

**Section 1. Product and Company Identification**

Product Name	Disulfiram
Product ID	D3374
Chemical Name (Synonyms)	Tetraethylthiuram disulfide; Teturamin; TTD; Cronetal; Abstensil; Antadix; Antietanol; Exhoran; Antabuse; Etabus; Esperal; Tetradine; Noxal; Tetraetil
Supplier	LKT Laboratories, Inc 545 Phalen Blvd. St. Paul, MN 55130 USA Ph: 651-644-8424 Fax: 651-644-8357 www.lktlabs.com - getinfo@lktlabs.com
Emergency Phone #	1-800-424-9300

Section 2. Hazards Identification

GHS Classification	Acute toxicity, Oral (Category 4), H302 Skin sensitization (Category 1), H317 Specific target organ toxicity - repeated exposure (Category 2), H373 Acute aquatic toxicity (Category 1), H400 Chronic aquatic toxicity (Category 1), H410
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GHS Label elements including precautionary statements**Pictogram****Signal word** Warning**Hazard and precautionary statements****Hazard statements**

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

Precautionary statements

P260 - Do not breathe dust, fumes, gas, mist, vapors and spray.
P264 - Wash skin thoroughly after handling.
P270 - Do not eat, drink, or smoke when using this product.
P272 - Contaminated work clothing should not be allowed out of the workplace.
P273 - Avoid release to the environment.
P280 - Wear protective gloves.
P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell.
P302 + P352 - IF ON SKIN: Wash with plenty of soap and water.
P314 - Get medical advice/ attention if you feel unwell.
P321 - Specific treatment (see supplemental first aid instructions on this label).
P330 - Rinse mouth.
P333 + P313 - If skin irritation or rash occurs: Get medical advice/ attention.
P363 - Wash contaminated clothing before reuse.
P391 - Collect spillage.
P501 - Dispose of contents/ container to an approved waste disposal plant.

HMIS Classification	Health hazard: 2 Chronic health hazard: * Flammability: 0 Physical hazard: 0
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NFPA Rating	Health hazard: 2 Fire hazard: 0 Reactivity hazard: 0
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Potential Health Effects	Inhalation - May be harmful if inhaled. May cause respiratory tract irritation. May cause damage to organs through repeated exposure - Respiratory. Skin - May cause an allergic skin reaction. May cause skin sensitization.
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Eyes - May cause eye irritation.
Ingestion - Acute toxicity. Harmful if swallowed.

Section 3. Composition/Information on Ingredients

Substances	Ingredient: Title Compound	Percent: 100	
Formula	C ₁₀ H ₂₀ N ₂ S ₄	Formula Wt.	296.54
CAS No.	97-77-8	EC No.	202-607-8

Section 4. First Aid Measures

General advice	Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.
Eye Contact	Flush eyes with water as a precaution.
Skin Contact	Wash off with soap and plenty of water. Consult a physician.
Inhalation	If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
Ingestion	Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

Section 5 . Firefighting Measures

Flash Point	Not available.
Extinguishing Media	Use water spray, alcohol-resistant foam, dry chemical, or carbon dioxide.
Firefighting Procedures	Wear self-contained breathing apparatus for firefighting if necessary.
Unusual Fire Hazards	Carbon oxides, nitrogen oxides (NO _x), sulfur oxides.

Section 6. Accidental Release Measures

Personal Precautions	Use personal protective equipment. Avoid dust formation. Avoid breathing dust, vapors, mist, or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.
Environmental Precautions	Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.
Methods and materials for containment and cleanup	Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

Section 7. Handling and Storage

Handling	Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed.
Storage Conditions	Keep container tightly closed in a dry and well-ventilated place. Recommended storage temperature: Ambient Keep in a dry place.
Hazardous Decomposition Products	Not available.
Other Remarks	

Section 8. Exposure Controls/Personal Protection

Personal protective equipment EXPOSURE CONTROLS

Contains no substances with occupational exposure limit values. Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

PERSONAL PROTECTION

Eye/face protection: Face shield and safety glasses. Use equipment for eye protection, tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU).

Skin protection: Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Body protection: Complete suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection: For nuisance exposures, use type P95 (US) or type P1 (EU EN 143) particle respirator. For a higher level protection, use type OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Section 9. Physical and Chemical Properties

Physical State	Solid.	Color	Light yellow crystalline powder.
Boiling Point	117°C	Volatility	Not available.
Melting Point	70°C	Density	1.3 g
Solubility	Soluble in alcohol (330 mg/mL), ether, acetone, benzene, or chloroform. Practically insoluble in water.	pH	Not available.
Flash Point	Not available.	Ignition temperature	Not available.
Lower explosion limit	Not available.	Autoignition temperature	Not available.
Upper explosion limit	Not available.	Vapor pressure	Not available.
Water solubility	Practically insoluble in water.	Odor	Not available.
Partition coefficient: n-octanol/water	log Pow: 5	Odor Threshold	Not available.
Relative vapor density	Not available.	Evaporation rate	Not available.

