

1. PRODUCT AND COMPANY IDENTIFICATION

Product name Thiokol FEC 2234 Flexible Epoxy Coating - Hardener/Side B
Version # 1.0
Revision date 29-Oct-2009
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
Titanium dioxide	13463-67-7	< 20
Benzyl Alcohol	100-51-6	< 10
Isophorone diamine	2855-13-2	< 10
N-aminoethyl piperazine	140-31-8	< 10
Silica, amorphous	7631-86-9	< 10
Non-hazardous and other components below reportable levels		> 40

3. HAZARDS IDENTIFICATION

Emergency overview Danger of serious damage to health by prolonged exposure. Toxic by inhalation, in contact with skin and if swallowed. May cause cancer. May cause breathing disorders and lung damage. Causes skin and eye burns.

Potential short term health effects

- Eyes** Toxic in contact with eyes. This product causes eye burns. Risk of serious damage to eyes.
- Skin** Toxic in contact with skin. Causes skin burns.
- Inhalation** Toxic by inhalation. May cause breathing disorders and lung damage.
- Ingestion** Toxic if swallowed. Do not ingest. Ingestion may produce burns to the lips, oral cavity, upper airway, esophagus and possibly the digestive tract.

Target organs Eyes. Lungs. Respiratory system.

4. FIRST AID MEASURES

First aid

- Eye contact** Immediately flush eyes with plenty of water for at least 20 minutes. Get medical attention immediately.
- Skin contact** Get medical attention immediately. Remove and isolate contaminated clothing and shoes. Immediately flush skin with running water for at least 20 minutes. For minor skin contact, avoid spreading material on unaffected skin.
- Inhalation** Call a physician or Poison Control Center immediately. Move to fresh air. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Get medical attention immediately. If breathing is difficult, give oxygen. Get medical attention, if needed.
- Ingestion** If material is ingested, immediately contact a physician or poison control center. Do not induce vomiting without medical advice. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Do not use mouth-to-mouth method if victim ingested the substance.

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. Immediate medical attention is required. Keep victim warm. In case of shortness of breath, give oxygen. Keep victim under observation.

5. FIRE FIGHTING MEASURES

Suitable extinguishing media	Small Fires: Dry chemical, CO ₂ , water spray or regular foam. Large Fires: Water spray, fog or regular foam.
Fire fighting equipment/instructions	Move containers from fire area if you can do it without risk. Do not scatter spilled material with high pressure water streams. Withdraw immediately in case of rising sound from venting safety devices or any discoloration of tanks due to fire. ALWAYS stay away from tanks engulfed in flame. If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also consider initial evacuation for 800 meters (1/2 mile) in all directions.
Flash point	200 °F (93.3 °C) Pensky-Martens Closed Cup

6. ACCIDENTAL RELEASE MEASURES

Evacuation procedures	Ventilate closed spaces before entering. Stay upwind. Keep out of low areas. Keep unnecessary personnel away.
Containment procedures	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.
Personal precautions	Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire. Ensure adequate ventilation. 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.
Methods for cleaning up	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

Handling	Do not breathe gas/fumes/vapor/spray. Do not get this material in your eyes, on your skin, or on your clothing. In case of insufficient ventilation wear suitable respiratory equipment. Wear personal protective equipment. Do not handle or store near an open flame, heat or other sources of ignition. Surfaces may become slippery after spillage.
Storage	Keep out of the reach of children. Keep container tightly closed. Keep in a cool, well-ventilated place. This material can accumulate static charge which may cause spark and become an ignition source. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Do not freeze.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limits

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

Titanium dioxide 13463-67-7 10 Mg/m³ TWA

ACGIH - Threshold Limits Values - TLV Basis - Critical Effects

Titanium dioxide 13463-67-7 lung

OSHA - Final PELs - Time Weighted Averages (TWAs)

Titanium dioxide 13463-67-7 15 Mg/m³ TWA (total dust)

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. In case of insufficient ventilation wear suitable respiratory equipment.

Hand protection Protective gloves.

Eye protection Wear chemical goggles. Face-shield.

Skin and body protection Wear chemical protective equipment that is specifically recommended by the manufacturer. It may provide little or no thermal protection. Wear appropriate chemical resistant gloves. Use chemical splash goggles and face shield (ANSI Z87.1 or approved equivalent). Wear suitable protective clothing.

General Structural firefighters protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations. Avoid contact with the skin and the eyes.

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

Hygiene measures Keep away from food and drink. Avoid contact with the skin and the eyes. Handle in accordance with good industrial hygiene and safety practice. Handle in accordance with good industrial hygiene and safety practice for diagnostics. When using do not smoke.

9. PHYSICAL & CHEMICAL PROPERTIES

Density	11.2455 lb/gal
Form	Liquid.
Specific gravity	1.35

10. CHEMICAL STABILITY & REACTIVITY INFORMATION

Stability	Stable at normal conditions.
Conditions to avoid	Direct sources of heat.
Hazardous polymerization	Will not occur.
Incompatibility	Alcohols. Amines. Caustics. Cresol. Glycol. Isocyanates. Phenol. Strong oxidizing agents. Vinyl acetates. Will form explosive mixtures in air.

