Safety Data Sheet

TBzTD

1. IDENTIFICATION OF SUBSTANCE / COMPANY INFORMATION

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Tetrabenzyl thiuram Disulfide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synonyms</td>
<td>TBzTD</td>
</tr>
<tr>
<td>CAS #</td>
<td>10591-85-2</td>
</tr>
<tr>
<td>Formula</td>
<td>C₃₀H₂₈S₄N₂</td>
</tr>
<tr>
<td>Chemical Family</td>
<td>Accelerator</td>
</tr>
<tr>
<td>Supplier</td>
<td>SunBoss Chemicals Corp.</td>
</tr>
<tr>
<td>Address</td>
<td>8-110 West Beaver Creek Road</td>
</tr>
<tr>
<td></td>
<td>Richmond Hill, ON L4B 1J9</td>
</tr>
<tr>
<td>Telephone</td>
<td>905-707-3433</td>
</tr>
<tr>
<td>Fax</td>
<td>905-707-7393</td>
</tr>
</tbody>
</table>

Emergency Information: After normal hours call Chemtrec at 1-800-424-9300

2. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No.</th>
<th>Weight %</th>
<th>EC No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetrabenzylthiuram disulfide</td>
<td>10591-85-2</td>
<td>&gt; 97</td>
<td>404-310-0</td>
</tr>
<tr>
<td>White Mineral Oil (powder only)</td>
<td>8042-47-5</td>
<td>1-2</td>
<td>232-455-8</td>
</tr>
</tbody>
</table>

Symbol(s): None
Risk Phrase(s): None

3. HEALTH HAZARDS INFORMATION

EMERGENCY OVERVIEW

Signal Word: WARNING!
COMBUSTIBLE MATERIAL!
Inhalation and ingestion may cause alcohol intolerance (Antabuse Effect)
Skin, eye and respiratory tract irritant.

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: May cause alcohol intolerance (Antabuse Effect) May cause headache, dizziness, nausea, vomiting, gastrointestinal irritation.
<table>
<thead>
<tr>
<th>Procedure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin contact</td>
<td>May be absorbed through the skin and contribute to the symptoms listed under ingestion. My cause skin defatting with prolonged exposure.</td>
</tr>
<tr>
<td>Eye Contact</td>
<td>Causes mild eye irritation. Signs / symptoms can include redness, swelling, pain and tearing.</td>
</tr>
</tbody>
</table>

### 4. EMERGENCY FIRST AID PROCEDURES

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation</td>
<td>Supply fresh air. If required, provide artificial respiration. Keep patient warm. Seek immediate medical advice.</td>
</tr>
<tr>
<td>Ingestion</td>
<td>Seek immediate medical advice. Only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person.</td>
</tr>
<tr>
<td>Skin</td>
<td>Immediately wash with water and soap and rinse thoroughly. Seek immediate medical advice.</td>
</tr>
<tr>
<td>Eyes</td>
<td>Immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.</td>
</tr>
<tr>
<td>Note to Physician</td>
<td>Treat symptomatically. Exposure by ingestion, inhalation or skin absorption may cause alcohol intolerance (Antabuse Effect)</td>
</tr>
</tbody>
</table>

### 5. FIRE AND EXPLOSION HAZARD MEASURES

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammability</td>
<td>Not determined</td>
</tr>
<tr>
<td>Flash Point</td>
<td>Not determined</td>
</tr>
<tr>
<td>Flash Point Method</td>
<td>Not determined</td>
</tr>
<tr>
<td>DOT Category</td>
<td>Not regulated</td>
</tr>
<tr>
<td>Extinguishing Media</td>
<td>Water fog, carbon dioxide, foam, dry chemical</td>
</tr>
<tr>
<td>Auto Ignition Temp.</td>
<td>440°C</td>
</tr>
<tr>
<td>Flammable Limits</td>
<td>Not determined</td>
</tr>
<tr>
<td>Special Fire Fighting Procedures</td>
<td>Fight fire from a safe distance and from a protected location. Use water spray to cool fire exposed surfaces. Decomposition in fire may produce toxic gases. Do not allow runoff to enter waterways.</td>
</tr>
<tr>
<td>Special Protective Equipment</td>
<td>Full protective clothing and approved self-contained breathing apparatus required for fire-fighting personnel.</td>
</tr>
<tr>
<td>Unusual Fire and Explosion Hazards</td>
<td>Combustible. Minimum Ignition Energy (MIE) = &lt;3 mJ. Kst - 129 bar.m/s. Toxic emissions may result if product is involved in a fire.</td>
</tr>
</tbody>
</table>

### 6. ACCIDENTAL RELEASE MEASURES

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procedures</td>
<td>Wear protective equipment specified. Avoid the generation of dust. Sweep, vacuum, or shovel and place into closable container for disposal.</td>
</tr>
</tbody>
</table>
Clean up Methods
Isolate area and remove sources of friction, impact, heat, low level electrical current, and RF energy. Isolate spill and stop leak where safe. Remove ignition sources and work with non-sparking tools. Scoop up and remove solids. Do NOT spread spilled product with water.

7. HANDLING AND STORAGE

Handling
Avoid contact with eyes, skin and clothing. Avoid generating or breathing dust. Wash thoroughly with soap and water after handling. Wash hands before eating, drinking, and chewing gum, using tobacco or using the toilet. Reclose containers of unused product. Keep containers tightly closed when not in use. Do not reuse this container.

