



Safety Data Sheet

Material Name: VeroGlaze MED620

MSDS ID: DOC-06164_A1

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: VeroGlaze MED620

Chemical Family

acrylic compounds

Substance Registration Number(s)

The components are either registered, pre-registered or not subject to REACH.

Substance Registration Number(s) : 01-0000016491-73-XXXX (CAS#, 5117-12-4)

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 210

D-77836 Rheinmünster, Germany

Phone: +49 722 97 77 20

Emergency # +49 722 97772280

Email Address

objet-info@stratasys.com; www.stratasys.com

1.4 Emergency Telephone Number

+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)

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 Corrosion / Irritation, Category 2

Skin sensitizer, Category 1

Toxic to Reproduction, Category 2

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 3

Classification according to Directives 67/548/EEC and/or 1999/45/EC

R22 Harmful if swallowed.

R36/37/38 Irritating to eyes, respiratory system and skin.

R41 Risk of serious damage to eyes.

R43 May cause sensitization by skin contact.

R48/22 Harmful: danger of serious damage to health by prolonged exposure if swallowed.

R52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

R62 Possible risk of impaired fertility.

2.2 Label Elements

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

H315 Causes skin irritation

H317 May cause an allergic skin reaction

H335 May cause respiratory irritation

H361 Suspected of damaging fertility or the unborn child.

H373 May cause damage to organs through prolonged or repeated exposure

H412 Harmful to aquatic life with long lasting effects

Precautionary Statement(s)**Prevention**

P271 Use only outdoors or in a well-ventilated area. **P280** Wear protective gloves/protective clothing/eye protection/face protection.

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.

Storage

P405 Store locked up.

Disposal

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

Labeling according to Directive 67/548/EEC and/or 1999/45/EC
Symbols

Xn
R22 Harmful if swallowed.

R36/37/38 Irritating to eyes, respiratory system and skin.

R41 Risk of serious damage to eyes.

R43 May cause sensitization by skin contact.

R48/22 Harmful: danger of serious damage to health by prolonged exposure if swallowed.

R52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

R62 Possible risk of impaired fertility.

S2 Keep out of the reach of children.

S24 Avoid contact with skin.

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

S46 If swallowed, seek medical advice immediately and show this container or label.

S60 This material and its container must be disposed of as hazardous waste.

S61 Avoid release to the environment. Refer to special instructions/Safety data sheets.

2.3 Other Hazards

None known.

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

CAS EC No Registration No	Component Synonyms	67/548 EEC (DSD)	1272/2008 (CLP)	Percent
--	Acrylic monomer	Xn; R:22-41-43-48/22	Acute Tox. 4 (Oral) Eye Dam. 1 Skin Sens. 1 STOT RE 2	<30
5888-33-5 227-561-6 --	2-Propenoic acid, 1,7,7-trimethylbicyclo[2.2.1]hept-2-yl ester, exo-	Xi N; R:36/37/38-51/53	Skin Irrit. 2 Eye Irrit. 2 STOT SE 3 Aquatic Chronic 2	<25
--	Acrylic Oligomer	Xi; R:43	Skin Sens. 1	<15

--	Photo Initiator	Xn; R:62	Repr. 2	<3
13463-67-7 236-675-5 --	Titanium dioxide			<0.8
52408-84-1 500-114-5 --	Acrylic acid ester	Xi; R:36-43	Eye Irrit. 2 Skin Sens. 1	<0.3
1333-86-4 215-609-9 --	Carbon black			0.1-1
1330-20-7 215-535-7 --	Xylenes (o-, m-, p- isomers)	Xn; R:10-20/21-38	Flam. Liq. 3 Acute Tox. 4 (Dermal) Acute Inh. Tox. 4 Skin Irrit. 2 Note(s): C	0.01-0.1
123-86-4 204-658-1 --	n-Butyl acetate	R:10-66-67	Flam. Liq. 3 STOT SE 3 EU Repeat Skin EU	0.01-0.1
100-41-4 202-849-4 --	Ethylbenzene	F Xn; R:11-20	Flam. Liq. 2 Acute Inh. Tox. 4	0.01-0.1
108-65-6 203-603-9 --	Propylene glycol monomethyl ether acetate	R:10	Flam. Liq. 3	0.01-0.1
7664-38-2 231-633-2 --	Phosphoric acid	C; R:34	Skin Corr. 1B Note(s): B	0.0005-0.002

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

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



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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. 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.

