



Material Safety Data Sheet

Material Name: Objet VeroBlackPlus, RGD875

ID: FC875

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Material Name: Objet VeroBlackplus, RGD875

Manufacturer Information

Objet, Inc.
5 Fortune Drive
Billerica, MA 01821
E-mail: objet-info@stratasys.com, www.stratasys.com
Phone: 1-877-489-9449

24 Hour Emergency Telephone Service

+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 response

Synonyms

FC875

Chemical Family

mixture of acrylic monomers and oligomers

Product Use

industrial

Section 2 - HAZARDS IDENTIFICATION

NFPA Ratings: Health: 2 Fire: 1 Reactivity: 0

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

Overview

This product is considered to be an article according to 29 CFR 1910.1200 (OSHA Hazard Communication Standard) and the Canadian Controlled Product Regulations. While no specific safety information is required for articles, this Material Safety Data Sheet is provided for informational purposes. As manufactured and supplied, the Objet ink cartridge is not hazardous under normal conditions of use. While unlikely, uncured ink may leak from damaged ink cartridges and cause eye irritation. Uncured ink may cause an allergic response in sensitized individuals. The liquid within the cartridges is considered hazardous, and the MSDS has been prepared in case of exposure to the liquid. Under normal conditions of use, the substance is released from a cartridge only inside an appropriate printing system, and therefore, exposure is limited.

EMERGENCY OVERVIEW

Color: black

Physical Form: article containing liquid

Odor: characteristic odor

Health Hazards: eye irritation, allergic reactions

**POTENTIAL HEALTH EFFECTS****Inhalation****Short Term:** irritation, nausea, headache**Long Term:** no information on significant adverse effects**Skin****Short Term:** irritation, tingling sensation, allergic reactions**Long Term:** allergic reactions**Eye****Short Term:** irritation, eye damage**Long Term:** irritation**Ingestion****Short Term:** irritation, nausea, vomiting**Long Term:** no information on significant adverse effects*****Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS*****

CAS	Component	Percent
Proprietary	Acrylic monomer	20-30
Proprietary	Urethane acrylate oligomer	15-30
Proprietary	Isobornyl acrylate	5-25
Proprietary	Acrylic oligomer	5-15
Proprietary	Acrylic monomer	1-10
Proprietary	Epoxy acrylate	1-10
Proprietary	Photochemical	0.1-3
Proprietary	Photoinitiator	0.1-2
Proprietary	Acrylic acid ester	<1
71-43-2	Benzene	<0.5
Proprietary	Polyether modified dimethylpolysiloxane	<0.5
106-42-3	p-Xylene	<0.5
Proprietary	Dispersing additive	<0.5
Proprietary	Dispersing additive	<0.5
Proprietary	Dispersing additive	<0.5
Proprietary	Acrylate	<0.2
1333-86-4	Carbon black	<0.1
100-41-4	Ethylbenzene	<0.1

*****Section 4 - FIRST AID MEASURES*******Inhalation**

If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.

Skin

Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing before reuse. If product polymerizes and adheres to skin, DO NOT attempt to remove. Get immediate medical attention.

Eyes

Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately if the skin or eyes become bonded. Do not apply neutralizing agents. Get medical attention if irritation develops or persists.



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Ingestion

If swallowed, do not induce vomiting. Never give anything by mouth to an unconscious or convulsive person. Get medical attention.

Note to Physicians

If adverse effects occur, treat symptomatically and supportively.

Section 5 - FIRE FIGHTING MEASURES

See Section 9 for Flammability Properties

Flammable Properties

Slight fire hazard.

Extinguishing Media

carbon dioxide, regular dry chemical, foam, water spray

Unsuitable Extinguishing Media

high-pressure water streams

Protective Equipment and Precautions for Firefighters

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

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.

Hazardous Combustion Products

Combustion: oxides of carbon, oxides of nitrogen

Sensitivity to Mechanical Impact

Not sensitive

Sensitivity to Static Discharge

Not sensitive

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.

Section 7 - HANDLING AND STORAGE

Handling Procedures

Avoid breathing vapor or mist. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. Contaminated clothing should be removed and laundered before reuse.

