

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

**Material Name:** VEROCYAN RGD841

**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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**24 Hour Emergency Telephone Service**

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

**Classification in accordance with 29 CFR 1910.1200**

Acute Toxicity (Oral), Category 4

Eye Damage / Irritation, Category 1

Skin Corrosion / Irritation, Category 2

Skin sensitizer, Category 1

Specific Target Organ Toxicity - Single Exposure, Category 3 (respiratory system)

Specific Target Organ Toxicity - Repeated Exposure, Category 2

Hazardous to the Aquatic Environment - Chronic Hazard, Category 2

**GHS LABEL ELEMENTS**

**Symbol(s)**



### Signal Word

DANGER

### Hazard Statement(s)

Harmful if swallowed.  
 Causes serious eye damage.  
 Causes skin irritation.  
 May cause an allergic skin reaction.  
 May cause respiratory irritation.  
 May cause damage to organs through prolonged or repeated exposure.  
 May cause damage to organs through prolonged or repeated exposure.  
 Toxic to aquatic life with long lasting effects.

### Precautionary Statement(s)

#### Prevention

Wash thoroughly after handling. Do not eat, drink, or smoke when using this product. Wear protective gloves and eye/face protection. Contaminated work clothing should not be allowed out of the workplace. Use only outdoors or in a well-ventilated area. Do not breathe vapor or mist.

#### Response

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

#### Storage

Store in a well-ventilated place. Keep container tightly closed. Store locked up.

#### Disposal

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

#### Hazard(s) Not Otherwise Classified

None known.

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

CAS	Component	Percent
--	Acrylic monomer	<30
5888-33-5	Exo-1,7,7-Trimethylbicyclo [2.2.1]hept-2-yl acrylate	<25
--	Acrylic Oligomer	<15
--	Photo initiator	<2
52408-84-1	Acrylic acid ester	<0.3
13463-67-7	Titanium dioxide	<0.8
108-65-6	Propylene glycol monomethyl ether acetate	0.01-0.1
7664-38-2	Phosphoric acid	0.0005-0.002

### 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.

TITANIUM DIOXIDE is present in a low concentration, dispersed in a 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. Take off contaminated clothing and wash before re-use.

##### 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

respiratory tract irritation, eye damage, skin irritation, allergic skin reaction

##### Delayed

allergic reactions, 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:** oxides of carbon

#### 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.

### Special Protective Equipment and Precautions for Firefighters

Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure. Avoid inhalation of material or combustion by-products.

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

### Personal Precautions, Protective Equipment and Emergency Procedures

Wear personal protective clothing and equipment, see Section 8. 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

Do not breathe vapor or mist. Use only outdoors or in a well-ventilated area. Wear protective gloves and eye/face protection. Contaminated work clothing should not be allowed out of the workplace. Wash thoroughly after handling. Do not eat, drink, or smoke when using this product. Avoid release to the environment.

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

**Incompatibilities** Not applicable under normal conditions of use and storage.

### \*\*\*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)

#### Propylene glycol monomethyl ether acetate (108-65-6)

**Europe:** 50 ppm TWA; 275 mg/m<sup>3</sup> TWA

Possibility of significant uptake through the skin

100 ppm STEL; 550 mg/m<sup>3</sup> STEL

#### Phosphoric acid (7664-38-2)

**ACGIH:** 1 mg/m<sup>3</sup> TWA

3 mg/m<sup>3</sup> STEL

**NIOSH:** 1 mg/m<sup>3</sup> TWA

3 mg/m<sup>3</sup> STEL

1000 mg/m<sup>3</sup> IDLH

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**Europe:** 1 mg/m3 TWA  
2 mg/m3 STEL  
**OSHA (US):** 1 mg/m3 TWA  
**Mexico:** 1 mg/m3 TWA LMPE-PPT  
3 mg/m3 STEL [LMPE-CT]

### 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.

<b>***Section 9 - PHYSICAL AND CHEMICAL PROPERTIES***</b>
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<b>Physical State:</b>	Liquid	<b>Appearance:</b>	ink cartridge containing blue liquid ink
<b>Color:</b>	blue	<b>Physical Form:</b>	liquid
<b>Odor:</b>	characteristic odor	<b>Odor Threshold:</b>	Not available
<b>pH:</b>	Not applicable	<b>Melting Point:</b>	Not available
<b>Boiling Point:</b>	Not available	<b>Decomposition:</b>	Not available
<b>Flash Point:</b>	>100 °C (>212°F)	<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>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\*\*\*

#### Chemical Stability

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 or light.