4.2 Most Important Symptoms and Effects, both Acute and Delayed

Acute

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

Delayed

allergic reactions, reproductive effects

4.3 Indication of any Immediate Medical Attention and Special Treatment Needed

Note to Physicians

IF exposed or concerned: Get medical advice/attention.

Section 5 - FIRE FIGHTING MEASURES

5.1 Extinguishing Media

Use extinguishing agents appropriate for surrounding fire. Class B fires: Use carbon dioxide (CO₂), 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: oxides of carbon

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. Avoid inhalation of material or combustion by-products.



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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

Wear personal protective clothing and equipment, see Section 8.

6.2 Environmental Precautions

Avoid release to the environment.

6.3 Methods and Material for Containment and Cleaning up

Collect spilled material. Collect spilled cartridge contents 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

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.

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. Shipment temperature (up to 5 weeks) is -20 °C to 50 °C. 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)**

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

Carbon black (1333-86-4)

Belgium:	3.5 mg/m ³ TWA
Denmark:	Present 3.5 mg/m ³ TWA
Estonia:	3 mg/m ³ TWA (dust)
Finland:	3.5 mg/m ³ TWA 7 mg/m ³ STEL
France:	3.5 mg/m ³ TWA
Greece:	3.5 mg/m ³ TWA 7 mg/m ³ STEL
Ireland:	3.5 mg/m ³ TWA 7 mg/m ³ STEL
Poland:	4.0 mg/m ³ TWA (total inhalable dust)
Portugal:	3.5 mg/m ³ TWA [VLE-MP]
Slovak Republic:	2 mg/m ³ TWA (respirable fraction, 5% or less fibrogenic component); 10 mg/m ³ TWA (respirable fraction, greater than 5% fibrogenic component); 10 mg/m ³ TWA (total aerosol)
Spain:	3.5 mg/m ³ TWA [VLA-ED]
Sweden:	3 mg/m ³ LLV (total dust)
United Kingdom:	3.5 mg/m ³ TWA 7 mg/m ³ STEL 3 mg/m ³ TWA (inhalable fraction)

Xylenes (o-, m-, p- isomers) (1330-20-7)

EU (IOELV):	50 ppm TWA (pure); 221 mg/m ³ TWA (pure) 100 ppm STEL (pure); 442 mg/m ³ STEL (pure) Possibility of significant uptake through the skin
Austria:	50 ppm TWA; 221 mg/m ³ TWA (all isomers) 100 ppm STEL (all isomers, 4 X 15 min); 442 mg/m ³ STEL (all isomers, 4 X 15 min) skin notation
Belgium:	50 ppm TWA; 221 mg/m ³ TWA 100 ppm STEL; 442 mg/m ³ STEL Skin
Bulgaria:	Skin notation (pure) 442.0 mg/m ³ STEL (pure); 100 ppm STEL 221.0 mg/m ³ TWA (pure); 50 ppm TWA
Czech Republic:	400 mg/m ³ Ceiling Potential for cutaneous absorption
Cyprus:	Skin-potential for cutaneous absorption 100 ppm STEL; 442 mg/m ³ STEL 50 ppm TWA; 221 mg/m ³ TWA
Denmark:	Present Potential for cutaneous absorption 25 ppm TWA; 109 mg/m ³ TWA
Estonia:	Skin notation 100 ppm STEL; 450 mg/m ³ STEL 50 ppm TWA; 221 mg/m ³ TWA
Finland:	50 ppm TWA; 220 mg/m ³ TWA 100 ppm STEL; 440 mg/m ³ STEL Potential for cutaneous absorption
France:	50 ppm TWA (restrictive limit); 221 mg/m ³ TWA (restrictive limit) 100 ppm STEL [VLCT] (restrictive limit); 442 mg/m ³ STEL [VLCT] (restrictive limit) Risk of cutaneous absorption
Germany (TRGS):	100 ppm TWA AGW (all isomers, exposure factor 2); 440 mg/m ³ TWA AGW (all isomers, exposure factor 2) skin notation (all isomers)
Germany (DFG):	100 ppm TWA MAK (all isomers); 440 mg/m ³ TWA MAK (all isomers) 200 ppm Peak (all isomers); 880 mg/m ³ Peak (all isomers) skin notation (all isomers)
Gibraltar:	Skin notation 100 ppm STEL (pure); 442 mg/m ³ STEL (pure) 50 ppm TWA (pure); 221 mg/m ³ TWA (pure)
Greece:	100 ppm TWA; 435 mg/m ³ TWA 150 ppm STEL; 650 mg/m ³ STEL skin - potential for cutaneous absorption
Hungary:	potential for cutaneous absorption 442 mg/m ³ STEL [CK] 221 mg/m ³ TWA [AK]
Ireland:	50 ppm TWA; 221 mg/m ³ TWA 100 ppm STEL; 442 mg/m ³ STEL Potential for cutaneous absorption

