

I. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**Product/Trade Name: VisiJet® HR-M100 Model Material**

Chemical Family: Organic mixture
 Product Use: For the InVision™ HR 3-D printer only

Manufacturer:



| | In the U.S./Canada | In Europe |
|----------------------|--|--|
| Manufacturer Contact | 3D Systems, Inc. 26081 Avenue Hall Valencia, CA 91355 U.S.A. | 3D Systems GmbH Guerickeweg 9 Darmstadt, Germany |
| For Information: | Phone: 970.257.4700 or Toll-free Phone: 800.793.3669 | Phone: +49 (0) 6151 357-357 Fax: +49 (0) 6151 357-111 |
| Emergency: | 800.424.9300 - Chemtrec | 703.527.3887 - Chemtrec (U.S.) |

**Hazardous Materials
 Identification System
 (HMIS):**

(Degree of hazard: 0 = low, 4 = extreme):

Health 2
 Flammability 0
 Physical Hazards 0 (None)

**National Fire Protection
 Association (NFPA):**

Mixture, Not Rated

II. COMPOSITION INFORMATION

| | | EU Classification | |
|--|---------------|-------------------|----------|
| Chemical Identity | Concentration | Symbol | R-Phrase |
| Triethylene glycol dimethacrylate ester | 35 – 65% | Xi | 38, 43 |
| Mixture of aromatic and aliphatic urethane acrylates with acrylic esters | 5 – 25% | None | none |
| Polypropylene glycol monomethacrylate | 7 – 13% | Xi | 38 |
| Mixture of urethane oligomers | 5 – 15% | None | None |
| Substituted ketone | 1 – 5% | None | 52 |

OSHA Classification: Irritant, sensitizer

III. HAZARDS IDENTIFICATION

MAY CAUSE EYE AND SKIN IRRITATION. MAY CAUSE AN ALLERGIC SKIN REACTION. HAZARDOUS POLYMERIZATION MAY OCCUR UPON DEPLETION OF INHIBITOR OR EXPOSURE TO HEAT. AVOID CONTACT WITH EYES, SKIN AND CLOTHING. WEAR EYE PROTECTION AND IMPERVIOUS GLOVES WHEN HANDLING. KEEP CONTAINER CLOSED WHEN NOT IN USE. DO NOT TAKE INTERNALLY. KEEP OUT OF THE REACH OF CHILDREN.

FOR INDUSTRIAL USE ONLY.

Potential Health Effects

| | |
|-------------|--|
| EYE: | May cause irritation consisting of redness, swelling and pain. |
| SKIN: | May cause irritation or other allergic reactions, including redness and/or swelling. |
| INHALATION: | Inhalation of high concentrations may cause mild respiratory irritation. |
| INGESTION: | Ingestion may cause nausea, diarrhea and/or stomach pain. |
| CHRONIC: | May cause an allergic skin reaction with repeated or prolonged exposure consisting of redness, swelling and/or rash (urticaria). |

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: May aggravate an existing eczema, dermatitis or other skin condition. See notes to physician below.

POTENTIAL ENVIRONMENTAL EFFECTS: A theoretical structure-reactivity calculation predicts that one of the components may be harmful to aquatic organisms.

IV. FIRST AID MEASURES

| | |
|---------------------|---|
| Skin contact: | Immediately flush skin with plenty of soap and water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. |
| Eye contact: | Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation persists. Avoid exposure to UV and other light sources. |
| Inhalation: | Move affected person to fresh air. In case of asphyxia, initiate artificial respiration immediately. If breathing is difficult, give oxygen. Get medical attention immediately. |
| Ingestion: | Ingestion is unlikely. However, if large quantities are swallowed, get medical attention and, if directed by medical personnel, induce vomiting immediately. Never give anything by mouth to an unconscious person. |
| Notes to Physician: | Allergic dermatitis in susceptible individuals may be delayed. It may appear after weeks or even months of frequent and prolonged contact. |

