1. PRODUCT AND COMPANY IDENTIFICATION

XP-3637 OPTO CORE

Supplier: Shipley Company
455 Forest Street
Marlborough, MA 01752 United States of America

Revision date: 07/18/2003

For non-emergency information contact: 508-481-7950

Emergency telephone number:
Chemtrec 800-424-9300
Shipley emergency 508-481-7950

2. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronic grade propylene glycol</td>
<td>108-65-6</td>
<td>30.0 - 50.0 %</td>
</tr>
<tr>
<td>monomethyl ether acetate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organosiloxane polymer</td>
<td></td>
<td>30.0 - 50.0 %</td>
</tr>
<tr>
<td>Amidomethyl ether crosslinker</td>
<td></td>
<td>&lt; 10.0 %</td>
</tr>
<tr>
<td>Aromatic Sulfur Compound</td>
<td></td>
<td>&lt; 1.0 %</td>
</tr>
<tr>
<td>Ethanol</td>
<td>64-17-5</td>
<td>&lt; 1.0 %</td>
</tr>
</tbody>
</table>

3. HAZARDS IDENTIFICATION

Emergency Overview

Appearance
Form: liquid
Colour: clear
Odour: none

Hazard Summary
WARNING!
Combustible liquid and vapor.
Prolonged, repeated contact, inhalation, ingestion, or absorption through the skin, may cause toxic effects to internal organ systems (liver, kidney, central nervous system).
Liquid may cause burns to eyes.

Potential Health Effects
Primary Routes of Entry: Inhalation, ingestion, eye and skin contact.
Eyes: Will cause severe conjunctival irritation, corneal damage, and may result in loss of vision.

Skin: Material may cause irritation. Prolonged or repeated exposure may have the following effects: systemic effects similar to those resulting from ingestion

Ingestion: Swallowing may have the following effects: irritation of mouth, throat and digestive tract Repeated doses may have the following effects: central nervous system damage liver damage kidney damage

Inhalation: Inhalation may have the following effects: irritation of nose, throat and respiratory tract Higher concentrations may have the following effects: systemic effects similar to those resulting from ingestion

Target Organs: Eye Respiratory System Skin nervous system Liver kidney

Carcinogenicity Not considered carcinogenic by NTP, IARC, and OSHA

4. FIRST AID MEASURES

Inhalation: Remove from exposure. If there is difficulty in breathing, give oxygen. Seek medical attention if symptoms persist.

Skin contact: Wash skin with water. Continue washing for at least 15 minutes. Obtain medical attention if blistering occurs or redness persists.

Eye contact: Immediately flush the eye with plenty of water for at least 15 minutes, holding the eye open. Obtain medical attention if soreness or redness persists.

Ingestion: Wash out mouth with water. Have victim drink 1-3 glasses of water to dilute stomach contents. Induce vomiting if person is conscious. Immediate medical attention is required Never administer anything by mouth if a victim is losing consciousness, is unconscious or is convulsing.

Notes to physician Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Flash point 45 °C (114.08 °F )

Suitable extinguishing media: Use water spray, foam, dry chemical or carbon dioxide. Keep containers and surroundings cool with water spray.
Specific hazards during fire fighting: This product may give rise to hazardous vapors in a fire. Vapors can travel a considerable distance to a source of ignition and result in flashback.

Special protective equipment for fire-fighters: Wear full protective clothing and self-contained breathing apparatus.

Further information: Pressure may build up in closed containers with possible liberation of combustible vapors.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Wear appropriate protective clothing.
Wear respiratory protection.
Eliminate all ignition sources.

Environmental precautions
Prevent the material from entering drains or water courses.
Do not discharge directly to a water source.
Advise Authorities if spillage has entered watercourse or sewer or has contaminated soil or vegetation.

Methods for cleaning up
Contain spills immediately with inert materials (e.g., sand, earth).
Transfer into suitable containers for recovery or disposal.
Finally flush area with plenty of water.

7. HANDLING AND STORAGE

Handling
Use local exhaust ventilation. Avoid contact with eyes, skin and clothing. Keep container tightly closed.
Further information on storage conditions: Keep away from heat, sparks, flame, and other sources of ignition. Practice good personal hygiene to prevent accidental exposure.

Storage
Storage conditions: Store in original container. Store away from sources of heat or ignition. Storage area should be: cool dry well ventilated out of direct sunlight

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limit(s)
Exposure limits are listed below, if they exist.

<table>
<thead>
<tr>
<th>Component</th>
<th>Regulation</th>
<th>Type of listing</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronic grade propylene glycol monomethyl ether acetate</td>
<td>Rohm and Haas</td>
<td>TWA</td>
<td>30 ppm</td>
</tr>
<tr>
<td></td>
<td>Rohm and Haas</td>
<td>STEL</td>
<td>90 ppm</td>
</tr>
<tr>
<td></td>
<td>Rohm and Haas</td>
<td>Absorbed via skin</td>
<td></td>
</tr>
</tbody>
</table>
### 9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance**
- **Form**: liquid
- **Colour**: clear
- **Odour**: none
- **pH**: 7.0
- **Flash point**: 45 °C (114.08 °F)

**Component**: Electronic grade propylene glycol monomethyl ether acetate
- **Vapour pressure**: 3.7 mmHg at 20 °C
- **Relative vapour density**: Heavier than air.
- **Water solubility**: insoluble
- **Relative density**: 1.10
- **Evaporation rate**: Slower than ether
- **VOC’s**: 446 g/l

**NOTE**: The physical data presented above are typical values and should not be construed as a specification.

### 10. STABILITY AND REACTIVITY

**Hazardous reactions**: Stable under normal conditions.

**Conditions to avoid**: High temperatures, Static discharge, contact with incompatible materials
Materials to avoid

- Strong oxidizing agents
- Strong acids
- Strong Mineral Acids

Hazardous decomposition products

- oxides of carbon
- Ethanol
- silicon dioxide
- polymerization

Will not occur.

