

according to Regulation (EC) No. 1907/2006 as amended by (EC) No. 1272/2008

Section 1. Identification of the Substance/Mixture and of the Company/Undertaking

- 1.1 Product Name:** Disulfiram
Synonyms: N,N,N',N'-tetraethyl-thioperoxydicarbonic diamide; Tetraethylthiuram disulfide; NSC 25953;
- 1.2 Relevant identified uses of the substance or mixture and uses advised against:**
Relevant identified uses: For research use only, not for human or veterinary use.
- 1.3 Details of the Supplier of the Safety Data Sheet:**
Details of the Australian Supplier
 Astral Scientific Pty Ltd
 29 Mangrove Lane
 Taren Point NSW 2229
- Company Phone Number** 02 9540 2055
E-mail Address support@astralscientific.com.au
Emergency telephone number 13 11 26

Section 2. Hazards Identification

- 2.1 Classification of the Substance or Mixture:**
Acute Toxicity: Oral, Category 4
Skin Sensitization, Category 1
Specific Target Organ Toxicity (repeated exposure), Category 2
Aquatic Toxicity (Acute), Category 1
Aquatic Toxicity (Chronic), Category 1

2.2 Label Elements:



GHS Signal Word: Warning

GHS Hazard Phrases:

- H302: Harmful if swallowed.
 H317: May cause an allergic skin reaction.
 H373: May cause damage to {organs} through prolonged or repeated exposure.
 H400: Very toxic to aquatic life.
 H410: Very toxic to aquatic life with long lasting effects.

GHS Precaution Phrases:

- P264: Wash {hands} thoroughly after handling.
 P261: Avoid breathing {dust/fume/gas/mist/vapours/spray}.
 P272: Contaminated work clothing should not be allowed out of the workplace.
 P280: Wear {protective gloves/protective clothing/eye protection/face protection}.
 P362+364: Take off contaminated clothing and wash it before reuse.
 P260: Do not breathe {dust/fume/gas/mist/vapours/spray}.
 P273: Avoid release to the environment.

GHS Response Phrases:

- P301+312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

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P330: Rinse mouth.
 P302+352: IF ON SKIN: Wash with plenty of soap and water.
 P333+313: If skin irritation or rash occurs, seek medical advice/attention.
 P314: Get medical attention/advice if you feel unwell.
 P391: Collect spillage.

GHS Storage and Disposal Phrases:

Please refer to Section 7 for Storage and Section 13 for Disposal information.

2.3 Adverse Human Health Harmful if swallowed.
Effects and Symptoms: Material may be irritating to the mucous membranes and upper respiratory tract.
 May be harmful by inhalation or skin absorption.
 May cause an allergic skin reaction.
 May cause damage to {organs} through prolonged or repeated exposure.
 May cause eye, skin, or respiratory system irritation.
 Very toxic to aquatic life with long lasting effects.
 To the best of our knowledge, the toxicological properties have not been thoroughly investigated.

Section 3. Composition/Information on Ingredients

CAS # / RTECS #	Hazardous Components (Chemical Name)/ REACH Registration No.	Concentration	EC No./ EC Index No.	GHS Classification
97-77-8 JO1225000	Thioperoxydicarbonic diamide ((H2N)C(S))2S2), tetraethyl-	100.0 %	202-607-8 006-079-00-8	Acute Tox.(O) 4: H302 Skin Sens. 1: H317 STOT (RE) 2: H373 Aquatic (A) 1: H400 Aquatic (C) 1: H410

Section 4. First Aid Measures

4.1 Description of First Aid Measures:

In Case of Inhalation: Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Get immediate medical attention.

In Case of Skin Contact: Immediately wash skin with soap and plenty of water for at least 15 minutes. Remove contaminated clothing. Get medical attention if symptoms occur. Wash clothing before reuse.

In Case of Eye Contact: Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Have eyes examined and tested by medical personnel.

In Case of Ingestion: Wash out mouth with water provided person is conscious. Never give anything by mouth to an unconscious person. Get medical attention. Do NOT induce vomiting unless directed to do so by medical personnel.

Section 5. Fire Fighting Measures

5.1 Suitable Extinguishing Use alcohol-resistant foam, carbon dioxide, water, or dry chemical spray.
Media: Use water spray to cool fire-exposed containers.
Unsuitable Extinguishing A solid water stream may be inefficient.
Media:

5.2 Flammable Properties and No data available.
Hazards: No data available.

Flash Pt: No data.
Explosive Limits: LEL: No data. UEL: No data.
Autoignition Pt: No data.

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5.3 Fire Fighting Instructions: As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH approved or equivalent), and full protective gear to prevent contact with skin and eyes.

Section 6. Accidental Release Measures

- 6.1 Protective Precautions,** Avoid raising and breathing dust, and provide adequate ventilation.
Protective Equipment and Emergency Procedures: As conditions warrant, wear a NIOSH approved self-contained breathing apparatus, or respirator, and appropriate personal protection (rubber boots, safety goggles, and heavy rubber gloves).
- 6.2 Environmental Precautions:** Take steps to avoid release into the environment, if safe to do so.
- 6.3 Methods and Material For Containment and Cleaning Up:** Contain spill and collect, as appropriate. Transfer to a chemical waste container for disposal in accordance with local regulations.