11. TOXICOLOGICAL INFORMATION

Acute toxicity	Causes burns.
Local effects	Toxic by inhalation, in contact with skin and if swallowed.
Component analysis - LD50	

NIOSH - Selected LD50s and LC50s

Benzyl Alcohol	100-51-6	Oral LD50 Rat: 1230 mg/kg; Oral LD50 Mouse: 1360 mg/kg; Dermal LD50 Rabbit: 2 g/kg
N-aminoethyl piperazine	140-31-8	Oral LD50 Rat: 2140 µL/kg; Dermal LD50 Rabbit: 880 µL/kg

Carcinogenicity	Cancer hazard.
-----------------	----------------

ACGIH - Threshold Limits Values - Carcinogens

Titanium dioxide	13463-67-7	A4 - Not Classifiable as a Human Carcinogen
------------------	------------	---

Chronic toxicity	Prolonged or repeated exposure may cause lung injury.
Routes of exposure	Inhalation. Skin contact. Ingestion.

12. ECOLOGICAL INFORMATION

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

Environmental effects

Ecotoxicity - Freshwater Fish Species Data

Benzyl Alcohol	100-51-6	96 Hr LC50 fathead minnow: 460 mg/L (Static); 96 Hr LC50 bluegill: 10 mg/L (Static)
N-aminoethyl piperazine	140-31-8	96 Hr LC50 fathead minnow: 2190 mg/L (flow-through)

Ecotoxicity - Microtox Data

Benzyl Alcohol	100-51-6	5 Min EC50 Photobacterium phosphoreum: 63.7 mg/L; 15 min EC50 Photobacterium phosphoreum: 63.7 mg/L; 30 min EC50 Photobacterium phosphoreum: 71.4 mg/L
----------------	----------	--

Ecotoxicity - Water Flea Data

Benzyl Alcohol	100-51-6	48 Hr EC50 water flea: 23 mg/L
----------------	----------	--------------------------------

13. DISPOSAL CONSIDERATIONS

Disposal instructions	This product, in its present state, when discarded or disposed of, is not a hazardous waste according to Federal regulations (40 CFR 261.4 (b)(4)). Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste. Dispose in accordance with all applicable regulations.
-----------------------	--

14. TRANSPORTATION INFORMATION

Department of Transportation (DOT) Requirements

Not regulated as dangerous goods.

ERG number	153
------------	-----

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

US federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

CERCLA/SARA Hazardous Substances - Not applicable.

Inventory - European Union - European Inventory of Existing Commercial Chemical Substances (EINECS)

Benzyl Alcohol	100-51-6	202-859-9
Isophorone diamine	2855-13-2	220-666-8
N-aminoethyl piperazine	140-31-8	205-411-0
Silica, amorphous	7631-86-9	231-545-4
Titanium dioxide	13463-67-7	236-675-5

Inventory - United States - Section 8(b) Inventory (TSCA)

Benzyl Alcohol	100-51-6	Present
Isophorone diamine	2855-13-2	Present
N-aminoethyl piperazine	140-31-8	Present
Silica, amorphous	7631-86-9	Present
Titanium dioxide	13463-67-7	Present

Occupational safety and health administration (OSHA)

29 CFR 1910.1200 hazardous chemical Yes

CERCLA (superfund) reportable quantity

None

Superfund amendments and reauthorization act of 1986 (SARA)

Section 302 extremely hazardous substance No

Section 311 hazardous chemical Yes

Hazard categories Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

NFPA ratings

Health: 3
Flammability: 1
Instability: 0

International regulations

Canada - WHMIS - Ingredient Disclosure List

Benzyl Alcohol	100-51-6	1 % (English Item 169, French Item 170)
Isophorone diamine	2855-13-2	1 % (English Item 899, French Item 1048)
N-aminoethyl piperazine	140-31-8	1 % (English Item 68, French Item 213)
Silica, amorphous	7631-86-9	1 % (English Item 1403, French Item 1488)

State regulations

Massachusetts - Right To Know List

Benzyl Alcohol	100-51-6	Present
N-aminoethyl piperazine	140-31-8	Present
Silica, amorphous	7631-86-9	Present; Exempt when encapsulated or if particulates are not present and cannot be substantially generated through use of the product.
Titanium dioxide	13463-67-7	Present

New Jersey - Right to Know Hazardous Substance List

Isophorone diamine	2855-13-2	sn 1067
N-aminoethyl piperazine	140-31-8	sn 0075
Silica, amorphous	7631-86-9	sn 1655
Titanium dioxide	13463-67-7	sn 1861

Pennsylvania - RTK (Right to Know) List

Benzyl Alcohol	100-51-6	Present
N-aminoethyl piperazine	140-31-8	Present
Silica, amorphous	7631-86-9	Present
Titanium dioxide	13463-67-7	Present

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. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release.

Issue date

29-Oct-2009