V. FIRE FIGHTING MEASURES

| | |
|-----------------------------------|--|
| Unusual Fire & Explosion Hazards: | Inhibitor depletion caused by heat, exposure to radiation or oxidizers can cause spontaneous polymerization generating heat and pressure. Avoid the use of a stream of water to control fire since frothing can occur. |
| Flashpoint: | Not determined – not expected to be flammable, but will burn at high temperature. |
| Extinguishing media: | Use water mist, dry chemical, carbon dioxide or chemical foam. DO NOT USE high volume water jet. |
| Protective equipment: | Use full protective clothing for chemicals and self-contained breathing apparatus. |

VI. ACCIDENTAL RELEASE MEASURES

For small spills, wipe up with absorbent, inert material and place in suitable and closable container for disposal. Use proper personal protective equipment as indicated in Section VIII. Do not release chemically contaminated water into drains, soil or surface waters. Sufficient measures must be taken to retain water used for extinguishing. Dispose of contaminated water and soil according to local regulations. Remove and clean protective clothing.

VII. HANDLING AND STORAGE

| | |
|-----------|--|
| Handling: | Handle and open container with care. Avoid unnecessary personal contact. Avoid contact with eyes and prolonged or repeated skin contact. Do not inhale mists. Use with adequate ventilation. |
| Storage: | MAXIMUM 35°C (95°F). Store in the original container securely closed and at room temperature. Store indoors in a cool, dry area with adequate ventilation. Store out of direct sunlight or UV light sources. |

VIII. EXPOSURE CONTROLS, PERSONAL PROTECTION

| | ACGIH TLV | OSHA PEL | International OELs |
|---|------------------|------------------|---|
| Triethylene glycol dimethacrylate ester | None established | None established | Germany (MAK); Danger of sensitization of the skin. |
| Other components | None established | None established | None established |

Respiratory protection:..... Not normally required.

Ventilation: General (mechanical) room ventilation is expected to be satisfactory for use at room temperature. Special, local ventilation is recommended at points where vapors generated at high temperatures may be vented to the workplace air.

Eye protection: Wear suitable eye/face protection.

Skin protection: Wear suitable protective clothing and gloves.

Other protective equipment: Eye wash and safety shower should be available in the immediate work area.

IX. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: White to neutral colored soft solid

Melting point:..... 55 - 65°C (131 - 149°F)

Solubility in water: Insoluble at 20°C (68°F)

Vapor pressure: No data

Partition coefficient: No data

Explosive properties:..... Not expected to be explosive

Odor: Slight acrylate odor

Boiling point: No data

Density: 1.01 g/cm³ at 25°C

Flashpoint: >207°C (405°F)

Ignition: No data

pH-value: Not applicable

Viscosity: 12 - 14 mPa*s @ 80°C

X. STABILITY AND REACTIVITY

Conditions to avoid: Inhibitor depletion caused by heat, exposure to radiation or oxidizers can cause spontaneous polymerization generating heat and pressure. Stable under normal use of product.

Materials to avoid: Strong oxidizing agents.

Hazardous decomposition products:..... Thermal decomposition or burning may release oxides of carbon and other toxic gases or vapors.

Hazardous polymerization:..... May occur. Refer to Section 5.

XI. TOXICOLOGICAL INFORMATION

| For Product The toxicological properties of this product have not been thoroughly investigated. | | For Components: | | | | |
|---|-----------------------------|---|-------------------------------|---|----------------------------------|--------------------|
| | | Triethyleneglycol dimethacrylate ester | Urethane acrylates and esters | Urethane oligomers | Propyleneglycol monomethacrylate | Substituted ketone |
| Oral LD ₅₀ | > 2 g/kg (rats) | 4.49 ml/kg (rats) | No data | > 5 g/kg (rats) | 29.1 mg/kg (rat) | No data |
| Dermal LD ₅₀ | > 2 g/kg | > 2.0 ml/kg (rabbits) | No data | > 2 g/kg (rabbits) | > 20 ml/kg (rabbit) | No data |
| Inhalation LC ₅₀ | Slightly toxic | > 2 mg/l (rats) | No data | No data | > 5000 mg/m ³ (rat) | No data |
| Irritation | Mild eye and skin irritant | Minimally irritating to eyes and skin (rabbits) | Eye irritant | Mild skin irritant, moderate eye irritant (rabbits) | Eye irritant | Irritant |
| Sensitization | Expected to be a sensitizer | Sensitizer (guinea pigs) | No data | Sensitizer (guinea pigs) | No data | No data |

Mutagenicity: Triethylene glycol dimethacrylate tested positive in an *in vitro* mammalian cytogenicity test.
Carcinogenicity: This product is not classified as a carcinogen by NTP, IARC, OSHA or EPA.

