

APPLICATIONS AND PROPERTIES

- TETD closely resembles TMTD in its applications.
- TETD is less prone to scorching and blooming and has good processing safety.
- Product can be used in CR as an anti-scorching agent.
- It can also be used as raw material for germicides, pesticides and medicine.
- Soluble in benzene, acetone, chloroform, CS₂.
- Partly soluble in gasoline, insoluble in water, acid and alkali with a lower concentration.
- Sensitive to skin.
- TETD is regulated for use under the following sections of FDA 21 CFR:
175.105 – Components of Adhesives.
177.2600 – Rubber Articles Intended for Repeated Use in Food Contact.

STORAGE

Product should be stored in a cool, dry and well ventilated area. Avoid exposure to direct sunlight. Pallets should not be stacked. Stacking of palletized material or temperatures above 35°C can cause unusual compacting of this product. The recommended storage life is 1 year, when stored under normal conditions.

HANDLING PRECAUTIONS

For detailed information on toxicological properties and handling precautions, please refer to the current Safety Data Sheet. This information is available by request from **SunBoss Chemicals Corp.**

[Revised: November 6, 2014 by kk]

Safety Data Sheet

TETD

1. IDENTIFICATION OF SUBSTANCE / COMPANY INFORMATION

Chemical Name	Tetraethyl thiuram Disulfide
Synonyms	Dis(diethylthiocarbamoyl) disulfide, Disulfiram, Accelerator TETD
CAS #	97-77-8
Formula	C ₁₀ H ₂₀ N ₂ S ₄
Chemical Family	Accelerator
Supplier	SunBoss Chemicals Corp.
Address	8-110 West Beaver Creek Road Richmond Hill, ON L4B 1J9
Telephone	905-707-3433
Fax	905-707-7393

Emergency Information

After normal hours call Chemtrec at 1-800-424-9300

2. COMPOSITION / INFORMATION ON INGREDIENTS

<u>Component</u>	<u>CAS - No</u>	<u>Weight %</u>	<u>EC No.</u>
Tetraethylthiuram Disulfide	97-77-8	≥ 98	202-607-8
Ethoxylated Alcohols [-3mm-grs only]	68439-50-9	≤ 2	
	<u>Symbol(s)</u>	<u>Risk Phrase(s)</u>	
	Xi, N	R22, R36/37/38, R43, R50/53	

3. HEALTH HAZARDS INFORMATION

EMERGENCY OVERVIEW

Signal Word: **WARNING!**

Harmful if swallowed!

Inhalation may cause alcohol intolerance (Antabuse Effect).

Irritating to eyes, respiratory system and skin.

May cause sensitisation by skin contact.

Very toxic to aquatic organisms may cause long-term adverse effects in the aquatic environment.

Potential Health Effects

Inhalation

Exposure to dust particles generated from this material may cause irritation of the respiratory tract. Inhalation may cause alcohol intolerance.

Ingestion	Danger of serious damage to health by prolonged exposure if swallowed. Very toxic to aquatic organisms may cause long-term adverse effects in the aquatic environment.
Skin contact	May cause sensitization with skin contact. May cause skin defatting with prolonged exposure.
Eye Contact	Causes mild eye irritation. Signs/symptoms can include redness, swelling, pain and tearing.

4. EMERGENCY FIRST AID PROCEDURES

Inhalation	Remove person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, get immediate medical attention.
Ingestion	If swallowed, call a physician immediately. Only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person.
Skin	Remove contaminated clothing, wash skin with water, using soap if available. Remove contaminated clothing and launder before reuse.
Eyes	In case of contact, immediately flush eyes with plenty of water – eyelid should be held away from eyeball to ensure thorough rinsing. Seek medical attention if irritation persists.
Note to Physician	Provide symptomatic/supportive care as necessary. Treatment based on sound judgment of physician and individual reactions of patient. Observe for signs of respiratory distress.

5. FIRE AND EXPLOSION HAZARD MEASURES

Flammability	Not determined
Flash Point	Not determined
Flash Point Method	Not determined
DOT Category	Not regulated
Extinguishing Media	Water spray, water mist, foam, dry chemical powder. Water jet is an unsuitable extinguishing method.
Auto Ignition Temperature	240 – 280°C
Flammable Limits	Not determined
Special Fire Fighting Procedures	Fight fire from a safe distance and from a protected location. Use water spray to cool fire exposed surface. Decomposition in fire may produce toxic gases. Do not allow runoff to enter waterways.
Special Protective Equipment	Fire fighters should wear full protective clothing, including self-contained breathing equipment.
Unusual Fire and Explosion Hazards	Toxic emissions may result if product is involved in a fire: hydrogen cyanide (HCN), sulphur dioxide (SO ₂), nitrous gases (NO _x).

6. ACCIDENTAL RELEASE MEASURES

Procedures	Clothing suitable to avoid skin contact, local ventilation and dust mask recommended.
Clean up Methods	Sweep and place into a suitable container. Avoid generation of dust. Do not use water to remove spilled material.