Italy:	50 ppm TWA (pure); 221 mg/m ³ TWA (pure) 100 ppm STEL (pure); 442 mg/m ³ STEL (pure) skin - potential for cutaneous absorption (pure)
Latvia:	skin - potential for cutaneous exposure 100 ppm STEL; 442 mg/m ³ STEL 50 ppm TWA; 221 mg/m ³ TWA
Lithuania:	Skin notation 100 ppm STEL; 450 mg/m ³ STEL 50 ppm TWA; 200 mg/m ³ TWA
Luxembourg:	100 ppm STEL; 442 mg/m ³ STEL 50 ppm TWA; 221 mg/m ³ TWA
Malta:	possibility of significant uptake through the skin (pure) 100 ppm STEL (pure); 442 mg/m ³ STEL (pure) 50 ppm TWA (pure); 221 mg/m ³ TWA (pure)
Netherlands:	210 mg/m ³ TWA 442 mg/m ³ STEL skin notation
Poland:	Irritant Skin notation 100 mg/m ³ TWA
Portugal:	100 ppm TWA [VLE-MP] 150 ppm STEL [VLE-CD]
Romania:	3 g/L Medium: urine Time: end of shift Parameter: Methylhippuric acid Skin notation 100 ppm STEL; 442 mg/m ³ STEL 50 ppm TWA; 221 mg/m ³ TWA
Slovak Republic:	442 mg/m ³ Ceiling Potential for cutaneous absorption 50 ppm TWA; 221 mg/m ³ TWA
Slovenia:	Potential for cutaneous absorption 100 ppm STEL; 442 mg/m ³ STEL 50 ppm TWA; 221 mg/m ³ TWA
Spain:	50 ppm TWA [VLA-ED] (indicative limit value); 221 mg/m ³ TWA [VLA-ED] (indicative limit value) 100 ppm STEL [VLA-EC]; 442 mg/m ³ STEL [VLA-EC] skin - potential for cutaneous exposure
Sweden:	50 ppm LLV; 221 mg/m ³ LLV 100 ppm STV; 442 mg/m ³ STV Skin notation
United Kingdom:	50 ppm TWA; 220 mg/m ³ TWA 100 ppm STEL; 441 mg/m ³ STEL Potential for cutaneous absorption 100 ppm TWA 150 ppm STEL
n-Butyl acetate (123-86-4)	
Austria:	100 ppm TWA; 480 mg/m ³ TWA (all isomers except tert-Butyl acetate) 100 ppm STEL (all isomers except tert-Butyl acetate); 480 mg/m ³ STEL (all isomers except tert-Butyl acetate)