XII. ECOLOGICAL INFORMATION

The aquatic toxicity of the product is unknown, however, based on a theoretical structure-reactivity calculation, on of the components may be toxic to aquatic organisms and is regulated under TSCA Section 5 Significant New Use Rule (SNRU) concerning release to water. The material is subject to record keeping as specified in 40CFR § 721.3850. Prevent contamination of soil, drains and surface waters.

Data for components: Substituted ketone: Zebra fish, 96-hour LC_{50} = 24 ppm
Daphnia magna, 24-hour EC_{50} = 105 ppm

Inhibitory concentration on respiration of aerobic wastewater bacteria, IC_{20} , IC_{50} , IC_{80} : > 100 ppm
Readily biodegradable (Modified Sturm Test)

XIII. DISPOSAL CONSIDERATIONS

This product is not a hazardous waste as specified in 40CFR 261. Dispose in accordance with all Federal, State and Local regulations. Do not discharge material or clean-up residue into sewers or waterways.

XIV. TRANSPORT INFORMATION

| | US DOT | RID/ADR | IMDG | IATA | IMO | Canada TDG |
|----------------|---------------|---------|------|------|-----|------------|
| Shipping Name | Not regulated | | | | | |
| Hazard Class: | | | | | | |
| UN Number: | | | | | | |
| Packing Group: | | | | | | |

FLASHPOINT: Not determined

XV. REGULATORY INFORMATION

US FEDERAL

TSCA: All materials are listed on the TSCA Inventory. This product is subject to a TSCA Section 5 SNUR concerning record keeping and release to water as specified in 40CFR § 721.3850
CERCLA: None
SARA 313: None
SARA 312 Hazard Class: Health: Acute – Yes
Chronic – No
Fire: No
Reactive: Yes
Sudden Release of Pressure: No
SARA 302 EHS List: None of the components are listed

STATE RIGHT-TO-KNOW STATUS

| Component | CA Prop. 65 | Michigan | New Jersey | Pennsylvania | Massachusetts |
|-----------------------------------|-------------|------------|------------|--------------|---------------|
| 1-hydroxycyclohexyl phenyl ketone | * | Not listed | X | X | Not listed |

* This product may contain trace quantities of a substance known to the state of California to cause cancer and/or reproductive toxicity.

EUROPEAN/INTERNATIONAL REGULATIONS

Hazard Classification

Danger Symbol: Xi Irritant
Risk Phrases: R 36/38 Irritating to eyes and skin
R 43 May cause sensitization by skin contact.

Safety Phrases: S 2 Keep out of reach of children.
S 7 Keep container tightly closed.
S 15 Keep away from heat.
S 24/25 Avoid contact with skin and eyes.
S 37/39 Wear suitable gloves and eye/face protection.
S 46 If swallowed, seek medical advice immediately and show this container or label.

Contains: Trimethylene glycol dimethacrylate

Canadian DSL List:..... The components of this product are on the DSL or are exempt from reporting under the New Substances Notification Regulations.

Canadian IDL: Trimethylene glycol dimethacrylate

WHMIS:..... Class D2B. This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations.

XVI. ADDITIONAL INFORMATION

MSDS Creation Date:.....06/14/04

MSDS Revision #:

MSDS Revision Date:.....

Reason for Revision:.....

For more information:.....www.3dsystems.com

800.793.3669 (Toll-free in the US GMT-07:00; N. America, Mon – Fri, 6:00 a.m. to 6 p.m.)

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