

# SAFETY DATA SHEETS

According to the UN GHS revision 9

Version: 1.1  
Creation Date: July 15, 2019  
Revision Date: April 24, 2024

## SECTION 1: Identification

### 1.1 GHS Product identifier

Product name Disulfoton

### 1.2 Other means of identification

Product number CCPD102153

Other names O,O-diethyl S-[2-(ethylsulfanyl)ethyl] phosphorodithioate; Thiodemeton; S-2-ethylthioethyl O,O-diethyl phosphorodithioate

### 1.3 Recommended use of the chemical and restrictions on use

Identified uses For laboratory and Industrial use only.

Uses advised against no data available

### 1.4 Supplier's details

Company CATO Research Chemicals Inc.

Address 3/F,Building B,No.179 BASIGO, Guangpu Rd East,Huangpu Dist,Guangzhou

Telephone +86-20-81960175

### 1.5 Emergency phone number

Emergency phone number +86-20-81960175

Service hours 'Monday to Friday, 9am-5pm (Standard time zone: UTC/GMT +8 hours).

## SECTION 2: Hazard identification

### 2.1 Classification of the substance or mixture

Acute toxicity - Category 2, Oral

Acute toxicity - Category 1, Dermal

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

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

### 2.2 GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Danger

Hazard statement(s)

H300 Fatal if swallowed

H310 Fatal in contact with skin

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.

P262 Do not get in eyes, on skin, or on clothing.

P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...

P273 Avoid release to the environment.

Response

P301+P316 IF SWALLOWED: Get emergency medical help immediately.

P321 Specific treatment (see ... on this label).

P330 Rinse mouth.

P302+P352 IF ON SKIN: Wash with plenty of water/...

P316 Get emergency medical help immediately.

P361+P364 Take off immediately all contaminated clothing and wash it before reuse.

P391 Collect spillage.

Storage

P405 Store locked up.

**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.

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

no data available

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

**3.1 Substances**

| Chemical name | Common names and synonyms | CAS number | EC number | Concentration |
|---------------|---------------------------|------------|-----------|---------------|
| Disulfoton    | Disulfoton                | 298-04-4   | 206-054-3 | 100%          |

**SECTION 4: First-aid measures**

**4.1 Description of necessary first-aid measures**

**If inhaled**

Fresh air, rest. Half-upright position. Artificial respiration may be needed. Refer for medical attention.

**Following skin contact**

Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer for medical attention.

**Following eye contact**

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

**Following ingestion**

Rinse mouth. Induce vomiting (ONLY IN CONSCIOUS PERSONS!). Refer for medical attention.

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

It is classified as super toxic. Probable oral lethal dose in humans is less than 5 mg/kg or a taste (less than 7 drops) for a 70 kg (150 lb.) person. It is poisonous and may be fatal if inhaled, swallowed, or absorbed through the skin. Contact may cause burns to skin and eyes. (EPA, 1998)

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

Basic treatment: Establish a patent airway. Suction if necessary. Aggressive airway control may be needed. Watch for signs of respiratory insufficiency and assist ventilations if necessary. Administer oxygen by nonrebreather mask at 10 to 15 L/min. Monitor for pulmonary edema and treat if necessary. Monitor for shock and treat if necessary. Anticipate seizures and treat if necessary. For eye contamination, flush eyes immediately with water. Irrigate each eye continuously with normal saline during transport. Do not use emetics. For ingestion, rinse mouth and administer 5 ml/kg up to 200 ml of water for dilution if the patient can swallow, has a strong gag reflex, and does not drool. Administer activated charcoal. Organophosphates and related compounds

**SECTION 5: Fire-fighting measures**

**5.1 Suitable extinguishing media**

If material is on fire or involved in a fire: Do not extinguish fire unless flow can be stopped. Use water in flooding quantities as fog. Solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water. Apply water from as far a distance as possible. Use foam, dry chemical, or carbon dioxide. Keep run-off water out of sewers and water sources. Disulfoton mixture (Organophosphorus pesticides, liquid, nos)

**5.2 Specific hazards arising from the chemical**

Material may burn but does not ignite easily. Cylinder may explode in the heat of fire. Poisonous gases may be generated from the fire or runoff water. Oxidizable in air. (EPA, 1998)

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

Use water spray, powder, foam, carbon dioxide.

**SECTION 6: Accidental release measures**

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

Personal protection: chemical protection suit including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Ventilation. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

**6.2 Environmental precautions**

Ventilation. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations. Do NOT let this chemical enter the environment. Personal protection: chemical protection suit including self-contained breathing apparatus.

