

MATERIAL SAFETY DATA SHEET

Complies with Approved Code of Practice: Chemical (Hazard Information and Packaging for Supply) Regulations 2002 (UK) and European 91/155/EEC, 67/548/EEC, 1999/45/EC format, Australian NOHSC: 1008, 10005(1999), 2011(2003), 1003(1995) and ANSI Standard Z400.1 and U.S. Federal OSHA Hazard Communication

Section 1. Identification of the Substance/Preparation and Company

- 1.1 PRODUCTS IDENTIFICATION:** zb[®]60 binder clear
- 1.2 USE OF SUBSTANCE:** zb[®]60 clear is a mixture formula to be used to fuse powder for making rapid-prototyping 3D models.
- 1.3 COMPANY:** Z Corporation
32 Second Ave.
Burlington, MA 01803
Contact Person: Manager of Technical Services
Telephone Number: 781-852-5050
Foreign Contact: +(45) 48 14 11 22
Svanevang 2, 3450 Allerød, Denmark
Date of Preparation: 4/07 **Revised:** 3/10
- 1.4 FOR CHEMICAL EMERGENCY:** Spill Leak Fire Exposure or Accident
Call CHEMTREC Day or Night
DOMESTIC NORTH AMERICAN: 800-424-9300
INTERNATIONAL, CALL 703-527-3887 (collect calls accepted)

Section 2. Hazards Identifications

Potential Human Health Effects:

Prolonged and repeated exposure may cause skin allergic reactions. May be harmful if swallowed.

Target Organs or Systems:

Respiratory, kidneys, skin, eyes

Route of Exposure:

Skin Contact: May cause skin irritation and/or allergic reactions.

Skin Absorption: May be harmful if absorbed through the skin.

Eye Contact: May cause eye irritation.

Inhalation: May be harmful if inhaled. Material may be irritating to the mucous membranes and upper respiratory tract.

Ingestion: May be harmful if swallowed.

Signs and Symptoms of Exposure:

Prolonged exposure can cause: Nausea, headache, and vomiting.

Carcinogens:

None of the ingredients in this product contain carcinogens in concentrations of 0.1 percent or greater based on IARC and NTP.

Potential Environmental Effects:

No significant environmental hazards are expected if material is released to the environment.

Section 3. Composition/Information of Ingredients

Substance is a mixture with following general composition:

Components	Approximate % by weight	C.A.S. No. & EINECS No.	UK/EU Classification according to Directive 67/548/EEC
1. Humectant	<10%	Trade Secret	Not Classified as Dangerous
2. Water	>90%	7732-18-5	Not Classified as Dangerous

Section 4. Emergency First Aid Measures

Inhalation Exposure:

Remove from area to fresh air. Seek medical attention if breathing becomes difficult.

Eye Contact Exposure:

Immediately flush eyes with copious amounts of water for at least 15 minutes. Call a physician.

Skin Contact Exposure:

Immediately wash with soap and rinse with copious amounts of water.

Oral Exposure (Ingestion):

Wash out mouth with water provided the person is conscious and seek medical attention.

Section 5. Fire-Fighting Measures (Fire and Explosion Hazard)

Flash point (Method Used)	Flammable limits	LEL	UEL
	Not Applicable	Not Applicable	Not Applicable
Not considered to be a fire hazard (primarily water)			

Extinguishing Media:

Water spray, carbon dioxide, dry chemical powder or appropriate foam.

Special Fire Fighting Procedures

As with all fires, fire fighters should wear full protective gear including supplied air respirators.

Unusual Fire & Explosion:

This product's major component is water, thus it will not readily burn. If the water is boiled off, the remaining components may emit toxic fumes under fire conditions such as carbon monoxide, carbon dioxide, and oxides of nitrogen. Protective fire fighting equipment: self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

Exposure Hazard(s): Material: Irritant

Section 6. Accidental Release Measures

Procedures of Personal Precautions:

Exercise appropriate precautions to minimize direct contact with skin or eyes. Wear, chemical safety goggles, and rubber gloves.

Environmental Precautions:

This material poses no significant environmental hazards; however, it is important to minimize contamination of sewage water, soil, groundwater, drainage systems, or bodies of water.

Methods of Cleaning Up:

Contain spills immediately with inert materials (eg. sand, earth). Avoid discharge to sanitary and natural waters. Place in closed containers for disposal. Wash spill site after material pickup is complete prior to re-occupancy.

Waste Disposal Method:

Follow safe solid waste disposal guidelines in accordance with federal, state and local regulations. National or regional provisions may also be in force.

Section 7. Handling and Storage

Handling Precautions:

User Exposure: Avoid inhalation. Avoid contact with eyes, skin and clothing. Avoid prolonged or repeated exposure. Wash thoroughly after handling.

Storage Precautions:

Suitable: Keep tightly closed.

Special Requirements:

Store in a cool place. Other requirements for handling and storage are found in the Technical Bulletin that describes the use of the product and specific procedures.

Section 8. Exposure Controls & Personal Protection**Exposure Limits:**

Component	IOELVs (UK)	EC OEL	ACGIH TLV	OSHA PEL
1. Humectant	TWA = 10 mg/m ³	TWA = 10 mg/m ³	10 mg/m ³ irritation	10 mg/m ³ as a mist

Notations:

IOELVs = Indicative Occupational Exposure Limit Values

TLV = Threshold Limit Value

OEL = Occupational Exposure Limits

PEL = Permissible Exposure Limit

TWA = time weighted average

Engineering Controls:

Safety shower and eye wash. Maintain air concentrations below occupational exposure standards using engineering controls as necessary.

