

# MATERIAL DATA SHEET

## Section 01. Identification of Chemical Substance and Company

- 1.1. **PRODUCTS IDENTIFICATION:** zp<sup>®</sup> 150 powder
- 1.2. **USE OF SUBSTANCE:** Plaster 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

## Section 02. Physical & Chemical Properties

**Appearance:** White Powder  
**Flash point:** Not Applicable (NA)  
**Flammability:** NA  
**Vapor pressure:** NA  
**Specific Gravity:** (H<sub>2</sub>O = 1): Unknown  
**Auto-ignition temperature:** NA

**Initial boiling point:** NA  
**Evaporation rate:** NA  
**Upper/lower flammable limits:** NA  
**Relative density:** 2.6 – 2.7 g/cm<sup>3</sup>  
**Solubility:** 0.83% (3<sup>0</sup>C)  
**Melting point/freezing point:** 1450<sup>0</sup>C

## Section 03. Stability and Reactivity

**Stability:** Stable in dry environments. Dew point conditions or other conditions causing presence of liquid will harden the material.

**Conditions to Avoid:** Avoid wet / high humidity conditions. Avoid generating dust.

**Incompatible Products:** Acids, strong basis, oxidizing agents, water, and high humidity.

**Hazardous Decomposition Products:** Oxides of carbon. Irritating and toxic fumes at elevated temperatures.

**Hazardous Polymerization:** Will not occur.

## Section 04. Toxicological Information

Data for product components only, mixture not evaluated.

<b>1. Plaster</b>	
<i>Human</i>	Oral LD50 – >5,000 mg/kg; Skin LD50 – not determined; Eye Irritation – not determined; Dermal LD50 – not determined The sulfate ion has caused gastro-intestinal disturbance in humans following large oral doses.
<i>Monkeys, Rats, Hamsters</i>	Limited studies involving the repeated inhalation of an (unspecified) calcium sulfate failed to identify any particular target organs in monkeys, rats and hamsters
<i>Rat</i>	LD50 - >2,000 mg/kg (oral); LD50 - >2,000 mg/kg (skin) Sub acute toxicity (1 ml of 5% PVA and 0.9% NaCl solution, 25 days): PVA-treated rats became hypersensitive. There were enlargements of adrenals, and hearts, and kidneys.
<i>Rabbit</i>	Eye Irritation – Slightly; Skin Irritant – No
<i>Other</i>	Ames bacterial Test – no mutagenicity
<b>2. Vinyl Polymer</b>	
<i>Human</i>	Eye Irritation – Severe; Skin Irritant – Mild
<i>Rabbit</i>	Skin nonirritating as powder, slight irritation in aqueous solution and LD50 >1,000 mg/kg Eye slight irritation which subsided by 48 hrs after exposure
<i>Rat</i>	Oral LD50 >5000 mg/kg; Inhalation LC50 >20.0 mg/l 1 hour practically nontoxic to animals by acute inhalation
<i>Mouse</i>	Oral LD50 – 14,270 mg/kg
<i>Adult Guinea Pig</i>	Not a skin sensitizer with 10% aqueous solution, Oral LD50 18,750 mg/kg
<i>Mutagenicity</i>	Not mutagenic in vitro (Ames Test), Not mutagenic in vivo mouse assay.
<i>Reproductive</i>	No information available
<i>Cancer</i>	IARC Cancer Review: Group 3 “not classifiable as it its carcinogenicity in humans”
<b>3. Carbohydrate</b>	
<i>Human</i>	Skin – 300 ug/3D-I Mild
<i>Mouse</i>	Intraperitoneal LD50 – 6600 mg/kg

## Section 05. Ecological Information

Data for product components only, mixture not evaluated.

1. Plaster	
Red Killfish	LC50 1000 mg/L
Biodegradability	Degraded by bacteria such as <i>Pseudomonas sp.</i>
2. Vinyl Polymer	
Fish <i>Pimephales promelas</i>	LC50 >40,000 mg/l 96 hr
Fish <i>Lepomis macrochirus</i>	LC50 >10,000 mg/l 96 hr
Crustacean <i>Ceriodaphnia</i>	LC50 7,850 ppm 48 hr
Crustacean <i>Daphnia magna</i>	LC50 8,300 ppm 48 hr
Bacteria <i>Photobacterium phosphoreum</i>	EC50 >50,000 ppm
Bioaccumulation	Biodegradability 90% (Zahn-Wellens test)
Biodegradability	Biological Oxygen Demand (BOD): BOD5 = 0-5%; BOD30 = 100%
3. Carbohydrate	No data available

## Section 06. 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 07. Transportation Information

This is not a regulated material for transportation.

## Section 08. Regulatory Information

The following provides a summary of the legal requirements. All ingredients are listed on the chemical inventories as listed below or qualify for an exemption.

Ingredient	EPA TSCA	CA Prop 65	European Economic Community (EEC)				Canada Regs	
			EINECS	European Community Standards	Listed as dangerous chemicals	EEC Symbol	DSL	NPRI
(1) Plaster	Yes	No	Yes	Nuisance dust 6 to 10 mg/m <sup>3</sup>	No	None	Yes	No
(2) Vinyl Polymer	Yes	No	Yes	Nuisance dust 10 mg/m <sup>3</sup>	No	None	Yes	No
(3) Carbohydrate	Yes	No	Yes	Nuisance dust 10 mg/m <sup>3</sup>	No	None	Yes	No

DSL = Canadian Domestic Substance List

NPRI = National Pollutant Release Inventory

**Relevant European R and S phrases for the mixture/preparation: None**

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 any 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 09. Other Information**

**HMIS (Hazardous Materials Information System) for secondary labeling:**

**Health 1\***

**Fire Hazard 0**

**Physical Hazard 1**

**Personal Protective Equipment B**

\*additional chronic hazards present

### **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

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