

# Safety Data Sheet

Material Name RIGUR RGD450

SDS ID: DOC-06161\_B USA  
In Compliance with Regulation  
29 CFR 1910.1200

## \*\*\*Section 1 - IDENTIFICATION\*\*\*

**Material Name:** RIGUR RGD450

**Chemical Family**

acrylic compounds

**Recommended Use**

This product is a cartridge containing ink. Under normal conditions of use, the substance is released from a cartridge only inside an appropriate printing system, and therefore, exposure is limited.

**Restrictions on Use**

None known.

**Manufacturer Information**

Objet, Inc.  
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Billerica, MA 01821  
E-mail: info@object.com, www.object.com

Phone: 1-877-489-9449

Emergency # +1 978 495 5580

**24 Hour Emergency Telephone Service**

+49 722 97772280 - Europe - Multi lingual response  
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+61 2 8011 4763 - Australia - Multi lingual response  
+86 15626070595 - China - Chinese response

## \*\*\*Section 2 - HAZARDS IDENTIFICATION\*\*\*

**Classification in accordance with 29 CFR 1910.1200**

Acute Toxicity (Oral), Category 4  
Eye Damage / Irritation, Category 1  
Skin sensitizer, Category 1  
Specific Target Organ Toxicity - Repeated Exposure, Category 2 (organs)

**GHS LABEL ELEMENTS**

**Symbol(s)**



**Signal Word**

DANGER

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## Hazard Statement(s)

- Harmful if swallowed
- Causes serious eye damage
- May cause an allergic skin reaction
- May cause damage to organs through prolonged or repeated exposure

## Precautionary Statement(s)

### Prevention

Wash thoroughly after handling. Do not eat, drink, or smoke when using this product. Do not breathe vapor or fumes. Contaminated work clothing should not be allowed out of the workplace. Use only outdoors or in a well-ventilated area.

### Response

IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Rinse mouth. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician. IF ON SKIN: Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse.

### Storage

None needed according to classification criteria.

### Disposal

Dispose in accordance with all applicable regulations.

## \* \* \*Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS\* \* \*

CAS	Component	Percent
--	Morpholine, 4-(1-oxo-2-propenyl)-	<45
--	Dicyclopentylidimethylene diacrylate	<30
--	Poly(oxy-1,2-ethanediyl), $\alpha, \alpha'$ -[(1-methylethylidene)di-4,1-phenylene]bis[ $\omega$ -[(2-methyl-1-oxo-2-propenyl)oxy]-	<25
5888-33-5	2-Propenoic acid, 1,7,7-trimethylbicyclo[2.2.1]hept-2-yl ester, exo-	<5
--	Methanone, (1-hydroxycyclohexyl)phenyl-	<3
Trade Secret	Phosphine oxide, phenylbis(2,4,6-trimethylbenzoyl)-	<2
13463-67-7	Titanium dioxide	<0.8

## Additional Information

**Notes:** Under normal conditions of use, the substance is released from a cartridge only inside an appropriate printing system, and therefore, exposure is limited. The liquid within the cartridges is considered hazardous, and the MSDS has been prepared in case of exposure to the liquid.

## \* \* \*Section 4 - FIRST AID MEASURES\* \* \*

### Description of Necessary Measures

#### Inhalation

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

#### Skin

IF ON SKIN: Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention.

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## Eyes

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.

## Ingestion

IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Rinse mouth.

## Most Important Symptoms/Effects

### Acute

eye damage, allergic skin reaction

### Delayed

allergic skin reaction, May cause damage to organs through prolonged or repeated exposure

## Indication of Immediate Medical Attention and Special Treatment

If adverse effects occur, treat symptomatically and supportively.

## \* \* \*Section 5 - FIRE FIGHTING MEASURES\* \* \*

### Suitable Extinguishing Media

Use extinguishing agents appropriate for surrounding fire. Class B fires: Use carbon dioxide (CO<sub>2</sub>), regular dry chemical (sodium bicarbonate), regular form (Aqueous Film Forming Foam-AFFF), or water spray to cool containers.

### Unsuitable Extinguishing Media

None known.

### Specific Hazards Arising from the Chemical

Slight fire hazard.

### Hazardous Combustion Products

**Combustion:** None known.

### Special Protective Equipment and Precautions for Firefighters

Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure.

## \* \* \*Section 6 - ACCIDENTAL RELEASE MEASURES\* \* \*

### Personal Precautions, Protective Equipment and Emergency Procedures

See Section 8 for personal protection information. Avoid release to the environment.

### Methods and Materials for Containment and Cleaning Up

Intact cartridges do not pose a leak or spill hazard. Damaged cartridges may leak uncured ink. Stop leak if possible without personal risk. Reduce vapors with water spray. Absorb with sand or other non-combustible material. Collect spilled material with an inert absorbent such as sand or vermiculite. Place in properly labeled closed container. Dispose in accordance with all applicable regulations. Keep out of water supplies and sewers. Flush spill area with water.

## \* \* \*Section 7 - HANDLING AND STORAGE\* \* \*

### Precautions for Safe Handling

Wash thoroughly after handling. Do not eat, drink, or smoke when using this product. Wear protective gloves and eye/face protection. Avoid breathing vapors or fumes. Contaminated work clothing should not be allowed out of the workplace.