Section 10. Stability and Reactivity

Stability Stable under recommended storage conditions.

Materials To Avoid Strong oxidizing agents.

Hazardous Decomposition Products Not available.

Possibility of hazardous reactions Not available.

Conditions to avoid Not available.

Section 11. Toxicological Information

Oral LD50 Rabbit - 1,800 mg/kg. Remarks: Peripheral Nerve and Sensation: Flaccid paralysis without anesthesia (usually neuromuscular blockage). Behavioral: Ataxia. Nutritional and Gross Metabolic: Changes in: Body temperature decrease. Mouse - 1,980 mg/kg.

Inhalation LC50 Not available.

Dermal LD50 Not available.

Other information on acute toxicity Not available.

Reproductive Toxicity Not available.

Specific organ toxicity single exposure (GHS) Not available.

Specific organ toxicity repeated exposure (GHS) Not available.

Teratogenicity Not available.

Skin corrosion/irritation Not available.

Serious eye damage/irritation Rabbit Result: No eye irritation (OECD Test Guideline 405)

Respiratory or skin sensitization Not available.

Germ cell mutagenicity Hamster, ovary, sister chromatid exchange. Hamster, embryo, morphological transformation. Chicken, embryo, other mutation test systems. Mouse, embryo, DNA inhibition. Mouse, lymphocyte. Chicken, embryo, DNA inhibition. Mouse, sister chromatid exchange. Rat, morphological transformation.

Aspiration Hazard Not available.

Synergistic effects Not available.

Additional Information RTECS: JO1225000. A serious toxic interaction has been observed in rats fed tetraethylthiuram (antabuse, ro-sulfiram) and then exposed to vapors of 1,2-dibromoethane. May cause nervous system disturbances. Lethargy, Ataxia, seizures, coma, thyroid enlargement.

Signs and symptoms of exposure Stomach, irregularities, based on human evidence.

Potential Health Effects Inhalation - May be harmful if inhaled. May cause respiratory tract irritation. May cause damage to organs through repeated exposure - Respiratory.
Skin - May cause an allergic skin reaction. May cause skin sensitization.
Eyes - May cause eye irritation.
Ingestion - Acute toxicity. Harmful if swallowed.

Carcinogenicity **IARC:** 3 - Group 3: Not classifiable as to its carcinogenicity to humans (Disulfiram).
ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Section 12. Ecological Information

Toxicity Toxicity to fish - LC50 - Poecilia reticulata (guppy) - 0.187 mg/l - 96 h (OECD Test Guideline 203).
Toxicity to daphnia and other aquatic invertebrates - LC50 - Daphnia magna (Water flea) - 0.12 mg/l - 48 h.
Toxicity to algae - Growth inhibition EC50 - Chlorella pyrenoidosa - 1.8 mg/l - 96h.

Mobility in soil Not available.

PBT and vPvB assessment PBT/vPvB assessment not available as chemical safety assessment not required/not

conducted.

Persistence and degradability Not available.

Other adverse effects An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Very toxic to aquatic life with long lasting effects.

Bioaccumulative potential Not available.

Section 13. Disposal Considerations

Waste Disposal Dispose of material according to all federal, state and local regulations.
Offer material to a licensed, professional waste disposal company to dispose of as unused product. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Section 14. Transport Information

DOT (US) Not dangerous goods.

IATA UN number: 3077 Class: 9 Packing group: III
Proper shipping name: Environmentally hazardous substance, solid, n.o.s. (Disulfiram).

IMDG UN number: 3077 Class: 9 Packing group: III EMS No.: F-A, S-F
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Disulfiram) Marine
Pollutant: Marine pollutant

Further Information EHS-Mark required (ADR 2.2.9.1.10, IMDG code 2.10.3) for single packagings and combination packagings containing inner packagings with Dangerous Goods > 5L for liquids or > 5kg for solids.

Section 15. Regulatory Information

Reach No.

SARA 302 Components SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Components Acute health hazard, chronic health hazard.

Massachusetts Right To Know Components No components are subject to the Massachusetts Right to Know Act.
Disulfiram CAS No. 97-77-8 Revision Date: 2007-03-01

Pennsylvania Right To Know Components Disulfiram CAS #: 97-77-8 Revision Date: 2007-03-01

New Jersey Right To Know Components Disulfiram CAS #: 97-77-8 Revision Date: 2007-03-01

California Prop 65 Components This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

Section 16. Other Information

Other information The information in this document is believed to be correct but is not necessarily complete. LKT does not guarantee the accuracy of the information. The burden of verifying the information in this document rests solely upon the user.

Updated 7/11/2019

For emergencies in the USA, call
CHEMTREC 800-424-9300