Storage Procedures

Store in accordance with all current regulations and standards. Store in a combustible storage area away from heat and open flame. Store between 15 C and 25 C (59 - 77 F). Shipment temperature (up to 3 weeks) is -20C to 50 C (-4 to 122 F). Store in a cool, dry place. Avoid direct sunlight. Keep container tightly closed and in a well-ventilated place. Keep in the dark. Keep separated from incompatible substances.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Component Exposure Limits

Benzene (71-43-2)

- ACGIH:** 0.5 ppm TWA
2.5 ppm STEL
Skin - potential significant contribution to overall exposure by the cutaneous route
- NIOSH:** 0.1 ppm TWA
1 ppm STEL
500 ppm IDLH
- Europe:** Substantial contribution to the total body burden via dermal exposure possible
1 ppm TWA; 3.25 mg/m³ TWA
- OSHA (US):** 5 ppm STEL (See 29 CFR 1910.1028, 15 min); 0.5 ppm Action Level; 1 ppm TWA
10 ppm TWA (applies to industry segments exempt from the benzene standard at 29 CFR 1910.1028); 1 ppm TWA
5 ppm STEL (see 29 CFR 1910.1028)
25 ppm Ceiling
- Mexico:** 1 ppm TWA LMPE-PPT; 3.2 mg/m³ TWA LMPE-PPT
5 ppm STEL [LMPE-CT]; 16 mg/m³ STEL [LMPE-CT]

Ventilation

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

PERSONAL PROTECTIVE EQUIPMENT

Eyes/Face

Chemical goggles or safety glasses with side shields should be worn when handling a damaged cartridge.
Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Protective Clothing

Wear appropriate chemical resistant clothing.

Glove Recommendations

Wear neoprene or nitrile impervious gloves when handling damaged cartridge.

Respiratory Protection

Respiratory protection is not generally needed when using this product.
For emergency and other conditions where there may be a potential for significant exposure, use an approved full face positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Article, Contents: Liquid	Appearance:	toner/cartridge; contents are a black liquid
Color:	black	Physical Form:	article containing liquid
Odor:	characteristic odor	Odor Threshold:	Not available
pH:	Not available	Melting Point:	Not available
Boiling Point:	Not applicable	Flash Point:	>100 °C
Decomposition:	Not available	Evaporation Rate:	Not available
Vapor Pressure:	Not applicable	Vapor Density (air = 1):	Not applicable
Density:	Not available	Specific Gravity (water = 1):	Not available
Water Solubility:	insoluble	Coeff. Water/Oil Dist:	Not available
Viscosity:	Not available		

*****Section 10 - STABILITY AND REACTIVITY*******Chemical Stability**

Unstable on exposure to heat and light.

Conditions to Avoid

Avoid exposure to heat and light.

Materials to Avoid

acids, bases, oxidizing materials, peroxides, reducing agents

Hazardous Decomposition

Combustion: oxides of carbon, oxides of nitrogen

Possibility of Hazardous Reactions

Uncured ink will polymerize on exposure to light.

*****Section 11 - TOXICOLOGICAL INFORMATION*******Component Analysis - LD50/LC50**

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

Isobornyl acrylate (Proprietary)

Oral LD50 Rat 4890 mg/kg; Dermal LD50 Rabbit >5 g/kg

Benzene (71-43-2)

Inhalation LC50 Rat 13050-14380 ppm 4 h; Oral LD50 Rat 1800 mg/kg

Component Carcinogenicity**Benzene (71-43-2)**

ACGIH: A1 - Confirmed Human Carcinogen

IARC: Monograph 100F [2012]; Supplement 7 [1987]; Monograph 29 [1982] (Group 1 (carcinogenic to humans))

NTP: Known Human Carcinogen

DFG: Category 1 (causes cancer in man)

OSHA: Cancer hazard - see 29 CFR 1910.1028

Irritation

Contact with uncured ink may cause eye and skin irritation.

Medical Conditions Aggravated by Exposure

None known.

Tumorigenic

No data available for the mixture.

Mutagenic

No data available for the mixture.

Reproductive Effects

No data available for the mixture.

Additional Data

Uncured ink may polymerize and adhere to tissue.

*****Section 12 - ECOLOGICAL INFORMATION*******Component Analysis - Aquatic Toxicity**

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

Benzene (71-43-2)

Fish: 96 Hr LC50 Pimephales promelas: 10.7-14.7 mg/L [flow-through]; 96 Hr LC50 Oncorhynchus mykiss: 5.3 mg/L [flow-through]; 96 Hr LC50 Lepomis macrochirus: 22.49 mg/L [static]; 96 Hr LC50 Poecilia reticulata: 28.6 mg/L [static]; 96 Hr LC50 Pimephales promelas: 22330-41160 µg/L [static]; 96 Hr LC50 Lepomis macrochirus: 70000-142000 µg/L [static]

Algae: 72 Hr EC50 Pseudokirchneriella subcapitata: 29 mg/L

Invertebrate: 48 Hr EC50 Daphnia magna: 8.76 - 15.6 mg/L [Static]; 48 Hr EC50 Daphnia magna: 10 mg/L

*****Section 13 - DISPOSAL CONSIDERATIONS*******US EPA Waste Number & Descriptions****General Product Information****Component Waste Numbers****Benzene (71-43-2)**

RCRA: waste number U019 (Ignitable waste, Toxic waste)
0.5 mg/L regulatory level

Disposal Instructions

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.