	100 ppm Ceiling; 480 mg/m ³ Ceiling
Belgium:	150 ppm TWA; 723 mg/m ³ TWA 200 ppm STEL; 964 mg/m ³ STEL
Bulgaria:	950.0 mg/m ³ STEL 710.0 mg/m ³ TWA
Czech Republic:	1200 mg/m ³ Ceiling
Denmark:	Present
	150 ppm TWA; 710 mg/m ³ TWA
Finland:	150 ppm TWA; 720 mg/m ³ TWA 200 ppm STEL; 960 mg/m ³ STEL
France:	150 ppm TWA; 710 mg/m ³ TWA 200 ppm STEL [VLCT]; 940 mg/m ³ STEL [VLCT]
Germany (TRGS):	62 ppm TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 2); 300 mg/m ³ TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 2)
Germany (DFG):	100 ppm TWA MAK; 480 mg/m ³ TWA MAK 200 ppm Peak; 960 mg/m ³ Peak
Greece:	150 ppm TWA; 710 mg/m ³ TWA 200 ppm STEL; 950 mg/m ³ STEL
Hungary:	sensitizer 950 mg/m ³ STEL [CK] 950 mg/m ³ TWA [AK]
Latvia:	200 mg/m ³ TWA
Portugal:	150 ppm TWA [VLE-MP] 200 ppm STEL [VLE-CD]
Romania:	200 ppm STEL; 950 mg/m ³ STEL
Slovak Republic:	700 mg/m ³ Ceiling 100 ppm TWA; 480 mg/m ³ TWA
Slovenia:	100 ppm STEL; 480 mg/m ³ STEL 100 ppm TWA; 480 mg/m ³ TWA
Spain:	150 ppm TWA [VLA-ED]; 724 mg/m ³ TWA [VLA-ED] 200 ppm STEL [VLA-EC]; 965 mg/m ³ STEL [VLA-EC]
Sweden:	100 ppm LLV; 500 mg/m ³ LLV 150 ppm STV; 700 mg/m ³ STV 150 ppm TWA 200 ppm STEL
Ethylbenzene (100-41-4)	
EU (IOELV):	100 ppm TWA; 442 mg/m ³ TWA 200 ppm STEL; 884 mg/m ³ STEL Possibility of significant uptake through the skin
Austria:	100 ppm TWA; 440 mg/m ³ TWA 200 ppm STEL (8 X 5 min); 880 mg/m ³ STEL (8 X 5 min) skin notation
Belgium:	100 ppm TWA; 442 mg/m ³ TWA 125 ppm STEL; 551 mg/m ³ STEL Skin
Bulgaria:	Skin notation

	545.0 mg/m ³ STEL 435.0 mg/m ³ TWA
Czech Republic:	500 mg/m ³ Ceiling Potential for cutaneous absorption
Cyprus:	Skin-potential for cutaneous absorption 200 ppm STEL; 884 mg/m ³ STEL 100 ppm TWA; 442 mg/m ³ TWA
Denmark:	Present Present Potential for cutaneous absorption 50 ppm TWA; 217 mg/m ³ TWA
Estonia:	Sensitizer Skin notation 200 ppm STEL; 884 mg/m ³ STEL 100 ppm TWA; 442 mg/m ³ TWA
Finland:	50 ppm TWA; 220 mg/m ³ TWA 200 ppm STEL; 880 mg/m ³ STEL Potential for cutaneous absorption
France:	20 ppm TWA (restrictive limit); 88.4 mg/m ³ TWA (restrictive limit) 100 ppm STEL [VLCT] (restrictive limit); 442 mg/m ³ STEL [VLCT] (restrictive limit) Risk of cutaneous absorption
Germany (TRGS):	20 ppm TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 2); 88 mg/m ³ TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 2) skin notation
Germany (DFG):	20 ppm TWA MAK; 88 mg/m ³ TWA MAK 40 ppm Peak; 176 mg/m ³ Peak skin notation
Gibraltar:	Skin notation 200 ppm STEL; 884 mg/m ³ STEL 100 ppm TWA; 442 mg/m ³ TWA
Greece:	100 ppm TWA; 435 mg/m ³ TWA 125 ppm STEL; 545 mg/m ³ STEL
Hungary:	potential for cutaneous absorption 884 mg/m ³ STEL [CK] 442 mg/m ³ TWA [AK]
Ireland:	100 ppm TWA; 442 mg/m ³ TWA 200 ppm STEL; 884 mg/m ³ STEL Potential for cutaneous absorption
Italy:	100 ppm TWA; 442 mg/m ³ TWA 200 ppm STEL; 884 mg/m ³ STEL skin - potential for cutaneous absorption
Latvia:	skin - potential for cutaneous exposure 200 ppm STEL; 884 mg/m ³ STEL 100 ppm TWA; 442 mg/m ³ TWA
Lithuania:	Skin notation 200 ppm STEL; 884 mg/m ³ STEL