#### Incompatible Materials

Not applicable under normal conditions of use and storage.

#### Hazardous Decomposition

**Combustion:** oxides of carbon

### \*\*\*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

##### Propylene glycol monomethyl ether acetate (108-65-6)

Dermal LD50 Rabbit >5 g/kg; Oral LD50 Rat 8532 mg/kg

##### Phosphoric acid (7664-38-2)

Oral LD50 Rat 1530 mg/kg; Dermal LD50 Rabbit 2730 mg/kg; Inhalation LC50 Rat >850 mg/m<sup>3</sup> 1 h

#### Acute Toxicity Level

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

**Moderately Toxic:** inhalation

**Slightly Toxic:** ingestion

##### Propylene glycol monomethyl ether acetate (108-65-6)

**Slightly Toxic:** inhalation, ingestion

##### Phosphoric acid (7664-38-2)

**Highly Toxic:** inhalation

**Moderately Toxic:** ingestion

#### Information on Likely Routes of Exposure

##### Inhalation

irritation

##### Ingestion

Harmful if swallowed.

##### Skin Contact

irritation, allergic reactions

### Eye Contact

burns

### Immediate Effects

respiratory tract irritation, eye damage, skin irritation, allergic reactions

### Delayed Effects

allergic reactions, May cause damage to organs through prolonged or repeated exposure.

### Medical Conditions Aggravated by Exposure

None known.

### Irritation/Corrosivity Data

Contact with uncured ink may cause eye damage and skin irritation. Inhalation may cause respiratory tract 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)

### 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.

### Specific Target Organ Toxicity - Single Exposure

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

Harmful to aquatic life with long lasting effects.

#### Component Analysis - Aquatic Toxicity

Data may be available for the product or its components (if applicable, see below).

##### Propylene glycol monomethyl ether acetate (108-65-6)

**Fish:** 96 Hr LC50 Pimephales promelas: 161 mg/L [static]

**Invertebrate:** 48 Hr EC50 Daphnia magna: >500 mg/L

##### Phosphoric acid (7664-38-2)

**Fish:** 96 Hr LC50 Gambusia affinis: 3 - 3.5 mg/L

**Invertebrate:** 12 Hr EC50 Daphnia magna: 4.6 mg/L

#### 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.

#### Component Waste Numbers

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

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

#### US DOT Information

**Shipping Name:** environmentally hazardous substance, liquid, n.o.s. (Contains: exo-1,7,7 –trimethylbicyclo (2.2.1) Hept -2- yl acrylate)

**UN/NA#:** UN3082 **Hazard Class:** 9 **Packing Group:** III

**Required Label(s):** 9

#### IMDG Information

**Shipping Name:** environmentally hazardous substance, liquid, n.o.s. (Contains: exo-1,7,7 –trimethylbicyclo (2.2.1) Hept -2- yl acrylate)

**UN #:** UN3082 **Hazard Class:** 9 **Packing Group:** III

**Required Label(s):** 9



## \*\*\*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.

**Acrylic monomer (5117-12-4)**

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

**Phosphoric acid (7664-38-2)**

**CERCLA:** 5000 lb final RQ; 2270 kg final RQ

## SARA 311/312 Hazardous Categories

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

## 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
Phosphoric acid	7664-38-2	Yes	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: D2B.

## Canadian WHMIS Ingredient Disclosure List (IDL)

No components are listed in the WHMIS IDL.

## Component Analysis - Inventory

Component	CAS	US	CA
Acrylic monomer	--	Yes	NSL
Exo-1,7,7-Trimethylbicyclo [2.2.1]hept-2-yl acrylate	5888-33-5	Yes	DSL
Acrylic Oligomer	--	Yes	DSL
Photo initiator	--	Yes	DSL
Acrylic acid ester	52408-84-1	Yes	DSL
Titanium dioxide	13463-67-7	Yes	DSL
Propylene glycol monomethyl ether acetate	108-65-6	Yes	DSL
Phosphoric acid	7664-38-2	Yes	DSL

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

## Summary of Changes

New MSDS: October 23, 2012

**NFPA Ratings: Health: 3 Fire: 1 Reactivity: 0**



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Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

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1 MSDS ID: DOC-06154US\_B

In Compliance with Regulation 29 CFR 1910.1200

**HMIS Ratings: Health: 3 Fire: 1 Reactivity: 0**

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe \* = Chronic hazard

### Key / Legend

ADR - European Road Transport; 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

### 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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