



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[®]51 binder

Revision Date: August 3, 2015

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

1.1 Identification of the substance or preparation: zb[®]51 binder

1.2 Use of the substance / preparation: For use with ZPrinter[®] 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

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:
703.527.3887 - Chemtrec (U.S.)

2. HAZARDS IDENTIFICATION

2.1 Classification:

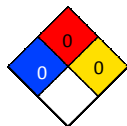
Not classified according to GHS, Regulation (EC) No. 1272/2008, HazCom 29, CFR 1910

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	Regulation 67/548/EEC, 1999/45/EC
1,4-Butanediol	110-63-4	203-786-5	1-5	Xn R 22, 67	Acut. Tox. 4, H302, STOT SE 3, H336
2-Propanol	67-63-0	200-661-7	0-1	F, Xi R11, 36, 67	Flam. Liq. 2, H225 Eye Irrit. 2, 319 STOT SE 3, H336



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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.

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 CO₂, CO and nitrogen oxides.

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.

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.

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)
1,4-Butanediol	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

9.2 Important health, safety and environmental information

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

10. STABILITY AND REACTIVITY

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

11. TOXICOLOGICAL INFORMATION

11.1 Toxicokinetics, metabolism and distribution: NA

11.2 Acute effects (toxicity tests)

Component	LD ₅₀ Oral	LD ₅₀ Dermal
1,4-Butanediol	1525 mg/kg (rats)	NA

11.3. General remarks:

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

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

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

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

15.4 Japanese regulations

Industrial Health and Safety Law	not applicable
Hazardous material	not applicable
Organic solvent poison prevention rule	not applicable
Ordinance on prevention of hazard due to specified chemical substances	not applicable
Lead Poisoning Prevention Rule	not applicable
Poison and Deleterious Substance Control law	not applicable
PRTR and Promotion of Chemical Management law (PRTR Law)	not applicable
Fire Services Act	not applicable
Explosives Law	not applicable
High pressure gas safety law	not applicable
Export Trade Control Order	not applicable
Waste Disposal and Public Cleaning Law	not applicable

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, H336- Specific target organ toxicity, single exposure, narcotic effects. Category 3, H336: May cause drowsiness or dizziness

Flam. Liq. 2, H225- Flammable liquids, category 2, H225: Highly flammable liquid and vapour

Eye Irrit. 2, H319- Serious eye damage/irritation, category 2, H319: Causes serious eye irritation

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

F: Extremely flammable

Xn: Harmful

Xi: Irritant

R11: Highly flammable

R22: Harmful if swallowed

R36: Irritating to eyes

R67: Vapours may cause drowsiness and dizziness



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www.3dsystems.com

800.793.3669 (Toll-free in the US GMT-07:00; N. America, Mon – Fri, 6:00 a.m. to 6 p.m.)
803.326.3900 (Outside the U.S. GMT-07:00; N. America, Mon – Fri, 6:00 a.m. to 6 p.m.)
+44 144-2282600 (Europe GMT+01:00; Mon – Fri, 08:00 a.m. - 17:00 p.m. MEZ)

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