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

Spillages of pesticides at any stage of their storage or handling should be treated with great care. Liquid formulation volumes may be reduced ... by evaporation. Dry sweeping of solids is always hazardous: These should be removed by vacuum cleaning or by dissolving them in water or other solvent in the factory environment. Pesticides

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

NO open flames. 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.

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

Provision to contain effluent from fire extinguishing. Separated from food and feedstuffs. Well closed. Store in original container, preferably in a locked area, away from children, food, feed.

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

#### Occupational Exposure limit values

TLV: 0.05 mg/m<sup>3</sup>, as TWA; (skin); A4 (not classifiable as a human carcinogen); BEI issued

#### Biological limit values

no data available

### 8.2 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.

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

#### Eye/face protection

Wear face shield or eye protection in combination with breathing protection.

#### Skin protection

Protective gloves. Protective clothing.

#### Respiratory protection

Use ventilation, local exhaust or breathing protection.

#### Thermal hazards

no data available

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

|                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Physical state</b>                                           | Disulfoton is a dark, yellow, oily liquid with a characteristic sulfur odor. It is a water emulsifiable liquid. It is toxic by inhalation, skin absorption, and/or ingestion. Exposure to skin or eyes may cause burns. It is combustible but does not ignite easily. When exposed to high temperature this material may emit toxic fumes. It is used as a pesticide. May be found in the form of a dry mixture where the liquid is absorbed onto a dry carrier. |
| <b>Colour</b>                                                   | Pure compound: yellow liquid                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Odour</b>                                                    | Characteristic, sulfur odor.                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Melting point/freezing point</b>                             | Greater than -13° F (EPA, 1998)                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Boiling point or initial boiling point and boiling range</b> | 330.8°C at 760 mmHg                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Flammability</b>                                             | Combustible Liquid, but will not ignite easily.                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Lower and upper explosion limit/flammability limit</b>       | no data available                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Flash point</b>                                              | 133°C                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Auto-ignition temperature</b>                                | no data available                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Decomposition temperature</b>                                | no data available                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>pH</b>                                                       | no data available                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Kinematic viscosity</b>                                      | no data available                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Solubility</b>                                               | 0.003 % at 73° F (NIOSH, 2016)                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Partition coefficient n-octanol/water</b>                    | log Kow = 4.02                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Vapour pressure</b>                                          | 0.000313mmHg at 25°C                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Density and/or relative density</b>                          | 1.176 g/cm <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Relative vapour density</b>                                  | no data available                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Particle characteristics</b>                                 | no data available                                                                                                                                                                                                                                                                                                                                                                                                                                                |

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

Decomposes on burning. This produces toxic fumes including phosphorus oxides and sulfur oxides.

## 10.2 Chemical stability

Oxidizable in air /srp: to sulfoxides, sulfoxones and their oxones/.

## 10.3 Possibility of hazardous reactions

Flammable in xylene solution. DISULFOTON is incompatible with the following: Alkalis (NIOSH, 2016). Organothiophosphates, such as DISULFOTON, are susceptible to formation of highly toxic and flammable phosphine gas in the presence of strong reducing agents such as hydrides. Partial oxidation by oxidizing agents may result in the release of toxic phosphorus oxides.

## 10.4 Conditions to avoid

no data available

## 10.5 Incompatible materials

Alkalis.

## 10.6 Hazardous decomposition products

Decomposition half-life/ (22 deg C) 133 days (pH 4), 169 days (pH 7), 131 days (pH 9). Photolysis DT50 1-4 days.

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# SECTION 11: Toxicological information

### Acute toxicity

- Oral: LD50 Rat male oral 6.8 mg/kg
- Inhalation: LC50 Rat (male) inhalation 0.06 mg/l/4 hr (for aerosol)
- Dermal: LD50 Rat (male) percutaneous 15.9 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 E Evidence of Non-carcinogenicity for Humans

### Reproductive toxicity

no data available

### STOT-single exposure

The substance may cause effects on the nervous system. This may result in convulsions and respiratory failure. Exposure above the OEL could cause death. Cholinesterase inhibition. The effects may be delayed. Medical observation is indicated.

### STOT-repeated exposure

Cholinesterase inhibition. Cumulative effects are possible. See Acute Hazards/Symptoms.

### Aspiration hazard

Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly on spraying.