Respiratory Protection:

Respiratory protection for this usage is not required. Where protection is desired, use NIOSH/MSHA approved respirator for organic vapors and P95 filter, or Type ABEK (EN14387 respirator cartridges for CEN(EU) use).

Protective Gloves:

For prolonged or repeated contact use disposable powder-free nitrile gloves.

Eye Protection:

Chemical safety goggles for situations with splash hazards.

Skin Protection:

Additional skin protection including aprons or coveralls is generally not needed for the designed usage.

Environmental Exposure Controls:

This product is not known to have chemical components requiring specific environmental exposure controls. Specific environmental requirements, however do vary and each user needs to follow local environmental protection requirements.

Section 9 Physical & Chemical Properties

Appearance: Liquid (mostly water)

Boiling Point (F°): 212° F water

Vapor Pressure (MM Hg): Not applicable (NA)

Vapor Density (air = 1): >1

pH: 10.00 ± .30

Melting Point: NA

Flash Point: NA

Flammability (soild, gas): NA

Explosive Properties: NA

Oxidizing Properties: NA

Bulk Density: NA

Water/Oil Distribution: NA

VOC by Weight = 0% (EPA Method 24)

Spec Gravity (H₂O = 1): >1

Color: Clear

Odour: Slight odour

Clarity: Clear

Solubility: Water

Solubility Fat: NA

Evaporation Rate: Water

Partition coefficient: n octanol/water: NA

Density: Not known

Viscosity: Not Determined

Section 10 Stability and Reactivity

Stability:**Stable:** Stable**Conditions to Avoid:** Moisture**Incompatible Products:** Strong oxidizers, strong bases, strong acids, strong reducing agents**Hazardous Decomposition Products:** Carbon monoxide, carbon dioxide, nitrogen oxides, aldehydes**Hazardous Polymerization:** Will not occur**Section 11 Toxicological Information**

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated for the mixture. The following is for the product components.

1. **Humectant: Primary Irritant:** The following is summary of the primary test data which show mildly toxic by ingestion. Human systemic effects by ingestion: headache and nausea or vomiting. A skin and eye irritant. In the form of a mist it is a nuisance particulate and inhalation irritant. Thorough toxicity data is available from from RTEC register number (MA805000)

Acute Toxicity Data:*Oral-Rat LD50: 12,600 mg/kg**Skn-Rabbit LD50: >10,000 mg/kg*Irritation Data:*Skn-Rabbit 500 mg 24H, mild irritation**Eyes-Rabbit 126 mg, mild irritation**Eyes-Rabbit 500 mg 24H, mild irritation*Sensitization: No Data availableChronic Exposure – IARC/NTP: Not listed**Section 12 Ecological Information**

1. **Humectant:**

Elimination information (persistence and degradability): No data available**Ecotoxicity effects**

Toxicity to Fish:

LC50 Fish Pimephales promelas (Fathead minnow) 44,000 mg/l

LC50 Fish Carassius auratus (Goldfish) >5,000 mg/l

LC50 – other fish >100,000 mg/l

LC50 Oncorhynchus mykiss (rainbow trout) 67,500 mg/l – 96 h

Further information on ecology: No data available**Section 13 Disposal Considerations**

Follow safe solid waste disposal guidelines in accordance with governmental regulations (community, national or regional). Contact a licensed professional waste disposal service to dispose of this mixture. As with all foreign substances do not allow to enter the storm or sewer drainage systems.

Contaminated Packaging: Dispose of as unused product.

Section 14 Transportation Information

This is not a regulated material for transportation.

Section 15 Regulatory Information

Ingredient	EPA TSCA	European Economic Community (EEC)				Canada Regs	
		EINECS	European Community Standards	Listed as dangerous chemicals	EEC Symbol	DSL	NDSL
1. Humectant	Yes	Yes	Yes	None	None	Yes	No

Risk Phrases: None

Safety Phrases:

S24/25: Avoid contact with skin and eyes.

Pursuant to Title III of the Superfund Amendments and Reauthorization Act of 1986, (SARA) and 40 CFR 372 Part 372, this product does not contain chemicals subject to the reporting requirements under Section 313.

This product does not contain chemicals subject to the reporting requirements under the Canadian National Pollutant Release Inventory (NPRI).

California Proposition 65: This product does not contain chemicals which are known to the state of California to cause cancer.

Section 16 Other Information

HMIS (Hazardous Materials Information System) for secondary labeling:

Health 1*

Fire Hazard 0

Physical Hazard 0

Personal Protective Equipment B

*additional chronic hazards present

Reason for Revision: Clarification of chemical hazards and format changes to match GHS

References

- 1) 2009 Threshold Limit Values and Biological Exposure Indices. American Conference of Governmental Industrial Hygienists.
- 2) MSDS + Cheminfo CD-ROM, Canadian Centre for Occupational Health and Safety
- 3) SAX'S Dangerous Properties of Industrial Materials, Tenth Edition
- 4) TSCA & SARA Title III, U.S. Environmental Protection Agency and the National Technical Information Services
- 5) Raw Material Manufacturers Material Safety Data Sheets
- 6) US National Institute of Medicines Toxnet current edition

Z Corporation believes the information and recommendations contained herein to be accurate and reliable. However, no liability whatsoever is assumed for the accuracy or completeness of the

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