

## Safety Data Sheet

Material Name: RIGUR RGD450

MSDS ID: DOC-06161\_C

In Compliance with Regulation (EC) 1907/2006 (REACH) as Amended

### \*\*\*Section 1 - IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING\*\*\*

#### 1.1 Product Identifier:

Material Name: RIGUR RGD450

#### Chemical Family

acrylic compounds

#### 1.2 Relevant Identified Uses of the Substance or Mixture and Uses Advised Against

##### Identified Uses

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.

##### Uses Advised Against

None known.

#### 1.3 Details of the supplier of the safety data sheet

Stratasys GmbH  
Airport Boulevard B 120  
D-77836 Rheinmünster, Germany

Phone: +49 722 97 77 20

Emergency # +49 722 97772280

+49 722 97772280 : Europe (Multi-lingual Response)  
+49 722 97772281 : Global (English language response)  
+1 978 495 5580 : USA (Multi-lingual Response)  
+85 2 975 70887 : Asia Pacific (Multi-lingual Response)  
+61 2 8011 4763 : Australia (Multi-lingual Response)  
+86 15626070595 : China (Chinese language response)

#### Email Address

info@stratasys.com, www.stratasys.com

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

#### 2.1 Classification of the Substance or Mixture

##### Classification according to Regulation (EC) No 1272/2008

Acute Toxicity (Oral), Category 4  
Eye Damage / Irritation, Category 1  
Skin sensitizer, Category 1  
Specific Target Organ Toxicity - Repeated Exposure, Category 2  
Hazardous to the Aquatic Environment - Chronic Hazard, Category 2

#### 2.2 Label Elements

## Safety Data Sheet

Material Name: RIGUR RGD450

MSDS ID: DOC-06161\_C

In Compliance with Regulation (EC) 1907/2006 (REACH) as Amended

Labeling according to Regulation (EC) 1272/2008/EC:

Symbol(s)



### Signal Word

DANGER

### Hazard Statement(s)

**H302** Harmful if swallowed.

**H318** Causes serious eye damage.

**H317** May cause an allergic skin reaction.

**H373** May cause damage to organs through prolonged or repeated exposure.

**H411** Toxic to aquatic life with long lasting effects.

### Precautionary Statement(s)

#### Prevention

**P280** Wear protective gloves/protective clothing/eye protection/face protection. **P261** Avoid breathing dust/fume/gas/mist/vapours/spray.

#### Response

**P305+P351+P338** IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. **P310** Immediately call a POISON CENTER or doctor/physician.

**P333+P313** If skin irritation or rash occurs: Get medical advice/attention.

#### Disposal

**P501** Dispose of contents/container in accordance with local/regional/national/international regulations.

### 2.3 Other Hazards

None known.

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

CAS EC No Registration No	Component Synonyms	1272/2008 (CLP)	Percent
----	Acrylic monomer	Acute Tox. 4 (Oral) Eye Dam. 1 Skin Sens. 1 STOT RE 2	<45
----	Acrylic monomer		<30
----	Acrylic oligomer		<25

## Safety Data Sheet

Material Name: RIGUR RGD450

MSDS ID: DOC-06161\_C

In Compliance with Regulation (EC) 1907/2006 (REACH) as Amended

5888-33-5 227-561-6 --	Exo-1,7,7-Trimethylbicyclo[2.2.1]hept-2-yl acrylate		<5
----	photo initiator		<3
Trade Secret	photo initiator	Skin Sens. 1 Aquatic Chronic 4	<2
13463-67-7 236-675-5 --	Titanium dioxide		<0.8

**Notes: B** Some substances (acids, bases, etc.) are placed on the market in aqueous solutions at various concentrations and, therefore, these solutions require different classification and labelling since the hazards vary at different concentrations. In Part 3 of Annex VI entries with Note B have a general designation of the following type: "nitric acid ...%". In this case the supplier must state the percentage concentration of the solution on the label. Unless otherwise stated, it is assumed that the percentage concentration is calculated on a weight/weight basis.

