

## 1. PRODUCT AND COMPANY IDENTIFICATION

**Product name** Thiokol 2235M, 2235SL, 2282 - Hardener/Side B  
**Version #** 4.0  
**Revision date** 07-Aug-2006  
**Company information** PolySpec  
 6614 Gant Road  
 Houston, TX 77066 US  
**Emergency** Chemtrec (800) 424-9300  
 International (703) 527-3887

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

Component(s)	CAS #	Percent
Manganese Dioxide	1313-13-9	< 60
Tetramethylthiuram disulfide	137-26-8	< 2.5
Non-hazardous and other components below reportable levels		> 40
<b>Composition comments</b>	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.	

## 3. HAZARDS IDENTIFICATION

**Emergency overview** Irritating to skin. Irritating to respiratory system. Harmful in contact with eyes. Danger of serious damage to health by prolonged exposure. May cause breathing disorders and lung damage. May cause brain and central nervous system damage.

**Potential short term health effects**

- Eyes** Contact may irritate or burn eyes. Eye contact may result in corneal injury.
- Skin** Components of the product may be absorbed into the body through the skin. Irritating to skin.
- Inhalation** May cause breathing disorders and lung damage. Irritating to respiratory system.
- Ingestion** Do not ingest.

**Target organs** Central nervous system. Eyes. Respiratory system. Skin.

**Main symptoms** Chronic exposure to neurotoxins damages the brain and the central nervous system.

## 4. FIRST AID MEASURES

**First aid**

- Eye contact** Immediately flush eyes with plenty of water for at least 20 minutes. Get medical attention if irritation develops or persists.
- Skin contact** Remove and isolate contaminated clothing and shoes. Wash off immediately with plenty of water. If skin irritation persists, call a physician.
- Inhalation** If breathing is difficult, give oxygen. Move to fresh air. Get medical attention, if needed.
- Ingestion** Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Drink plenty of water. Do not induce vomiting without medical advice.

**Notes to physician** Symptoms may be delayed.

**General advice** Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

## 5. FIRE FIGHTING MEASURES

**General fire hazards** Not a fire hazard.

**Suitable extinguishing media** Small Fires: Dry chemical, CO<sub>2</sub>, water spray or regular foam.  
 Large Fires: Water spray, fog or regular foam.

## 6. ACCIDENTAL RELEASE MEASURES

<b>Evacuation procedures</b>	Ventilate closed spaces before entering. Stay upwind. Keep out of low areas. Keep unnecessary personnel away. Local authorities should be advised if significant spillages cannot be contained.
<b>Containment procedures</b>	Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Prevent entry into waterways, sewers, basements or confined areas.
<b>Personal precautions</b>	Do not touch or walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep people away from and upwind of spill/leak.
<b>Environmental precautions</b>	Prevent further leakage or spillage if safe to do so. Do not contaminate water.
<b>Methods for cleaning up</b>	Avoid dust formation. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Dike far ahead of liquid spill for later disposal. Never return spills in original containers for re-use.

## 7. HANDLING AND STORAGE

<b>Handling</b>	Do not breathe gas/fumes/vapor/spray. Avoid contact with eyes. Handle and open container with care. Surfaces may become slippery after spillage.
<b>Storage</b>	Use care in handling/storage. Do not freeze.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### Exposure limits

#### ACGIH - Threshold Limits Values - Time Weighted Averages (TLV-TWA)

Manganese Dioxide	1313-13-9	0.2 Mg/m <sup>3</sup> TWA (as Mn)
Tetramethylthiuram disulfide	137-26-8	1 Mg/m <sup>3</sup> TWA

#### ACGIH - Threshold Limits Values - TLV Basis - Critical Effects

Manganese Dioxide	1313-13-9	CNS (manganism); lung; reproductive (as Mn)
Tetramethylthiuram disulfide	137-26-8	irritation

#### OSHA - Final PELs - Time Weighted Averages (TWAs)

Tetramethylthiuram disulfide	137-26-8	5 Mg/m <sup>3</sup> TWA
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### Personal protective equipment

**Respiratory protection** A NIOSH- approved air purifying respirator with an organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits.