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## Conditions for Safe Storage, including any Incompatibilities

Store in accordance with all current regulations and standards. Store locked up. Store in a well-ventilated place. Keep container tightly closed. Store between 15 °C and 25 °C (59 °F and 77 °F). Shipment temperature (up to 5 weeks) is -20°C (-4°F) to 50°C (122°F). Store in a combustible storage area away from heat and open flame. Store in a cool, dry place. Avoid direct sunlight. Keep in the dark. Keep separated from incompatible substances.

**Incompatibilities** Not applicable

## \*\*\*Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION\*\*\*

### Component Exposure Limits

#### Titanium dioxide (13463-67-7)

**ACGIH:** 10 mg/m<sup>3</sup> TWA

**NIOSH:** 5000 mg/m<sup>3</sup> IDLH

**OSHA (US):** 15 mg/m<sup>3</sup> TWA (total dust)

**Mexico:** 10 mg/m<sup>3</sup> TWA LMPE-PPT (as Ti)

20 mg/m<sup>3</sup> STEL [LMPE-CT] (as Ti)

### Component Analysis

There are no biological limit values for any of this product's components.

### Appropriate Engineering Controls

Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

### Individual Protection Measures, such as Personal Protective Equipment

#### Eyes/Face Protection

Eye protection not required under normal conditions. Chemical goggles or safety glasses with side shields should be worn when handling a damaged cartridge.

#### Skin Protection

Protective clothing is not required under normal conditions. Wear neoprene or nitrile impervious gloves when handling damaged cartridge. Wash contaminated clothing before reuse.

#### Glove Recommendations

Wear neoprene or nitrile impervious gloves when handling damaged cartridge.

#### Respiratory Protection

Respiratory protection is not generally needed when using this product.

## \*\*\*Section 9 - PHYSICAL AND CHEMICAL PROPERTIES\*\*\*



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<b>Physical State:</b>	Liquid	<b>Appearance:</b>	cartridge containing white liquid
<b>Color:</b>	white	<b>Physical Form:</b>	liquid
<b>Odor:</b>	characteristic odor	<b>Odor Threshold:</b>	Not available
<b>pH:</b>	Not available	<b>Melting Point:</b>	Not available
<b>Boiling Point:</b>	Not available	<b>Decomposition:</b>	Not available
<b>Flash Point:</b>	>100 C	<b>Evaporation Rate:</b>	Not available
<b>LEL:</b>	Not available	<b>UEL:</b>	Not available
<b>Vapor Pressure:</b>	Not available	<b>Vapor Density (air = 1):</b>	Not available
<b>Density:</b>	Not available	<b>Specific Gravity (water = 1):</b>	Not available
<b>Water Solubility:</b>	Not available	<b>Log KOW:</b>	Not available
<b>Coeff. Water/Oil Dist:</b>	Not available	<b>Auto Ignition:</b>	Not available
<b>Viscosity:</b>	Not available	<b>Volatility:</b>	Not available

## Other Property Information

No additional information is available.

## \*\*\*Section 10 - STABILITY AND REACTIVITY\*\*\*

### Reactivity

No reactivity hazard is expected.

### Chemical Stability

Stable under normal conditions of use. Store between 15 °C and 25 °C (59 °F and 77 °F).

### Possibility of Hazardous Reactions

Uncured ink will polymerize on exposure to light or heat rendering the product unusable. However, this reaction is not considered hazardous.

### Conditions to Avoid

Avoid exposure to heat and light.

### Incompatible Materials

Not applicable

### Hazardous Decomposition

**Combustion:** None known.

## \*\*\*Section 11 - TOXICOLOGICAL INFORMATION\*\*\*

### Acute and Chronic Toxicity

No hazard is expected from the normal use of this product. While unlikely, uncured ink may leak from damaged ink cartridges and cause skin and eye irritation. Contact with skin may cause tingling sensation or skin irritation. Contact with eyes may cause eye irritation, inflammation, or eye damage.

### Component Analysis - LD50/LC50

The components of this material have been reviewed in various sources and the following selected endpoints are published:

#### Titanium dioxide (13463-67-7)

Oral LD50 Rat >10000 mg/kg

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## Acute Toxicity Level

### Titanium dioxide (13463-67-7)

**Moderately Toxic:** inhalation

**Slightly Toxic:** ingestion

## Information on Likely Routes of Exposure

### Inhalation

none

### Ingestion

Harmful if swallowed.

### Skin Contact

allergic reactions

### Eye Contact

burns

## Immediate Effects

eye damage, allergic skin reaction

## Delayed Effects

May cause damage to organs through prolonged or repeated exposure, allergic skin reaction

## Medical Conditions Aggravated by Exposure

None known.

## Irritation/Corrosivity Data

Contact with uncured ink may cause eye damage and skin irritation.

## Respiratory Sensitization

No data available for the mixture.

## Dermal Sensitization

Component data indicate the substance is sensitizing. Uncured ink may cause an allergic response in sensitized individuals.