7. HANDLING AND STORAGE

Handling	Avoid contact with skin. Do not breathe dust. Provide appropriate exhaust ventilation where dust particle form.
Storage	Store closed containers in a cool, dry, well-ventilated area.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls	Avoid dust generation. Ensure good ventilation and local exhaustion of the working area as necessary to control any air contaminants to within their exposure limits. Adequate ventilation should be provided to keep dust concentrations below acceptable exposure limits. Discharge from the ventilation system should comply with the applicable air pollutions control regulations. Eliminate ignition sources.
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Exposure Limits
Tetraethylthiuram Disulfide

ACGIH TLV
2mg/m³ TWA

OSHA PEL
2mg/m³ TWA



Respiratory	Appropriate respiratory protection shall be worn when applied engineering controls are not adequate to protect against inhalation exposure. Firefighting: Use a Positive Pressure Demand Full Face Self Contained Breathing Apparatus.
Eyes	Wear safety glasses or goggles to protect against exposure. Eye protection is not required during typical product use conditions.
Skin	Normal work coveralls. Launder contaminated clothing before reuse.
Gloves	Use gloves as a standard industrial handling procedure. All cleanable impervious glove types are acceptable.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Light yellow powder, crystal powder or granules
Odour	Slightly amine
Specific Gravity	Not determined

Density	1.29 g/cm ³
Bulk Density	340-380 kg/m ³
Solubility in water	INSOLUBLE
pH	Not applicable
Other Solubility	Soluble in benzene, acetone, chloroform and CS ₂
Boiling point	Not relevant
Melting Point	66°C min
Molecular Weight	296.5
Molecular Formula	C ₁₀ H ₂₀ N ₂ S ₄

10. STABILITY AND REACTIVITY

Chemical Stability	Stable under recommended storage and handling conditions.
Conditions to avoid	No specific recommendations
Incompatibility	Oxidizing agents. Strong acids.
Hazardous Polymerization	Will not occur
Hazardous Decomposition Products	Carbon Monoxide, Oxides of nitrogen and sulphur.
Additional Guidelines	During the vulcanization process, traces of carcinogenic N-nitrosamines may be formed from decomposition products (amines) in the presence of nitrosating agents.

11. TOXICOLOGICAL INFORMATION

Acute oral LD 50 (mg/kg)	1,850 mg/kg – Rat 1,990 mg/kg - Mouse
Acute Dermal LD 50 (mg/kg)	Not determined
Acute Inhalation LC50 (mg/l)	Not determined
Principle routes of Exposure	Dermal – skin, eye
Ingestion	Danger of serious damage to health by prolonged exposure if swallowed. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Skin contact	May cause sensitization with skin contact. May cause skin defatting with prolonged exposure.
Inhalation	Exposure to dust particles generated from this material may cause irritation of the respiratory tract. Inhalation may cause alcohol intolerance.

Eye Contact	Causes mild eye irritation. Signs/symptoms can include redness, swelling, pain and tearing.
Aggravated Conditions	Alcohol consumption problems
Carcinogenicity	Negative in standard tests using bacteria and/or yeast cells. This product or one of its ingredients present at 0.1% or more, is NOT listed as a carcinogen or suspected carcinogen by NTP, IARC or OSHA. NOTE: May react with nitrosating agents during rubber vulcanization to form nitrosamines. Some nitrosamines are suspect human carcinogens.
Primary Irritation Effect	Practically non irritating
Genotoxicity	Ames test: not mutagenic.
Reproductive/Developmental Toxicity	No evidence of teratogenicity in animal studies using rats, mice and/or hamsters.

12. ECOLOGICAL INFORMATION

Acute Fish Toxicity	96h-LC50 (Poecilia reticulata): 0.91-0.32 mg/l. 96h-LC50 (Poecilia reticulata): 1.32 mg/l(Lit.)
Acute Crustacean Toxicity	48Hr LC50 Daphnia Magna = 0.12 mg/l.
Octonal/Water Coefficient	3.88 log P
Chemical Fate Information	Not determined
Other Information	Highly toxic to fish and aquatic invertebrates.

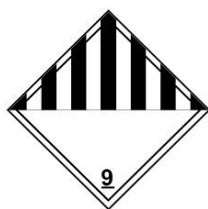
13. DISPOSAL CONSIDERATIONS

Waste Disposal	Recycle where possible. Incinerate according to local regulation. Do not discharge into the drains/surface water/groundwater.
Contaminated Packaging	If empty container retains product residues, all label precautions must be observed. Store away from ignition sources. Transport with all closures in place. Dispose of the container according to national and local regulations.