Section 14 - TRANSPORT INFORMATION

US DOT Information

Not regulated.

TDG Information

Not regulated.

Section 15 - REGULATORY INFORMATION

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 (Proprietary)

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

Benzene (71-43-2)

SARA 313: 0.1 % de minimis concentration

CERCLA: 10 lb final RQ (received an adjusted RQ of 10 lbs based on potential carcinogenicity in an August 14, 1989 final rule); 4.54 kg final RQ (received an adjusted RQ of 10 lbs based on potential carcinogenicity in an August 14, 1989 final rule)

Dispersing additive (Proprietary)

CERCLA: 5000 lb final RQ; 2270 kg final RQ

Dispersing additive (Proprietary)

SARA 313: 1.0 % de minimis concentration

CERCLA: 100 lb final RQ; 45.4 kg final RQ

p-Xylene (106-42-3)

SARA 313: 1.0 % de minimis concentration

CERCLA: 100 lb final RQ; 45.4 kg final RQ

TSCA 12b: Section 4, 1 % de minimus concentration

Ethylbenzene (100-41-4)

SARA 313: 0.1 % de minimis concentration

CERCLA: 1000 lb final RQ; 454 kg final RQ

SARA 311/312

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
Benzene	71-43-2	Yes	Yes	Yes	Yes	Yes
Dispersing additive	Proprietary	Yes	Yes	Yes	Yes	Yes
Dispersing additive	Proprietary	Yes	Yes	Yes	Yes	Yes
p-Xylene	106-42-3	Yes	Yes	No	Yes	Yes
Carbon black	1333-86-4	Yes	Yes	Yes	Yes	Yes
Ethylbenzene	100-41-4	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.

WARNING! This product contains a chemical known to the state of California to cause reproductive/developmental effects.

Concentration of Prop 65 components are very low (<0.5%).

Canada

This product has been classified in accordance with the criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

WHMIS Classification

This product is considered an article; therefore, there are no significant adverse effects when used as directed. Should the product break or leak, the contents of the cartridge would be classified as the following: D2B.

Canadian WHMIS Ingredient Disclosure List (IDL)

Components of this material have been checked against the Canadian WHMIS Ingredients Disclosure List. The List is composed of chemicals which must be identified on MSDSs if they are included in products which fall under WHMIS criteria specified in the Controlled Products Regulations and present above the threshold limits listed on the IDL.

Benzene (71-43-2)

0.1 %

p-Xylene (106-42-3)

0.1 %

Canadian Inventory

All components of this product are listed on either the DSL or the NDSL.

U.S. Inventory (TSCA)

All the components of this substance are listed on or are exempt from the inventory.

Component Analysis - Inventory

Component	CAS	US	CA
Acrylic monomer	Proprietary	Yes	NSL
Isobornyl acrylate	Proprietary	Yes	DSL
Epoxy acrylate	Proprietary	Yes	DSL
Acrylic monomer	Proprietary	Yes	DSL
Photochemical	Proprietary	Yes	DSL
Photoinitiator	Proprietary	Yes	DSL
Acrylic acid ester	Proprietary	Yes	DSL
Benzene	71-43-2	Yes	DSL
Dispersing additive	Proprietary	Yes	DSL
Dispersing additive	Proprietary	Yes	DSL
Dispersing additive	Proprietary	Yes	DSL
p-Xylene	106-42-3	Yes	DSL
Acrylate	Proprietary	Yes	DSL
Carbon black	1333-86-4	Yes	DSL
Ethylbenzene	100-41-4	Yes	DSL

*****Section 16 - OTHER INFORMATION*****

Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; DSL - Domestic Substances List; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; NFPA - National Fire Protection Agency; IARC - International Agency for Research on Cancer; NIOSH - National Institute for Occupational Safety and Health; NTP - National Toxicology Program; OSHA - Occupational Safety and Health Administration; SARA - Superfund Amendments and Reauthorization Act; TSCA - Toxic Substances Control Act



Stratasys® Material Safety Data Sheet

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Other Information

Reasonable care has been taken in the preparation of this information; however, the manufacturer makes no warranty whatsoever including the warranty of merchantability, expressed or implied, with respect to this information. The manufacturer makes no representations and assumes no liability for any direct, incidental, consequential, or other such damages resulting from its use or misuse.

New MSDS: 1/3/2012

MSDS Update: 01.01.2013

End of Sheet RGD875