11. TOXICOLOGICAL INFORMATION

Toxicological information on this product or its components appear in this section when such data is available.

Component: **Electronic grade propylene glycol monomethyl ether acetate**

- **Acute oral toxicity**
  - LD50 rat 8,532 mg/kg

Component: **Ethanol**

- **Acute oral toxicity**
  - LDLo human 1,400 mg/kg

Component: **Ethanol**

- **Acute oral toxicity**
  - LD50 mouse 3,450 mg/kg

Component: **Ethanol**

- **Acute oral toxicity**
  - LD50 rat 7,060 mg/kg

Component: **Electronic grade propylene glycol monomethyl ether acetate**

- **Acute inhalation toxicity**
  - LC50 rat 6 h 23.49 mg/l

Component: **Ethanol**

- **Acute inhalation toxicity**
  - LC50 rat 10 h 37.68 mg/l

Component: **Electronic grade propylene glycol monomethyl ether acetate**

- **Acute dermal toxicity**
  - LD50 rabbit >5,000 mg/kg

Component: **Ethanol**

- **Acute dermal toxicity**
  - LD50 rabbit 4,070 mg/kg

Component: **Electronic grade propylene glycol monomethyl ether acetate**

**Toxicity to reproduction**

Dermal teratology testing of this solvent (with less than 3% beta isomer) revealed no maternally toxic, teratogenic or fetotoxic responses in rats or rabbits exposed to concentrations of 1,000 and 2,000 mg/kg per day.

Component: **Electronic grade propylene glycol monomethyl ether acetate**

**Mutagenicity**

No significant mutagenic response was observed and the carcinogenic potential of the material is therefore considered to be low.
12. ECOLOGICAL INFORMATION

Ecotoxicological information on this product or its components appear in this section when such data is available.

**Electronic grade propylene glycol monomethyl ether acetate**

Ecotoxicity effects

Toxicity to fish

LC50 Fathead minnow (Pimephales promelas) 96 h
161 mg/l

Toxicity to aquatic invertebrates

EC50 Daphnia magna 48 h
>500 mg/l

**Ethanol**

Ecotoxicity effects

Toxicity to fish

LC50 Fathead minnow (Pimephales promelas) 96 h
14,200 mg/l

Toxicity to algae

Algae 168 h
5,000 mg/l

Toxicity to aquatic invertebrates

EC50 Daphnia magna 48 h
9268 ppm

13. DISPOSAL CONSIDERATIONS

Environmental precautions: Prevent the material from entering drains or water courses. Do not discharge directly to a water source. Advise Authorities if spillage has entered watercourse or sewer or has contaminated soil or vegetation.

Disposal

Dispose in accordance with all local, state (provincial), and federal regulations. Incineration is the recommended method of disposal for containers. Under RCRA, it is the responsibility of the product's user to determine at the time of disposal, whether the product meets RCRA criteria for hazardous waste. This is because the product uses, transformations, mixtures, processes, etc. may render the resulting materials hazardous.

Do not remove label until container is thoroughly cleaned. Empty containers may contain hazardous residues. This material and its container must be disposed of in a safe way.

14. TRANSPORT INFORMATION

**DOT**

Proper shipping name: Corrosive liquids, flammable, n.o.s.(Aromatic sulfur compound, Propylene glycol monomethyl ether acetate)

UN-No: UN 2920

Class: 8, 3

Packing group: II

**IMO/IMDG**
15. REGULATORY INFORMATION

SARA TITLE III: Section 311/312 Categorizations (40CFR370): Immediate, delayed, flammability hazard

SARA TITLE III: Section 313 Information (40CFR372)
This product does not contain a chemical which is listed in Section 313 at or above de minimis concentrations.

U.S. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D):
U.S. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)
This product does not contain any substances subject to Section 12(b) export notification.

US. Toxic Substances Control Act (TSCA) This product contains at least one component that is not listed (and is not excluded from listing) on the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory, and therefore can be used only for research and development purposes under the conditions described in the Code of Federal Regulations at 40 CFR 720.36.

California (Proposition 65)
This product does not contain materials which the State of California has found to cause cancer, birth defects or other reproductive harm.

16. OTHER INFORMATION

Hazard Rating

<table>
<thead>
<tr>
<th>NFPA</th>
<th>Health</th>
<th>Fire</th>
<th>Reactivity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

Legend

<table>
<thead>
<tr>
<th>ACGIH</th>
<th>American Conference of Governmental Industrial Hygienists</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAc</td>
<td>Butyl acetate</td>
</tr>
<tr>
<td>OSHA</td>
<td>Occupational Safety and Health Administration</td>
</tr>
<tr>
<td>PEL</td>
<td>Permissible Exposure Limit</td>
</tr>
<tr>
<td>STEL</td>
<td>Short Term Exposure Limit (STEL):</td>
</tr>
<tr>
<td>TLV</td>
<td>Threshold Limit Value</td>
</tr>
<tr>
<td>TWA</td>
<td>Time Weighted Average (TWA):</td>
</tr>
</tbody>
</table>

| | Bar denotes a revision from prior MSDS. |

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 given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. 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.