

## Safety Data Sheet

according to Regulation (EC) No 1907/2006 and 1272/2008,  
Hazard Communication Standard 29 CFR 1910 (USA),  
WHS Regulations Australia,  
JIS Z 7253 (2012) Japan

### zb<sup>®</sup>60 binder

Revision Date: May 1, 2018

#### 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

**1.1 Identification of the substance or preparation: zb<sup>®</sup>60 binder (clear, cyan, magenta, yellow, black)**

**1.2 Use of the substance / preparation:** For use with ZPrinter<sup>®</sup> 3D inkjet printer

**1.3 Company/undertaking identification:**

3D Systems, Inc.  
333 Three D Systems Circle  
Rock Hill, South Carolina U.S.A.  
Phone: 803.326.3900 or  
Toll-free Phone: 800.793.3669  
e-mail: moreinfo@3dsystems.com  
Chemical Emergency:  
800.424.9300 – Chemtrec (US)

3D Systems Europe Ltd.  
Mark House, Mark Road  
Hemel Hempstead  
Herts HP2 7 United Kingdom  
Phone: +44 144-2282600  
e-mail: moreinfo@3dsystems.com  
Chemical Emergency:  
+1.703.527.3887 - Chemtrec

3D Systems / Australia  
5 Lynch Street  
Hawthorn, VIC 3122  
+1 03 9819-4422  
e-mail: moreinfo@3dsystems.com  
Chemical Emergency:  
+(61) 29037.2994 –Chemtrec

#### 2. HAZARDS IDENTIFICATION

**2.1 Classification:**

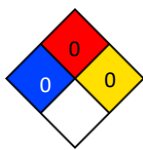
Not classified according to GHS, Regulation (EC) No. 1272/2008, HazCom 2012.

**2.2 Label Elements**

Regulation (EC) No, 1272/2008:

Hazard pictograms and signal word: None

Hazard statements: None



NFPA Ratings  
0 = Minimal  
1 = Slight  
2 = Moderate  
3 = Serious  
4 = Severe

**Hazardous Materials Identification System (HMIS):**

(Degree of hazard: 0 = low, 4 = extreme):

Health **0**  
Flammability **0**  
Physical Hazards **0**

#### 3. COMPOSITION/INFORMATION ON INGREDIENTS

**3.1 Preparation related information**

**Description:** aqueous solution

**3.2 Hazard ingredients:**

Chemical name	CAS-No	EC-No	%	Classification Regulation (EC) 1272/2008
2-pyrrolidone	616-45-5	210-483-1	0-1	Xi R22, 37/38,41

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#### 4. FIRST AID MEASURES

**4.1 In case of inhalation:** Move affected person to fresh air. If respiratory irritation occurs, seek medical attention immediately.

**4.2 In case of skin contact:** Flush skin with plenty of soap and water.

**4.3 In case of eye contact:** Flush eyes with plenty of water.

**4.4 In case of ingestion:** If ingested, drink plenty of water. Do not induce vomiting.

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#### 5. FIRE-FIGHTING MEASURES

**5.1 Suitable extinguishing media:** Water mist, dry chemical, carbon dioxide, or appropriate foam.

**5.2 Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases:** Thermal decomposition products can include CO<sub>2</sub>, CO and nitrogen oxides.

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#### 6. ACCIDENTAL RELEASE MEASURES

**6.1 Personal precautions:** Wear appropriate protective equipment and clothing.

**6.2 Environmental precautions:** Avoid discharge to sewer system.

**6.3 Methods for cleaning up:** Wipe up. Place all waste in an appropriate container for disposal.

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#### 7. HANDLING AND STORAGE

**7.1 Handling:** Avoid contact with skin and eyes. Do not allow to enter drains or watercourses.

**7.2 Storage:** Store sealed in the original container at room temperature.

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#### 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

##### 8.1 Exposure limit values:

General Product Information: No occupational exposure limits (PEL/TWA) have been established for this product.

Component Analysis:

Component	Component Manufacturer IEL (Internal Exposure Limit)
2-pyrrolidone	NA

##### 8.2 Exposure controls

**Technical measures to prevent exposure:** Use local exhaust ventilation.

**Instructual measures to prevent exposure:** When using, do not eat, drink or smoke. Wash hands after handling and before eating, smoking and using the lavatory and at the end of the day.