### 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\* \* \*

#### 4.1 Description of First Aid 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.

##### 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.

#### 4.2 Most Important Symptoms and Effects, both Acute and Delayed

##### Acute

eye damage, allergic skin reaction

##### Delayed

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

#### 4.3 Indication of any Immediate Medical Attention and Special Treatment Needed

##### Note to Physicians

No special instructions.

In Compliance with Regulation (EC) 1907/2006 (REACH) as Amended

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

#### 5.1 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.

#### 5.2 Special Hazards Arising from the Substance or Mixture

Slight fire hazard.

#### Thermal Decomposition Products

**Combustion:** None known.

#### 5.3 Advice for Firefighters

##### Fire Fighting Measures

Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Keep unnecessary people away, isolate hazard area and deny entry. Keep out of water supplies and sewers. Avoid inhalation of material or combustion by-products.

##### 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\*\*\*

#### Occupational Spill / Release

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 in appropriate container for disposal. Keep out of water supplies and sewers.

#### 6.1 Personal Precautions, Protective Equipment and Emergency Procedures

See Section 8 for personal protection information.

#### 6.2 Environmental Precautions

Avoid release to the environment.

#### 6.3 Methods and Material for Containment and Cleaning up

Collect spilled material with an inert absorbent such as sand or vermiculite. Place in properly labeled closed container. Flush area with water to remove trace residue.

#### 6.4 Reference to Other Sections

See Section 7 for Handling Procedures. See Section 8 for Personal Protective Equipment recommendations. See Section 13 for Disposal Considerations.

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

#### 7.1 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.

In Compliance with Regulation (EC) 1907/2006 (REACH) as Amended

**7.2 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.

**\*\*\*Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION\*\*\*****8.1 Control Parameters****Component Exposure Limits****Titanium dioxide (13463-67-7)**

<b>Austria:</b>	5 mg/m <sup>3</sup> TWA (alveolar dust, respirable fraction) 10 mg/m <sup>3</sup> STEL (alveolar dust, respirable fraction, 2 X 60 min)
<b>Belgium:</b>	10 mg/m <sup>3</sup> TWA
<b>Bulgaria:</b>	10.0 mg/m <sup>3</sup> TWA (respirable dust)
<b>Denmark:</b>	6 mg/m <sup>3</sup> TWA (as Ti)
<b>Estonia:</b>	5 mg/m <sup>3</sup> TWA
<b>France:</b>	10 mg/m <sup>3</sup> TWA (as Ti)
<b>Greece:</b>	10 mg/m <sup>3</sup> TWA (inhalable fraction); 5 mg/m <sup>3</sup> TWA (respirable fraction)
<b>Ireland:</b>	10 mg/m <sup>3</sup> TWA (total inhalable dust); 4 mg/m <sup>3</sup> TWA (respirable dust)
<b>Latvia:</b>	10 mg/m <sup>3</sup> TWA
<b>Lithuania:</b>	5 mg/m <sup>3</sup> TWA
<b>Poland:</b>	10.0 mg/m <sup>3</sup> TWA (<2% free crystalline silica and containing no asbestos, total inhalable dust)
<b>Portugal:</b>	10 mg/m <sup>3</sup> TWA [VLE-MP]
<b>Romania:</b>	15 mg/m <sup>3</sup> STEL 10 mg/m <sup>3</sup> TWA
<b>Spain:</b>	10 mg/m <sup>3</sup> TWA [VLA-ED]
<b>Sweden:</b>	5 mg/m <sup>3</sup> LLV (total dust)
<b>United Kingdom:</b>	10 mg/m <sup>3</sup> TWA (total inhalable); 4 mg/m <sup>3</sup> TWA (respirable) 30 mg/m <sup>3</sup> STEL (calculated, total inhalable); 12 mg/m <sup>3</sup> STEL (calculated, respirable) 10 mg/m <sup>3</sup> TWA

**Biological Limit Value****Component Analysis**

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

**Derived No Effect Levels (DNELs)**

No DNELs available.

**Predicted No Effect Concentrations (PNECs)**

No PNECs available.