	100 ppm TWA; 442 mg/m ³ TWA
Luxembourg:	Possibility of significant uptake through the skin 200 ppm STEL; 884 mg/m ³ STEL 100 ppm TWA; 442 mg/m ³ TWA
Malta:	possibility of significant uptake through the skin 200 ppm STEL; 884 mg/m ³ STEL 100 ppm TWA; 442 mg/m ³ TWA
Netherlands:	215 mg/m ³ TWA 430 mg/m ³ STEL skin notation
Poland:	Skin notation 400 mg/m ³ STEL [NDSCh] 200 mg/m ³ TWA
Portugal:	100 ppm TWA [VLE-MP] 125 ppm STEL [VLE-CD]
Romania:	1.5 g/g Creatinine Medium: urine Time: end of work week Parameter: Mandelic acid Skin notation 200 ppm STEL; 884 mg/m ³ STEL 100 ppm TWA; 442 mg/m ³ TWA
Slovak Republic:	884 mg/m ³ Ceiling Potential for cutaneous absorption 100 ppm TWA; 442 mg/m ³ TWA
Slovenia:	Potential for cutaneous absorption 200 ppm STEL; 884 mg/m ³ STEL 100 ppm TWA; 442 mg/m ³ TWA
Spain:	100 ppm TWA [VLA-ED] (indicative limit value); 441 mg/m ³ TWA [VLA-ED] (indicative limit value) 200 ppm STEL [VLA-EC]; 884 mg/m ³ STEL [VLA-EC] skin - potential for cutaneous exposure
Sweden:	50 ppm LLV; 200 mg/m ³ LLV 100 ppm STV; 450 mg/m ³ STV
United Kingdom:	100 ppm TWA; 441 mg/m ³ TWA 125 ppm STEL; 552 mg/m ³ STEL Potential for cutaneous absorption 20 ppm TWA

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

EU (IOELV):	50 ppm TWA; 275 mg/m ³ TWA 100 ppm STEL; 550 mg/m ³ STEL Possibility of significant uptake through the skin
Austria:	50 ppm TWA; 275 mg/m ³ TWA 100 ppm STEL (8 X 5 min); 550 mg/m ³ STEL (8 X 5 min) skin notation
Belgium:	50 ppm TWA; 275 mg/m ³ TWA 100 ppm STEL; 550 mg/m ³ STEL Skin
Bulgaria:	Skin notation 550.0 mg/m ³ STEL; 100 ppm STEL 275.0 mg/m ³ TWA; 50 ppm TWA

Czech Republic:	550 mg/m ³ Ceiling Potential for cutaneous absorption
Cyprus:	Skin-potential for cutaneous absorption 100 ppm STEL; 550 mg/m ³ STEL 50 ppm TWA; 275 mg/m ³ TWA
Denmark:	Present Potential for cutaneous absorption 50 ppm TWA; 275 mg/m ³ TWA
Estonia:	Sensitizer Skin notation 100 ppm STEL; 550 mg/m ³ STEL 50 ppm TWA; 275 mg/m ³ TWA
Finland:	50 ppm TWA; 270 mg/m ³ TWA 100 ppm STEL; 550 mg/m ³ STEL Potential for cutaneous absorption
France:	50 ppm TWA (restrictive limit); 275 mg/m ³ TWA (restrictive limit) 100 ppm STEL [VLCT] (restrictive limit); 550 mg/m ³ STEL [VLCT] (restrictive limit) Risk of cutaneous absorption
Germany (TRGS):	50 ppm TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 1); 270 mg/m ³ TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 1)
Germany (DFG):	50 ppm TWA MAK; 270 mg/m ³ TWA MAK 50 ppm Peak; 270 mg/m ³ Peak
Gibraltar:	Skin notation 100 ppm STEL; 550 mg/m ³ STEL 50 ppm TWA; 275 mg/m ³ TWA
Greece:	50 ppm TWA; 275 mg/m ³ TWA 100 ppm STEL; 550 mg/m ³ STEL skin - potential for cutaneous absorption
Hungary:	550 mg/m ³ STEL [CK] 275 mg/m ³ TWA [AK]
Ireland:	50 ppm TWA; 275 mg/m ³ TWA 100 ppm STEL; 550 mg/m ³ STEL Potential for cutaneous absorption
Italy:	50 ppm TWA; 275 mg/m ³ TWA 100 ppm STEL; 550 mg/m ³ STEL skin - potential for cutaneous absorption
Latvia:	skin - potential for cutaneous exposure 100 ppm STEL; 550 mg/m ³ STEL 50 ppm TWA; 275 mg/m ³ TWA
Lithuania:	Skin notation 75 ppm STEL; 400 mg/m ³ STEL 50 ppm TWA; 250 mg/m ³ TWA
Luxembourg:	Possibility of significant uptake through the skin 100 ppm STEL; 550 mg/m ³ STEL 50 ppm TWA; 275 mg/m ³ TWA
Malta:	possibility of significant uptake through the skin