## Carcinogenicity

### Component Carcinogenicity

#### Titanium dioxide (13463-67-7)

**ACGIH:** A4 - Not Classifiable as a Human Carcinogen

**IARC:** Monograph 93 [2010]; Monograph 47 [1989] (Group 2B (possibly carcinogenic to humans))

**DFG:** Category 3A (could be carcinogenic for man, inhalable fraction with the exception of ultra small particles)

Although Titanium Dioxide is classifiable by IARC as 2b carcinogen, under normal conditions of use carcinogenicity status will not be present as TiO<sub>2</sub> will be suspended in a liquid.

## Mutagenic Data

No data available for the mixture.

## Reproductive Effects Data

No data available for the mixture.

## Tumorigenic Data

No data available for the mixture.

## Additional Data

Uncured ink may polymerize and adhere to tissue.



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## Specific Target Organ Toxicity - Single Exposure

eyes, skin, respiratory system

## Specific Target Organ Toxicity - Repeated Exposure

May cause damage to organs through prolonged or repeated exposure

## Aspiration Hazard

No data available for the mixture.

## \*\*\*Section 12 - ECOLOGICAL INFORMATION\*\*\*

### Ecotoxicity

No data available.

### Persistence and Degradability

No data available.

### Bioaccumulative Potential

No data available.

### Mobility

No data available.

## \*\*\*Section 13 - DISPOSAL CONSIDERATIONS\*\*\*

### Disposal Methods

Dispose in accordance with all applicable regulations. Refer to manufacturer/supplier for information on recovery/recycling. Do not landfill. Avoid discharge into drains or surface water. See Section 7 for Handling Procedures. See Section 8 for Personal Protective Equipment recommendations. Hazardous Waste Number(s): 08 03 12\*

### Component Waste Numbers

No EPA Waste Numbers are applicable for this product's components.

## \*\*\*Section 14 - TRANSPORT INFORMATION\*\*\*

### Transportation

Not regulated as a hazardous material.

### US DOT Information

No Classification assigned.

### IMDG Information

No Classification assigned.

## \*\*\*Section 15 - REGULATORY INFORMATION\*\*\*

### Component Analysis

#### U.S. Federal Regulations

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 311/312 (40 CFR 370.21), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

#### Morpholine, 4-(1-oxo-2-propenyl)- (5117-12-4)

TSCA 12b: Section 5, 1 % de minimus concentration EPA: P-95-0169

#### SARA 311/312 Hazardous Categories

Acute Health: Yes Chronic Health: Yes Fire: No Pressure: No Reactive: No

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## U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA
Titanium dioxide	13463-67-7	No	Yes	Yes	Yes	Yes

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):

WARNING! This product contains a chemical known to the state of California to cause cancer.

## Canada Regulations

WHMIS CLASSIFICATION: D2A, D2B.

## Canadian WHMIS Ingredient Disclosure List (IDL)

No components are listed in the WHMIS IDL.

## Component Analysis - Inventory

Component	CAS	PHIL	MITI	KOREA	CHINA
Morpholine, 4-(1-oxo-2-propenyl)-	5117-12-4	No	Yes	Yes	Yes
Dicyclopentylidimethylene diacrylate	42594-17-2	Yes	Yes	Yes	Yes
Poly(oxy-1,2-ethanediyl), $\alpha,\alpha'$ -[(1-methylethylidene)di-4,1-phenylene]bis[ $\omega$ -[(2-methyl-1-oxo-2-propenyl)oxy]-	41637-38-1	No	Yes	No	Yes
2-Propenoic acid, 1,7,7-trimethylbicyclo[2.2.1]hept-2-yl ester, exo-	5888-33-5	Yes	Yes	Yes	Yes
Methanone, (1-hydroxycyclohexyl)phenyl-	947-19-3	Yes	Yes	Yes	Yes
Phosphine oxide, phenylbis(2,4,6-trimethylbenzoyl)-	Trade Secret	Yes	Yes	Yes	Yes
Titanium dioxide	13463-67-7	Yes	Yes	Yes	Yes

## \* \* \*Section 16 - OTHER INFORMATION\* \* \*

## Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; EEC - European Economic Community; EIN (EINECS) - European Inventory of Existing Commercial Chemical Substances; ELN (ELINCS) - European List of Notified Chemical Substances; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IMDG - International Maritime Dangerous Goods; Kow - Octanol/water partition coefficient; LEL - Lower Explosive Limit; RID - European Rail Transport; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TWA - Time Weighted Average; UEL - Upper Explosive Limit



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### Other Information

The information in this safety data sheet is based on data and samples provided to a third party SDS author. The sheet was written to the best of our ability and according to the state of knowledge at that time. The safety data sheet only constitutes a guideline for the safe handling, use, consumption, storage, transport and disposal of the substances/preparations/mixtures mentioned in this safety data sheet. New safety data sheets are written from time to time. Only the most recent versions may be used. Unless indicated otherwise word for word on the safety data sheet, the information does not apply to substances/preparations/mixtures in purer form, mixed with other substances or in processes. The safety data sheet offers no quality specification for the substances/preparations/mixtures in question.

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End of Sheet DOC-06161\_B USA