**8.2 Exposure Controls****Appropriate Engineering Controls**

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

**Eye / 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.

## Safety Data Sheet

Material Name: RIGUR RGD450

MSDS ID: DOC-06161\_C

In Compliance with Regulation (EC) 1907/2006 (REACH) as Amended

### 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\* \* \*

### 9.1 Information on Basic Physical and Chemical Properties

<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

### 9.2 Other Information

No additional information is available.

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

### 10.1 Reactivity

Heating may cause a fire

### 10.2 Chemical Stability

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

### 10.3 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.

### 10.4 Conditions to Avoid

Avoid exposure to heat and light.

### 10.5 Incompatible Materials

Not applicable

### 10.6 Hazardous Decomposition Products

#### Thermal Decomposition Products

**Combustion:** None known.

In Compliance with Regulation (EC) 1907/2006 (REACH) as Amended

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

#### 11.1 Information on Toxicological Effects

##### 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

##### Irritation / Corrosivity

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

##### Respiratory Sensitization

No data available for the mixture.

##### Skin Sensitization

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

##### Germ Cell Mutagenicity

No data available for the mixture.

##### Carcinogenicity

##### Component Carcinogenicity

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

**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)

##### Reproductive Toxicity

No data available for the mixture.

##### 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\*\*\*

#### 12.1 Toxicity

#### 12.2 Persistence and Degradability

No information available.

#### 12.3 Bioaccumulative Potential

No information available.

#### 12.4 Mobility in Soil

No information available.

## Safety Data Sheet

Material Name: RIGUR RGD450

MSDS ID: DOC-06161\_C

In Compliance with Regulation (EC) 1907/2006 (REACH) as Amended

### 12.5 Results of PBT and vPvB Assessment

No information available.

### EU - Interim Strategy for Management of PBT and vPvB Substances (PBT Assessments)

No components of this material are listed.

### 12.6 Other Adverse Effects

No information available.






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

### 13.1 Waste Treatment 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\*

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

### Transportation

	ADR	RID	ICAO	ADN	IMDG
<b>14.2 UN Number</b>	3082	3082	3082	3082	3082
<b>UN Proper Shipping Name</b>	Environmentally hazardous substance, liquid, n.o.s. <small>(Contains: Exo-1,7,7-Trimethylbicyclo[2.2.1]hept-2-yl acrylate)</small>	Environmentally hazardous substance, liquid, n.o.s. <small>(Contains: Exo-1,7,7-Trimethylbicyclo[2.2.1]hept-2-yl acrylate)</small>	Environmentally hazardous substance, liquid, n.o.s. <small>(Contains: Exo-1,7,7-Trimethylbicyclo[2.2.1]hept-2-yl acrylate)</small>	Environmentally hazardous substance, liquid, n.o.s. <small>(Contains: Exo-1,7,7-Trimethylbicyclo[2.2.1]hept-2-yl acrylate)</small>	Environmentally hazardous substance, liquid, n.o.s. <small>(Contains: Exo-1,7,7-Trimethylbicyclo[2.2.1]hept-2-yl acrylate)</small>
<b>14.3 Transport Hazard Class(es)</b>	<b>Hazard Class: 9</b> 	<b>Hazard Class: 9</b> 	<b>Hazard Class: 9</b> 	<b>Hazard Class: 9</b> 	<b>Hazard Class: 9</b> 
<b>14.4 Packing Group</b>	<b>Packing Group: III</b>	<b>Packing Group: III</b>	<b>Packing Group: III</b>	<b>Packing Group: III</b>	<b>Packing Group: III</b>
<b>14.5 Environmental Hazards</b>	<b>Marine Pollutant</b>	<b>Marine Pollutant</b>	<b>Marine Pollutant</b>	<b>Marine Pollutant</b>	<b>Marine Pollutant</b>
<b>14.6 Special Precautions</b>	<b>Classification</b>	<b>Classification</b>	<b>Passenger</b>	<b>Classification</b>	<b>EMS: F-A, S-</b>



## Safety Data Sheet

Material Name: RIGUR RGD450

MSDS ID: DOC-06161\_C

In Compliance with Regulation (EC) 1907/2006 (REACH) as Amended

For User	n Code : M6	n Code : M6	and Cargo aircraft - Packaging Instructions : Y964/964	n Code : M6	F
----------	-------------	-------------	--	-------------	---

14.7 Transport in Bulk  
According to Annex II

or MARPOL 73/78 and the IBC Code

### International Bulk Chemical Code

This material contains one or more of the following chemicals required by the IBC Code to be identified as dangerous chemicals in bulk.