	100 ppm STEL; 550 mg/m ³ STEL
	50 ppm TWA; 275 mg/m ³ TWA
Netherlands:	550 mg/m ³ TWA
Poland:	520 mg/m ³ STEL [NDSCh] 260 mg/m ³ TWA
Romania:	Skin notation 100 ppm STEL; 550 mg/m ³ STEL 50 ppm TWA; 275 mg/m ³ TWA
Slovak Republic:	550 mg/m ³ Ceiling Potential for cutaneous absorption 50 ppm TWA; 275 mg/m ³ TWA
Slovenia:	Potential for cutaneous absorption 100 ppm STEL; 550 mg/m ³ STEL 50 ppm TWA; 275 mg/m ³ TWA
Spain:	50 ppm TWA [VLA-ED] (indicative limit value); 275 mg/m ³ TWA [VLA-ED] (indicative limit value) 100 ppm STEL [VLA-EC]; 550 mg/m ³ STEL [VLA-EC] skin - potential for cutaneous exposure
Sweden:	50 ppm LLV; 250 mg/m ³ LLV 75 ppm STV; 400 mg/m ³ STV Skin notation
United Kingdom:	50 ppm TWA; 274 mg/m ³ TWA 100 ppm STEL; 548 mg/m ³ STEL Potential for cutaneous absorption
Phosphoric acid (7664-38-2)	
EU (IOELV):	1 mg/m ³ TWA 2 mg/m ³ STEL
Austria:	1 mg/m ³ TWA 2 mg/m ³ STEL (4 X 15 min)
Belgium:	1 mg/m ³ TWA 2 mg/m ³ STEL
Bulgaria:	2.0 mg/m ³ STEL 1.0 mg/m ³ TWA
Czech Republic:	2 mg/m ³ Ceiling
Cyprus:	2.0 mg/m ³ STEL 1 mg/m ³ TWA
Denmark:	1 mg/m ³ TWA
Estonia:	2 mg/m ³ STEL (vapor) 1 mg/m ³ TWA (vapor)
Finland:	1 mg/m ³ TWA 2 mg/m ³ STEL
France:	0.2 ppm TWA (indicative limit); 1 mg/m ³ TWA (indicative limit) 0.5 ppm STEL [VLCT] (indicative limit); 2 mg/m ³ STEL [VLCT] (indicative limit)
Germany (TRGS):	2 mg/m ³ TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, inhalable fraction, exposure factor 2)
Germany (DFG):	2 mg/m ³ TWA MAK (inhalable fraction) 4 mg/m ³ Peak (inhalable fraction)
Gibraltar:	2 mg/m ³ STEL

	1 mg/m ³ TWA
Greece:	1 mg/m ³ TWA 3 mg/m ³ STEL
Hungary:	2 mg/m ³ STEL [CK] 1 mg/m ³ TWA [AK]
Ireland:	1 mg/m ³ TWA 2 mg/m ³ STEL
Italy:	1 mg/m ³ TWA 2 mg/m ³ STEL
Latvia:	2 mg/m ³ STEL
Lithuania:	1 mg/m ³ TWA 2 mg/m ³ STEL
Luxembourg:	2 mg/m ³ STEL 1 mg/m ³ TWA
Malta:	2 mg/m ³ STEL 1 mg/m ³ TWA
Netherlands:	1 mg/m ³ TWA 2 mg/m ³ STEL
Poland:	Corrosive substance 2 mg/m ³ STEL [NDSCh] 1 mg/m ³ TWA
Portugal:	1 mg/m ³ TWA [VLE-MP] 3 mg/m ³ STEL [VLE-CD]
Romania:	2 mg/m ³ STEL 1 mg/m ³ TWA
Slovak Republic:	2 mg/m ³ Ceiling 1 mg/m ³ TWA
Slovenia:	2 mg/m ³ STEL 1 mg/m ³ TWA
Spain:	1 mg/m ³ TWA [VLA-ED] (indicative limit value; it is prohibited the partial or complete commercialization or use of this substance as a phytosanitary or biocide compound) 2 mg/m ³ STEL [VLA-EC]
Sweden:	1 mg/m ³ LLV 3 mg/m ³ STV
United Kingdom:	1 mg/m ³ TWA 2 mg/m ³ STEL 1 mg/m ³ TWA 3 mg/m ³ STEL

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

No components of this material are listed.

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.



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

Ventilation

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

8.2 Exposure Controls

Appropriate Engineering Controls

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.

