

Material Safety Data Sheet

Provisional.

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Product : Optical Adhesives MY-142 and MY-142B

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1. Chemical Product

Chemical identification: Mixture of acrylic and methacrylic resins and monomers.
 Intended uses: Optical adhesive. Low refractive index applications.

2. Composition: >70% proprietary acrylated urethane resin
 <30% proprietary acrylic and methacrylic monomers (Xi; R 36/37/38)

3. Hazard identification:

Classification: Harmful by inhalation and if swallowed. Irritating to eyes, respiratory system and skin.

Adverse human health effects: The product, when properly handled, according to good working and hygienic practices, is not dangerous for the human health.

Environmental effects: The product, when properly used and disposed, is not dangerous for the environment.

Physical and Chemical hazards: By-products from thermal decomposition are toxic and corrosive vapors. As the properties of this product has not been fully explored, care should be exercised when handling.

4. First Aid Procedures:

Symptomatology following exposure:

Eye contact: Redness, irritation
 Skin contact: Redness, irritation
 Ingestion: Abdominal pain, nausea, vomit
 Inhalation: Burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea and vomiting.

First Aid Measures:

Eye contact: Irrigate with pure water for at least 3 minutes, then seek medical attention.
 Skin contact: Wash with soap and water, seek medical advice in case of persistent irritation.
 Ingestion: Wash mouth and then give some glasses of water to drink. Induce vomiting. Seek medical advice in case of persistent pain.
 Inhalation: Take to fresh air. Seek medical advice in case of persistent pain.

5. Fire Fighting Procedures:

Specific hazards: The heating of the product may cause exothermic polymerization and decomposition with emission of toxic and corrosive vapors (HF, COx).

Specific methods: Wear specific protective equipment (see below)
 Stay opposite the wind and at safety distance from the flames.
 Remove the containers, when possible to do it in safe conditions.
 Keep container cool by spraying with water if exposed to fire or other heat sources.

Extinguishing media: Foam, water spray, CO₂, dry chemicals

Protection of fire fighters: Self contained breathing apparatus.
 Protective anti acid overall clothing.

6. Accidental Release Procedures:

Precautions with respect to individuals: Wear suitable protective clothing. Stop the release.

Precautions with respect to environment: Avoid discharge into the environment.
 Stop leaks as soon as possible.
 Clean up spillage immediately.

Cleaning of spillage: Absorb with a mineral filler such as sand, vermiculite etc. collect and store in a suitable container.

7. Storage and handling:

Handling

- Precautions:** No foreseeable hazard when the product is properly handled. Keep away from heat and sources of ignition.
- Technical measures:** Provide working areas with adequate ventilation and with water wash facilities (eye bath and emergency showers)

Storage

- Storage conditions:** keep container closed. Keep away from heat sources. Keep away from combustible, explosive and incompatible materials (sect. 10).
- Packaging:** Glass, plastic, lined materials
- Recommended materials:** The product is light sensitive and be kept in dark containers.
- Non suitable materials:** Not known, however, non-lined metals may corrode and contaminate the product.

8. Exposure control / individual protection:

- Exposure limits:** Only threshold limits of by-products from thermal decomposition are available (ACGIH 2005):
- | | | | |
|-------|-------------|-----------|-------|
| HF: | TLV/Ceiling | 2.6 mg/mc | 3 ppm |
| COF2: | TLV/Ceiling | 5.4 mg/mc | 2 ppm |
- Engineering measures:** Provide working areas with adequate ventilation/aspiration systems.

Personal Protective Equipment

- Respiratory protection** Use aspirator when performing operations involving potential exposure to vapor of the product.
Respirator with filler for organic vapor.
- Eye Protection** Safety goggles
- Hand Protection** rubber gloves
- Skin and body protection** work-suit or rubber apron
- Hygiene measures** Do not drink, eat and smoke during handling.

9. Physical and Chemical Properties:

- Appearance:** viscous liquid.
- Color:** pale yellow, transparent
- Odor:** characteristic, ester-like
- Acidity:** Not applicable
- Refractive index:** 1.40
- Viscosity:** 1000 cps
- Flash point:** >100°C
- Boiling Point:** >200°C
- Decomposition temperature:** >150°C
- Spontaneous ignition:** No
- Explosive Properties:** None
- Vapor Pressure:** < 1 mm Hg @ 20°C
- Density:** 1.2
- Solubility in water:** insoluble.
- Solubility in organic solvents:** soluble in alcohols, esters and ketones
- Volatiles:** < 0.1%

10. Stability and Reactivity

- Stability:** The product is stable in normal conditions of use and storage. May gel upon exposure to light or heat.
- Conditions to avoid:** Temperature above 60°C
Exposure to light
Contact with heat sources
- Materials to avoid:** Avoid thermal free radical producing initiators (peroxides etc.)
Oxidizing or reducing agents
Fine powdered magnesium, aluminum and their alloys above 100°C.
Avoid inerting. (do not store under nitrogen.).
- Hazardous decomposition products:** carbon monoxide. nitrogen oxides, hydrogen cyanide, hydrogen fluoride, carbonyl fluoride.

11. Toxicological Information

| | |
|--|---|
| Penetration routes: | Contact and ingestion |
| Adverse effects for human health: | Delayed and/or immediate effects after short and/or prolonged exposure: |
| Acute toxicity: | No available data |
| Local effects/irritating power: | eyes and skin irritant |
| Sensitization: | No available data |
| Chronic toxicity: | No available data |
| Carcinogenicity: | No available data |
| Mutagenicity: | No available data |
| Reproduction toxicity: | No available data |

12. Ecological information

As this product is a 100% active material, no evaporation or air pollution during handling under normal conditions can occur.

No other data available concerning environmental effects, ecostability or ecotoxicity.

Use the product according to good working practice, avoiding polluting the environment.

13. Disposal Consideration

Waste treatment: Send waste material to thermal destruction using high temperature incinerators designed to burn fluoride compounds.

Packaging treatment: Send to authorized land fills according to local laws and regulations.

14. Transport Regulations

Specific hazards: product not dangerous for transportation (not classified)

Packaging information: Product is normally shipped in either glass or polyethylene bottles.

International transport classification:

U. N. Number not assigned

Packaging group: not assigned

15. Regulatory information

Classification

Classification type: Not required

Hazard class: Xi - irritant

Labeling:

Hazard Symbol: Xi - irritant

Risk Phrases (R): R 36/37/38 irritating to eyes, respiratory system and skin.

Safety Phrases (S): S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S28: After contact with skin, wash immediately with plenty of soap and water.

S36/37/39: Wear protective clothing, gloves and eye/face protection.

16. Other Information

This document completes the technical sheet of use but it does not replace it. The information contained in this document is based on our knowledge of the product at this time.

The producer can offer no guarantee as to the accuracy or exhaustiveness of the above information. All chemicals may present unforeseen risks and should be used with cautions and by trained personnel.

We can not guarantee that the risks referred to above are the only risks present. The final choice of the application of a product is thus the sole responsibility of the user.

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