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

IBC Code: Category Z (slurry)

<b>***Section 15 - REGULATORY INFORMATION***</b>
--

### 15.1 Safety, Health and Environmental Regulations / Legislation Specific for the Substance or Mixture

#### EU - REACH (1907/2006) - Annex XIV List of Substances Subject to Authorisation

No components of this material are listed.

#### EU - REACH (1907/2006) - Article 59(1) Candidate List of Substances for Eventual Inclusion in Annex XIV

No components of this material are listed.

#### EU - REACH (1907/2006) - Annex XVII Restrictions of Certain Dangerous Substances, Mixtures and Articles

No components of this material are listed.

### Germany Regulations

#### Germany Water Classification

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

ID Number 6697, hazard class 2 - hazard to waters

**Exo-1,7,7-Trimethylbicyclo[2.2.1]hept-2-yl acrylate (5888-33-5)**

ID Number 2247, hazard class 2 - hazard to waters

**Methanone, (1-hydroxycyclohexyl)phenyl- (947-19-3)**

ID Number 2124, not considered hazardous to water

**Phosphine oxide, phenylbis(2,4,6-trimethylbenzoyl)- (Trade Secret)**

ID Number 2126, hazard class 1 - low hazard to waters

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

ID Number 1345, not considered hazardous to water

### Denmark Regulations

#### Environmental Protection Agency List of Undesirable Substances

No components of this material are listed.

#### Advisory List for Self-Classification of Dangerous Substances

**Dicyclopentylidimethylene diacrylate (42594-17-2)**

;;;

## Safety Data Sheet

Material Name: RIGUR RGD450

MSDS ID: DOC-06161\_C

In Compliance with Regulation (EC) 1907/2006 (REACH) as Amended

**Methanone, (1-hydroxycyclohexyl)phenyl- (947-19-3)**

### Advisory List for CLP-Classifications

**Dicyclopentylidimethylene diacrylate (42594-17-2)**

Carc2, SkinSens1, SkinIrr2, Acute1

**Methanone, (1-hydroxycyclohexyl)phenyl- (947-19-3)**

Chron3

### EU Inventory

#### Substance Analysis - Inventory

Component	CAS	EEC
Acrylic monomer	----	ELN
Acrylic monomer	----	EIN
Acrylic oligomer	----	No
Exo-1,7,7-Trimethylbicyclo[2.2.1]hept-2-yl acrylate	5888-33-5	EIN
photo initiator	----	EIN
photo initiator	Trade Secret	ELN
Titanium dioxide	13463-67-7	EIN

### 15.2 Chemical Safety Assessment

No chemical safety assessment has been carried out for the substance/mixture.

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

#### 16.1 Indication of changes

#### 16.2 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

#### 16.3 Key literature references and sources for data

Available upon request

#### 16.4 Methods used for classification of mixture according to Regulation (EC) No 1272/2008

Available upon request

#### 16.5 Training Advice

Read the Safety Data Sheet before handling product.

**In Compliance with Regulation (EC) 1907/2006 (REACH) as Amended****16.6 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.

Compliance with the instructions in this safety data sheet does not release the user from the obligation to take all measures dictated by common sense, regulations and recommendations or which are necessary and/or useful based on the real applicable circumstances. Stratasys does not guarantee the accuracy or exhaustiveness of the information provided. Use of this safety data sheet is subject to the license and liability limiting conditions as stated in your license agreement. All intellectual property rights to this sheet are the property of Stratasys and its distribution and reproduction are limited.

End of Sheet DOC-06161\_C