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

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

Section 10 - STABILITY AND REACTIVITY

10.1 Reactivity

Heating may cause a fire

10.2 Chemical Stability

Unstable on exposure to light. Unstable on exposure to heat.

10.3 Possibility of Hazardous Reactions

Uncured ink will polymerize on exposure to light.

10.4 Conditions to Avoid

Avoid exposure to heat and light.

10.5 Incompatible Materials

Not applicable under normal conditions of use and storage.

10.6 Hazardous Decomposition Products**Thermal Decomposition Products****Combustion:** oxides of carbon*****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. After skin contact: tingling or irritation of the skin. After eye contact: irritation, inflammation or damage of the eye tissue.

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

Xylenes (o-, m-, p- isomers) (1330-20-7)

Inhalation LC50 Rat 47635 mg/L 4 h; Oral LD50 Rat 4300 mg/kg

n-Butyl acetate (123-86-4)

Inhalation LC50 Rat 391 ppm 4 h (vapor); Dermal LD50 Rabbit >17600 mg/kg

Ethylbenzene (100-41-4)

Inhalation LC50 Rat 17.2 mg/L 4 h; Oral LD50 Rat 3500 mg/kg; Dermal LD50 Rabbit 15354 mg/kg

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

Oral LD50 Rat 8532 mg/kg; Dermal LD50 Rabbit >5000 mg/kg

Phosphoric acid (7664-38-2)

Oral LD50 Rat 1530 mg/kg; Dermal LD50 Rabbit 2730 mg/kg

Irritation / Corrosivity

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.

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.



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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)

Carbon black (1333-86-4)

IARC: Monograph 93 [2010]; Monograph 65 [1996] (Group 2B (possibly carcinogenic to humans))

DFG: Category 3B (could be carcinogenic for man, inhalable fraction)

Xylenes (o-, m-, p- isomers) (1330-20-7)

IARC: Monograph 71 [1999]; Monograph 47 [1989] (Group 3 (not classifiable))

Ethylbenzene (100-41-4)

IARC: Monograph 77 [2000] (Group 2B (possibly carcinogenic to humans))

DFG: Category 4 (no significant contribution to human cancer)

Reproductive Toxicity

Available data characterizes components of this product as reproductive hazards.

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* * *

12.1 Toxicity

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).

Carbon black (1333-86-4)

Invertebrate: 24 Hr EC50 Daphnia magna: >5600 mg/L

Xylenes (o-, m-, p- isomers) (1330-20-7)

Fish: 96 Hr LC50 Pimephales promelas: 13.4 mg/L [flow-through]; 96 Hr LC50 Oncorhynchus mykiss: 2.661 - 4.093 mg/L [static]; 96 Hr LC50 Oncorhynchus mykiss: 13.5 - 17.3 mg/L; 96 Hr LC50 Lepomis macrochirus: 13.1 - 16.5 mg/L [flow-through]; 96 Hr LC50 Lepomis macrochirus: 19 mg/L; 96 Hr LC50 Lepomis macrochirus: 7.711 - 9.591 mg/L [static]; 96 Hr LC50 Pimephales promelas: 23.53 - 29.97 mg/L [static]; 96 Hr LC50 Cyprinus carpio: 780 mg/L [semi-static]; 96 Hr LC50 Cyprinus carpio: >780 mg/L; 96 Hr LC50 Poecilia reticulata: 30.26 - 40.75 mg/L [static]

Invertebrate: 48 Hr EC50 water flea: 3.82 mg/L; 48 Hr LC50 Gammarus lacustris: 0.6 mg/L

n-Butyl acetate (123-86-4)

Fish: 96 Hr LC50 Pimephales promelas: 17 - 19 mg/L [flow-through]; 96 Hr LC50 Lepomis macrochirus: 100 mg/L [static]; 96 Hr LC50 Leuciscus idus: 62 mg/L [static]

Algae: 72 Hr EC50 Desmodesmus subspicatus: 674.7 mg/L

Invertebrate: 24 Hr EC50 Daphnia magna: 72.8 mg/L

Ethylbenzene (100-41-4)