Section 7. Handling and Storage

- 7.1 Precautions To Be Taken in Handling:** Avoid breathing dust/fume/gas/mist/vapours/spray. Avoid prolonged or repeated exposure.
- 7.2 Precautions To Be Taken in Storing:** Keep container tightly closed. Store in accordance with information listed on the product insert.

Section 8. Exposure Controls/Personal Protection

8.1 Exposure Parameters:

CAS #	Chemical Name	Jurisdiction	Recommended Exposure Limits	Notations
97-77-8	Thioperoxydicarbonic diamide ([(H2N)C(S)]2S2), tetraethyl-	ACGIH TLV	TLV: 2 mg/m3	
		France VL	TWA: 2 mg/m3	

8.2 Exposure Controls:

- 8.2.1 Engineering Controls (Ventilation etc.):** Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.
- 8.2.2 Personal protection equipment:**
- Eye Protection:** Safety glasses
- Protective Gloves:** Compatible chemical-resistant gloves
- Other Protective Clothing:** Lab coat
- Respiratory Equipment (Specify Type):** NIOSH approved respirator, as conditions warrant.
- Work/Hygienic/Maintenance Practices:** Do not take internally. Facilities storing or utilizing this material should be equipped with an eyewash and a safety shower. Wash thoroughly after handling. No data available.

Section 9. Physical and Chemical Properties

9.1 Information on Basic Physical and Chemical Properties

Physical States: [] Gas [] Liquid [X] Solid

Appearance and Odor: A crystalline solid

pH: No data.

Melting Point: No data.

Boiling Point: No data.

Flash Pt: No data.

Evaporation Rate: No data.

Flammability (solid, gas): No data available.

Explosive Limits: LEL: No data. UEL: No data.

Vapor Pressure (vs. Air or mm Hg): No data.

Vapor Density (vs. Air = 1): No data.

Specific Gravity (Water = 1): No data.

Solubility in Water: No data.

Solubility Notes: ~0.2 mg/ml in 1:4 DMF:PBS (pH 7.2); ~15 mg/ml in EtOH; ~20 mg/ml in DMSO; ~30 mg/ml in DMF;

Octanol/Water Partition Coefficient: No data.

Autoignition Pt: No data.

Decomposition Temperature: No data.

Viscosity: No data.

9.2 Other Information

Percent Volatile: No data.

Molecular Formula & Weight: C₁₀H₂₀N₂S₄ 296.5

Section 10. Stability and Reactivity

10.1 Reactivity: No data available.

10.2 Stability: Unstable [] Stable [X]

10.3 Stability Note(s): Stable if stored in accordance with information listed on the product insert.

Polymerization: Will occur [] Will not occur [X]

10.4 Conditions To Avoid: No data available.

10.5 Incompatibility - Materials To Avoid: strong oxidizing agents

10.6 Hazardous Decomposition or Byproducts: carbon dioxide
carbon monoxide
nitrogen oxides
sulfur oxides

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Section 11. Toxicological Information

11.1 Information on Toxicological Effects: The toxicological effects of this product have not been thoroughly studied.
Disulfiram - Toxicity Data: Oral LDLO (woman): 90 mg/kg/18D (intermittent); Oral LDLO (man): 150 mg/kg/6W (intermittent); Oral TDLO (man): 140 mg/kg/2W; Oral LDLO (human): 150 mg/kg; Subcutaneous LD (rat): >4 g/kg; Subcutaneous LD50 (mouse): 2600 mg/kg; Oral LD50 (rat): 500 mg/kg; Oral LD50 (mouse): 1.013 mg/kg; Skin LD50 (rabbit): >2000 mg/kg;
Disulfiram - Irritation Data: Eyes (rabbit): 0.1 g mild;

Chronic Toxicological Effects: Disulfiram - Investigated as a mutagen, reproductive effector, and tumorigen. Only select Registry of Toxic Effects of Chemical Substances (RTECS) data is presented here. See actual entry in RTECS for complete information.
Disulfiram RTECS Number: JO1225000

CAS #	Hazardous Components (Chemical Name)	NTP	IARC	ACGIH	OSHA
97-77-8	Thioperoxydicarbonic diamide ((H2N)C(S))2S2), tetraethyl-	n.a.	3	A4	n.a.

Section 12. Ecological Information

12.1 Toxicity: Avoid release into the environment.
Runoff from fire control or dilution water may cause pollution.

12.2 Persistence and Degradability: No data available.

12.3 Bioaccumulative Potential: No data available.

12.4 Mobility in Soil: No data available.

12.5 Results of PBT and vPvB assessment: No data available.

12.6 Other adverse effects: No data available.

Section 13. Disposal Considerations

13.1 Waste Disposal Method: Dispose in accordance with local, state, and federal regulations.

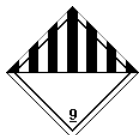
Section 14. Transport Information

14.1 LAND TRANSPORT (US DOT):

DOT Proper Shipping Name: Environmentally hazardous substance, solid, n.o.s. (N,N,N',N'-tetraethyl-thioperoxydicarbonic diamide)

DOT Hazard Class: 9 **CLASS 9**

UN/NA Number: 3077 **Packing Group:** III



14.1 LAND TRANSPORT (European ADR/RID):

ADR/RID Shipping Name: Environmentally hazardous substance, solid, n.o.s. (N,N,N',N'-tetraethyl-thioperoxydicarbonic diamide)

UN Number: 3077 **Packing Group:** III

Hazard Class: 9 - CLASS 9