**Hand protection** Protective gloves.

**Eye protection** Wear chemical goggles.

**Skin and body protection** Wear appropriate chemical resistant clothing.

**General** Avoid contact with the skin and the eyes. Wear suitable protective equipment.

**Engineering measures to reduce exposure** Provide adequate local exhaust ventilation to maintain worker exposure below exposure limits.

**Hygiene measures** Handle in accordance with good industrial hygiene and safety practice. Avoid contact with the skin and the eyes.

## 9. PHYSICAL & CHEMICAL PROPERTIES

<b>Density</b>	14.63 lb/gal
<b>Form</b>	Liquid.
<b>Specific gravity</b>	1.76

## 10. CHEMICAL STABILITY & REACTIVITY INFORMATION

**Stability** Stable at normal conditions. No hazards to be especially mentioned.

**Incompatibility** Acids. Peroxides. Strong oxidizing agents.

## 11. TOXICOLOGICAL INFORMATION

**Local effects** Risk of serious damage to eyes. Components of the product may be absorbed into the body through the skin. Irritating to respiratory system. Irritating to skin.

## Component analysis - LD50

### NIOSH - Selected LD50s and LC50s

Manganese Dioxide	1313-13-9	Oral LD50 Rat: >3478 mg/kg
Tetramethylthiuram disulfide	137-26-8	Inhalation LC50 Rat: 500 mg/m3/4H; Oral LD50 Rat: 560 mg/kg; Oral LD50 Mouse: 1250 mg/kg

## Carcinogenicity

### ACGIH - Threshold Limits Values - Carcinogens

Tetramethylthiuram disulfide	137-26-8	A4 - Not Classifiable as a Human Carcinogen
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## Chronic toxicity

Repeated absorption may cause disorder of central nervous system, liver, kidneys and blood. Prolonged or repeated exposure may cause lung injury.

## Further information

Symptoms may be delayed.

## Routes of exposure

Inhalation. Skin contact.

# 12. ECOLOGICAL INFORMATION

## Ecotoxicity

Components of this product have been identified as having potential environmental concerns.

# 13. DISPOSAL CONSIDERATIONS

## Disposal instructions

Dispose in accordance with all applicable regulations.

# 14. TRANSPORTATION INFORMATION

## Department of Transportation (DOT) Requirements

Not regulated as dangerous goods.

## International Air Transport Association (IATA) Requirements

Not regulated as dangerous goods.

## International Maritime Dangerous Goods (IMDG) Code Requirements

Not regulated as dangerous goods.

# 15. REGULATORY INFORMATION

## Occupational safety and health administration (OSHA)

29 CFR 1910.1200 hazardous chemical	Yes
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## CERCLA (superfund) reportable quantity

Tetramethylthiuram disulfide (TUEX): 10.0000

## Superfund amendments and reauthorization act of 1986 (SARA)

Section 302 extremely hazardous substance	No
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Section 311 hazardous chemical	Yes
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Hazard categories	Immediate Hazard - Yes Delayed Hazard - Yes Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No
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## NFPA ratings

Health: 2  
Flammability: 0  
Instability: 0

## International regulations

### Canada - WHMIS - Ingredient Disclosure List

Tetramethylthiuram disulfide	137-26-8	1 % (English Item 1566, French Item 1620)
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## State regulations

### Massachusetts - Right To Know List

Tetramethylthiuram disulfide	137-26-8	Present
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### New Jersey - Right to Know Hazardous Substance List

Manganese Dioxide	1313-13-9	sn 1157
Tetramethylthiuram disulfide	137-26-8	sn 1854

### Pennsylvania - RTK (Right to Know) List

Tetramethylthiuram disulfide	137-26-8	Environmental hazard
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## 16. OTHER INFORMATION

**Disclaimer**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication.

**Issue date**

07-Aug-2006