Fish: 96 Hr LC50 Oncorhynchus mykiss: 11.0 - 18.0 mg/L [static]; 96 Hr LC50 Oncorhynchus mykiss: 4.2 mg/L [semi-static]; 96 Hr LC50 Pimephales promelas: 7.55 - 11 mg/L [flow-through]; 96 Hr LC50 Lepomis macrochirus: 32 mg/L [static]; 96 Hr LC50 Pimephales promelas: 9.1 - 15.6 mg/L [static]; 96 Hr LC50 Poecilia reticulata: 9.6 mg/L [static]

Algae: 72 Hr EC50 Pseudokirchneriella subcapitata: 4.6 mg/L; 96 Hr EC50 Pseudokirchneriella subcapitata: >438 mg/L; 72 Hr EC50 Pseudokirchneriella subcapitata: 2.6 - 11.3 mg/L [static]; 96 Hr EC50 Pseudokirchneriella subcapitata: 1.7 - 7.6 mg/L [static]

Invertebrate: 48 Hr EC50 Daphnia magna: 1.8 - 2.4 mg/L

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

12.2 Persistence and Degradability

No data available for the mixture.

12.3 Bioaccumulative Potential

No data available for the mixture.

12.4 Mobility in Soil

No data available for the mixture.

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. Hazardous Waste Number(s): 08 03 12*
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 protection information.

*****Section 14 - TRANSPORT INFORMATION*******Transportation**

Not regulated as a hazardous material.

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)

Xylenes (o-, m-, p- isomers) (1330-20-7)

IBC Code: Category Y

Ethylbenzene (100-41-4)

IBC Code: Category Y

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

IBC Code: Category Z

Phosphoric acid (7664-38-2)

IBC Code: Category Z

*****Section 15 - REGULATORY INFORMATION*******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****Acrylic monomer (5117-12-4)**

ID Number 6697, hazard class 2 - hazard to waters

2-Propenoic acid, 1,7,7-trimethylbicyclo[2.2.1]hept-2-yl ester, exo- (5888-33-5)

ID Number 2247, hazard class 2 - hazard to waters

Diphenyl-2,4,6-trimethylbenzoyl phosphine oxide (75980-60-8)

ID Number 6366, hazard class 2 - hazard to waters

Titanium dioxide (13463-67-7)

ID Number 1345, not considered hazardous to water

Carbon black (1333-86-4)

ID Number 1742, not considered hazardous to water

Xylenes (o-, m-, p- isomers) (1330-20-7)

ID Number 206, hazard class 2 - hazard to waters

n-Butyl acetate (123-86-4)

ID Number 42, hazard class 1 - low hazard to waters

Ethylbenzene (100-41-4)

ID Number 99, hazard class 1 - low hazard to waters

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

ID Number 5033, hazard class 1 - low hazard to waters

Phosphoric acid (7664-38-2)

ID Number 392, hazard class 1 - low hazard to waters

Denmark Regulations

Environmental Protection Agency List of Undesirable Substances

No components of this material are listed.

EU Inventory

Substance Analysis - Inventory

Component	CAS	EEC
Acrylic monomer	--	ELN
2-Propenoic acid, 1,7,7-	5888-33-5	EIN
Acrylic Oligomer	--	NLP
Photo Initiator	--	EIN
Titanium dioxide	13463-67-7	EIN
Acrylic acid ester	52408-84-1	NLP
Carbon black	1333-86-4	EIN
Xylenes (o-, m-, p- isomers)	1330-20-7	EIN
n-Butyl acetate	123-86-4	EIN
Ethylbenzene	100-41-4	EIN
Propylene glycol monomethyl ether acetate	108-65-6	EIN
Phosphoric acid	7664-38-2	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

New MSDS: 11/19/2012

16.2 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

16.3 Key literature references and sources for data

Available upon request



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

Available upon request

16.5 Full Text of R Phrases in Section 3

R10 Flammable.

R11 Highly flammable.

R20 Harmful by inhalation.

R21 Harmful in contact with skin.

R22 Harmful if swallowed.

R34 Causes burns.

R36/37/38 Irritating to eyes, respiratory system and skin.

R41 Risk of serious damage to eyes.

R43 May cause sensitization by skin contact.

R48/22 Harmful: danger of serious damage to health by prolonged exposure if swallowed.

R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

R53 May cause long-term adverse effects in the aquatic environment.

R62 Possible risk of impaired fertility.

R67 Vapors may cause drowsiness and dizziness.

R66 Repeated exposure may cause skin dryness or cracking.

16.6 Training Advice

Read the Safety Data Sheet before handling product.

16.7 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-06164_A1