dangerous goods. (For reference only, please check.)

IMDG: Not dangerous goods. (For reference only, please check.)

IATA: Not dangerous goods. (For reference only, please check.)

### Transport hazard class(es)

ADR/RID: Not dangerous goods. (For reference only, please check.)

IMDG: Not dangerous goods. (For reference only, please check.)

IATA: Not dangerous goods. (For reference only, please check.)

### Packing group, if applicable

ADR/RID: Not dangerous goods. (For reference only, please check.)

IMDG: Not dangerous goods. (For reference only, please check.)

IATA: Not dangerous goods. (For reference only, please check.)

### Environmental hazards

ADR/RID: Yes

IMDG: Yes

IATA: Yes

### Special precautions for user

no data available

Transport in bulk according to IMO instruments

no data available

## **SECTION 15: Regulatory information**

Safety, health and environmental regulations specific for the product in question

European Inventory of Existing Commercial Chemical Substances (EINECS)

Listed.

EC Inventory

Listed.

United States Toxic Substances Control Act (TSCA) Inventory

Not Listed.

China Catalog of Hazardous chemicals 2015

Not Listed.

New Zealand Inventory of Chemicals (NZIoC)

Not Listed.

(PICCS)

Listed.

Vietnam National Chemical Inventory

Listed.

IECSC)

Listed.

Korea Existing Chemicals List (KECL)

Listed.

## SECTION 16: Other information

### Abbreviations and acronyms

CAS: Chemical Abstracts Service

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

RID: Regulation concerning the International Carriage of Dangerous Goods by Rail

IMDG: International Maritime Dangerous Goods

IATA: International Air Transportation Association

TWA: Time Weighted Average

STEL: Short term exposure limit

LC50: Lethal Concentration 50%

LD50: Lethal Dose 50%

EC50: Effective Concentration 50%

### References

IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>

HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>

IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>

eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website:  
[http://www.echemportal.org/echemportal/index?pagelD=0&request\\_locale=en](http://www.echemportal.org/echemportal/index?pagelD=0&request_locale=en)

CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>

ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>

ERG - Emergency Response Guidebook by U.S. Department of Transportation, website:  
<http://www.phmsa.dot.gov/hazmat/library/erg>

Germany GESTIS-database on hazard substance, website: <http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>

ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>

Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. We as supplier shall not be held liable for any