##### Personal protection equipment:

**Respiratory protection:** If ventilation cannot effectively keep vapor concentrations below established limits, appropriate certified respiratory protection must be provided (respiratory mask FFP3).

**Hand protection:** Use impervious nitrile gloves.

**Eye protection:** Wear safety glasses or chemical goggles.

**Body protection:** Use apron and closed shoes.

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#### 9. PHYSICAL AND CHEMICAL PROPERTIES

##### 9.1 Appearance:

**Physical state:** Liquid (clear, cyan, magenta, yellow or black)

##### 9.2 Important health, safety and environmental information

<b>pH (20 °C):</b>	9.8
<b>Melting point/range (°C):</b>	0°
<b>Boiling point/range (°C):</b>	100
<b>Flash point (°C):</b>	NA
<b>Ignition temperature (°C):</b>	NA
<b>Vapour pressure (°C):</b>	NA
<b>Density (g/cm<sup>3</sup>):</b>	1.0
<b>Bulk density (kg/m<sup>3</sup>):</b>	NA
<b>Water solubility (20°C in g/l):</b>	soluble
<b>Viscosity, dynamic (mPa s):</b>	NA
<b>Dust explosion hazard:</b>	NA
<b>Explosion limits:</b>	NA

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#### 10. STABILITY AND REACTIVITY

**Hazardous decomposition products:** Carbon dioxide, carbon monoxide and other toxic fumes can be released at high temperatures or upon burning.

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#### 11. TOXICOLOGICAL INFORMATION

**11.1 Toxicokinetics, metabolism and distribution:** NA

**11.2 Acute effects (toxicity tests)**

Component	LD <sub>50</sub> Oral	LD <sub>50</sub> Dermal
2-pyrrolidone	328 mg/kg (rats)	NA

##### 11.3 General remarks:

Carcinogenicity: None of this product's components are listed by ACGIH, IARC, OSHA, NIOSH, or NTP.

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#### 12. Ecological information

**12.1 Ecotoxicity:** The aquatic toxicity of the product is unknown. No data are available for the components of this product.

**12.2 Mobility:** No information available for product.

**12.3 Persistence and degradability:** No information available for product.

**12.4 Results of PBT assessment:** No information available for product

**12.5 Other adverse effects:** No information available for product

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#### 13. DISPOSAL CONSIDERATIONS

**Appropriate disposal / Product:** Do not contaminate drains, soil or surface waters with this material or its container. Reduce waste by attempting to utilize product completely. Dispose of this container and its contents in accordance with all local, state, and federal regulations.

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#### 14. TRANSPORT INFORMATION

**14.1 Land transport (ADR/RID/GGVSE):** Not regulated

**14.2 Sea transport (IMDG-Code/GGVSee):** Not regulated

**14.3 Air transport (ICAO-IATA/DGR):** Not regulated

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#### 15. REGULATORY INFORMATION

##### 15.1 EU regulations

EINEC/ELINCS/NLP: All materials are listed  
REACH Annex XVII: None listed

##### 15.2 US FEDERAL

TSCA: All materials are listed on the TSCA Inventory or are not subject to TSCA requirements:  
California Proposition 65: This product does not contain chemicals which are known to the state of California to cause cancer, birth, or any other reproductive defects.

##### 15.3 Australian regulations

SUSDP, Industrial Chemicals Act 1989:  
Australian Inventory of Chemical Substances, AICS: Listed

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#### 16. OTHER INFORMATION

##### 16.1 Relevant Hazard Statements (number and full text) referred to in sections 2 and 3 (according to (EC) No. 1272/2008):

Acute Tox.4, H302: Acute Toxicity, category 4, H 302: Harmful if swallowed  
STOT SE 3, H335: Specific target organ toxicity-single exposure, category 3 : May cause respiratory irritation  
Skin Irrit. 2, H315: Skin irritation, category 2, H315: Causes skin irritation  
Eye Dam.1, H318: Eye Damage, category 1, H318: Causes serious eye damage

##### Relevant R-Phrases (number and full text) referred to in sections 2 and 3:

Xi: Irritant  
R22: Harmful if swallowed  
R37/38: Irritating to respiratory system and skin  
R41: Risk of serious damage to eyes

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