14. TRANSPORT INFORMATION

DOT Not Regulated

IATA



UN/ID No.
Proper Shipping Name

Class
Packing Group



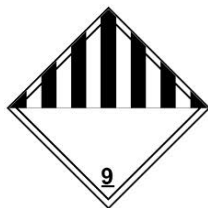
UN 3077
ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.,
(Tetraethyl thiuram Disulfide)

9
III

Marine Pollutant
Note:

Yes
Subject to special marking requirement (IATA 7.1.6.3)

IMDG



UN/ID No.
Proper Shipping Name

UN 3077
ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.,
(Tetraethyl thiuram Disulfide)

Class
Packing Group
Marine Pollutant
Special Markings

9
III
Yes
Symbol (fish and tree)

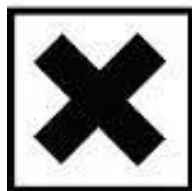
TDG (Canada)

See DOT

15. REGULATORY INFORMATION

LABELLING ACCORDING TO DIR 67/548 EEC

EC Number: 202-607-8
Classification based on: TESTS



IRRITANT (Xi)



DANGEROUS FOR THE ENVIRONMENT (N)

CLASSIFIED ACCORDING TO DIRECTIVE 199/45/EC

Risk Phrases:

R22 – Harmful if swallowed.
R36/37/38 – Irritating to eyes, respiratory system and skin.
R43 – May cause sensitization by skin contact.
R50/53 – Very toxic to aquatic organisms, may cause long term adverse effects in the aquatic environment.

Safety Phrases:

S22 – Do not breathe dust.
S24 – Avoid contact with skin.
S36/37/39 – Wear suitable protective clothing, gloves, eye, and face protection.

FDA Status 21 CFR

Regulated for use under the following sections of FDA 21 CFR:
175.105: Components of adhesives.
177.2600: Rubber articles intended for repeated use in food contact.

TSCA

Listed

Canadian DSL

Listed

EINECS/ELINCS Listed

US Regulations

SARA Section 302 Not determined.
SARA 311/312 Hazard Categories Immediate Delayed
SARA 313 Chemical Not determined.
RCRA Status Not a RCRA waste

Canadian Regulations

WHMIS Hazard Class



D2B TOXIC MATERIALS/Material Causing Other Toxic Effects

NPRI Not Listed

16. HAZARD RATING SYSTEM

NFPA Rating (Scale 0-4)

- 0 - Minimal Hazard
- 1 - Slight Hazard
- 2 - Moderate Hazard
- 3 - Serious Hazard
- 4 - Severe Hazard

HEALTH	2
FIRE	1
REACTIVITY	0

HMIS Classification (Scale 0-4)

- 0 - Minimal Hazard
- 1 - Slight Hazard
- 2 - Moderate Hazard
- 3 - Serious Hazard
- 4 - Severe Hazard

HEALTH	2
FIRE	1
REACTIVITY	0

17. OTHER INFORMATION

Although reasonable precautions have been taken in the preparation of the data contained herein, it is offered solely for your information, consideration and investigation. SunBoss Chemicals Corp. extends no warranty and assumes no responsibility for the accuracy or sufficiency of the content and expressly disclaims all liability for reliance thereon. This safety data sheet provides guidelines for the safe handling of this product; it does not and cannot advise on all possible situations, therefore, your specific use of this product should be evaluated to determine if additional precautions are required. It is the responsibility of the user to comply with all Federal, State and local laws and regulations. Individuals exposed to this product should read and understand this information and be provided pertinent training prior to working with this product.

Abbreviations and Acronyms

- ACGIH: American Conference of Governmental Industrial Hygienists Inc.
- CAS: Chemical Abstracts Service (Division of American Chemical Society)
- DOT: Department of Transportation (USA)
- EINECS: European Inventory of Existing Commercial Chemical Substances
- HMIS: Hazardous Materials Identification System (USA)
- IARC: Internal Agency for Research on Cancer
- IATA: International Air Transport Association
- IMDG: International Marine Code for Dangerous Goods
- LD50: Lethal Dose Medium
- LC50: Lethal Concentration Medium
- EC50: Effective Concentration Medium

NIOSH: National Institute for Occupational Safety and Health
NFPA: National Fire Protection Association (USA)
NPRI: National Pollutant Release Inventory (Canada)
NTP: National Toxicology Program
OSHA: Occupational Safety and Health Administration (USA)
PEL: Permissible Exposure Limits
TDG: Transportation of Dangerous Goods (Canada)
TLV: Threshold Limit Value
TWA: Time Weighted Average
WHMIS: Workplace Hazardous Materials Information Systems (Canada)

17. REVISION DATE

Revision number: 5

Date of Issue: September 9, 2014

Changes: Number and format of headings changed; Updates to Sections 1: Identification of Substance - EC information added; 2: Health Hazards Information; 8: Specific Personal Protection Equipment - pictograms added; 14: Transport information - pictograms added; 15: Regulatory information - EC information added; 16: Hazard Rating System - table added; 17: Abbreviations and Acronyms added