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# SECTION 12: Ecological information

## 12.1 Toxicity

- Toxicity to fish: no data available
- Toxicity to daphnia and other aquatic invertebrates: no data available
- Toxicity to algae: no data available
- Toxicity to microorganisms: no data available

## 12.2 Persistence and degradability

When ethylthiometon was added to soil under paddy conditions, there was rapid oxidation to the corresponding sulfoxide and sulfone. In silt loam soil, under paddy conditions, reduction of the sulfoxide to ethylthiometon occurred. At 28 deg C, the half-life of ethylthiometon ... /with/ its five metabolites was about 50 days.

## 12.3 Bioaccumulative potential

The bioconcentration factor (BCF) of disulfoton in carp (*Cyprinus carpio*) has been measured to be approximately 450(1). According to a classification scheme(2), this BCF value suggests bioconcentration in aquatic organisms is high(SRC).

## 12.4 Mobility in soil

Koc values of 642 and 1104(1), 811(2), 1,500(5), and 1,780(6) have been measured for disulfoton(1) and its Rf value has been determined to be 0.01 using soil thin layer chromatography(3). Koc values in 5 EUROSOLS where as follows: 4,622 - Vertic Cambisol clay loam (1.3% OM, pH 5.1), Sicily, Italy; 1,399 - Rendinza silt loam (3.7% OM, pH 7.4), Peloponnesos, Greece; 1,293 - Dystric Cambisol loam (3.45% OM, pH 5.2), Wales; 2,359 - Orthic Luvizol silt (1.55% OM, pH 6.5), Normandy France; 14,013 - Orthic Podzol loamy sand, Schl.-Holstein (9.25% OM, pH 3.2), Germany(4). According to a classification scheme(7), these Koc values suggest that disulfoton soil mobility is expected to range from low to immobile.

## 12.5 Other adverse effects

no data available

## SECTION 13: Disposal considerations

### 13.1 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

### 14.1 UN Number

ADR/RID: UN2783 (For reference only, please check.) IMDG: UN2783 (For reference only, please check.) IATA: UN2783 (For reference only, please check.)

### 14.2 UN Proper Shipping Name

ADR/RID: ORGANOPHOSPHORUS PESTICIDE, SOLID, TOXIC (For reference only, please check.) IMDG: ORGANOPHOSPHORUS PESTICIDE, SOLID, TOXIC (For reference only, please check.) IATA: ORGANOPHOSPHORUS PESTICIDE, SOLID, TOXIC (For reference only, please check.)

### 14.3 Transport hazard class(es)

ADR/RID: 6.1 (For reference only, please check.) IMDG: 6.1 (For reference only, please check.) IATA: 6.1 (For reference only, please check.)

### 14.4 Packing group, if applicable

ADR/RID: I (For reference only, please check.) IMDG: I (For reference only, please check.) IATA: I (For reference only, please check.)

### 14.5 Environmental hazards

ADR/RID: Yes IMDG: Yes IATA: Yes

### 14.6 Special precautions for user

no data available

### 14.7 Transport in bulk according to IMO instruments

no data available

## SECTION 15: Regulatory information

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

| Chemical name                                                            | Common names and synonyms | CAS number | EC number   |
|--------------------------------------------------------------------------|---------------------------|------------|-------------|
| Disulfoton                                                               | Disulfoton                | 298-04-4   | 206-054-3   |
| 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                                |                           |            | Listed.     |
| New Zealand Inventory of Chemicals (NZIoC)                               |                           |            | Listed.     |
| Philippines Inventory of Chemicals and Chemical Substances (PICCS)       |                           |            | Listed.     |
| Vietnam National Chemical Inventory                                      |                           |            | Not Listed. |
| Chinese Chemical Inventory of Existing Chemical Substances (China IECSC) |                           |            | Listed.     |
| Korea Existing Chemicals List (KECL)                                     |                           |            | Listed.     |

## SECTION 16: Other information

#### Information on revision

Creation Date July 15, 2019  
Revision Date April 24, 2024

#### 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?pageID=0&request\\_locale=en](http://www.echemportal.org/echemportal/index?pageID=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/>

#### Other Information

Depending on the degree of exposure, periodic medical examination is suggested. Specific treatment is necessary in case of poisoning with this substance; the appropriate means with instructions must be available. If the substance is formulated with solvent(s) also consult the card(s) (ICSC) of the solvent(s). Carrier solvents used in commercial formulations may change physical and toxicological properties. Do NOT take working clothes home.

**Any questions regarding this SDS, Please send your inquiry to [info@cato-chem.com](mailto:info@cato-chem.com)**

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