Storage
Store closed containers in a cool, dry, well-ventilated area. Store away from strong oxidizing materials. Avoid exposure to direct sunlight.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls
Avoid dust generation. Ensure good ventilation and local exhaustion of the working area. Combustible material, keep away from ignition sources. Discharge from the ventilation system should comply with the applicable air pollutions control regulations.

Exposure Limit

<table>
<thead>
<tr>
<th>Substance</th>
<th>ACGIH (TLV)</th>
<th>OSHA (PEL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetrabenzyl thiuram Disulfide</td>
<td>None reported</td>
<td>None reported</td>
</tr>
<tr>
<td>Mineral Oil</td>
<td>5mg/m³</td>
<td>5mg/m³</td>
</tr>
</tbody>
</table>

Respiratory
Appropriate respiratory protection shall be worn when applied engineering controls are not adequate to protect against inhalation exposure. Use in a well-ventilated area.

Eyes
Wear safety glasses or goggles to protect against exposure. Wear eye protection appropriate to handling activities.

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 or granules

Odour
Slight

Specific Gravity
1.40 @20°C

Density
1.15 g/cm³

Bulk Density
230-270 kg/m³ (powder) 235-365 kg/m³ (oiled)
Solubility in water: INSOLUBLE - 0.001-0.01 mg/l @ 20.5°C

pH: Not applicable

Other Solubility: Soluble in benzene, Carbon Disulfide, Organic liquids, including fats and oils.

Boiling point: 147-149°C

Melting Point: 128°C min

Molecular Weight: 544.8

Molecular Formula: C₃₀H₂₈S₄N₂

10. STABILITY AND REACTIVITY

Chemical Stability: Stable when stored at room temperature in closed, original container. Stable under normal conditions of handling, use and transportation.

Conditions to avoid: Avoid contact with heat, sparks, open flame, and static discharge.

Incompatibility: Contact with oxidizing agents.

Hazardous Polymerization: Will not occur

Hazardous Decomposition Products: Carbon monoxide, Oxides of nitrogen and sulphur.

Additional Guidelines: Not applicable

11. TOXICOLOGICAL INFORMATION

Acute oral LD 50 (mg/kg): >5000 mg/kg (Rat).

Acute Dermal LD 50 (mg/kg): Not determined

Acute Inhalation LC50 (mg/l): >5.03 mg/l (No Mortalities in 4 hours).


Ingestion: May cause alcohol intolerance (Antabuse Effect) May cause headache, dizziness, nausea, vomiting, gastrointestinal irritation.

Skin contact: May be absorbed through the skin and contribute to the symptoms listed under ingestion. My 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. Pulmonary disorders.
Carcinogenicity
This product or one of its ingredients present 0.1% or more is NOT listed as a carcinogen or suspected by NTP, IARC, or OSHA. Carcinogenic: Category 3
NOTE: May react with nitrosating agents during rubber vulcanization to form nitrosamines. Some nitrosamines are suspect human carcinogens.

Primary Irritation Effect
Practically non-irritating to skin. Lightly irritating to eyes. Not sensitizing in animal studies.

Genotoxicity
Negative for genetic activity - in vitro tests. Borderline (equivocal) results have been obtained in a mouse micronucleus in vivo study.

Reproductive/Developmental Toxicity
Not determined

12. ECOLOGICAL INFORMATION

Acute Fish Toxicity
96 Hr LC50 Guppy = >32 mg/l.

Acute Crustacean Toxicity
48Hr EC50 Daphnia Magna = 10 mg/l.

Octanol/Water Coefficient
3.4 and 3.7 log P

Chemical Fate Information
Ready Biodegradability (modified Strum) = Slight to nil.

Other Information
LC 50 (earthworms) > 1000 mg/kg of dry soil. Similar compounds show a low potential for bioaccumulation and environmental persistence.

13. DISPOSAL CONSIDERATIONS

Waste Disposal
This material is not a RCRA hazardous waste. Bury in a licensed landfill or burn in an approved incinerator according to federal, state, and local regulations. Empty containers should be handled in a manner not to cause dusting during collection, transportation and disposal.

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. Return for reuse or dispose according to national or local regulations. Dispose of container according to national or local regulations.

14. TRANSPORT

DOT
Not regulated

IATA
Not regulated

IMDG
Not regulated

TDG (Canada)
Not regulated

15. REGULATORY INFORMATION

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO THE EEC DANGEROUS SUBSTANCE DIRECTIVE AND THE DANGEROUS PREPARATION DIRECTIVE.

Risk Phrase(s)
None

Safety Phrase(s)
None
FDA Status 21 CFR
Not regulated for use in food contact applications under FDA 21 CFR.

TSCA
Listed

Canadian DSL
Listed

EINECS/ELINCS
Listed

US Regulations
SARA Section 302
Not applicable
SARA 311/312 Hazard Categories
Immediate
SARA 313 Chemical
Not applicable
RCRA Status
Not a RCRA waste

Canadian Regulations
WHMIS Hazard Class
Non-controlled

NPRI
Not Listed

16. HAZARD RATING SYSTEM

NFPA Rating (Scale 0-4)

<table>
<thead>
<tr>
<th>HEALTH</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIRE</td>
<td>1</td>
</tr>
<tr>
<td>REACTIVITY</td>
<td>0</td>
</tr>
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</table>

HMIS Classification (Scale 0-4)

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<tr>
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<td>REACTIVITY</td>
<td>0</td>
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</table>

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
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