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**PT MONOKEM SURYA****MATERIAL  
SAFETY  
DATA SHEET**

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**Section 1 Product Identification & Company Identification**

**Product Name** : Zirconium Silicate Flour MF-617  
**Product Use** : Precision Casting  
**CAS No.** : 14940-68-2

**Manufacturer:**

PT. MONOKEM SURYA  
Rukan Permata Senayan Blok D No.53 Jl. Tentara Pelajar, Jakarta, 12210 – Indonesia  
Ph: +62 21 57941388 – 89 Fax: +62 21 57941390

**Section 2 Composition/Information on Ingredients**

Chemical or Component : % by weight  
ZrO<sub>2</sub> + HfO<sub>2</sub> : >65.0  
TiO<sub>2</sub> : <0.15  
Fe<sub>2</sub>O<sub>3</sub> : <0.1

**Section 3 Hazardous Identification****Emergency Overview** :

Dust inhalation may be harmful to the respiratory system. This product contains respirable quartz. The predominant effect of over exposure to airborne quartz in humans is silicosis. Individuals with preexisting conditions of the lungs may have increased susceptibility to the toxicity of excessive exposure.

Observance of the 5 mg/m<sup>3</sup> OSHA PEL for respirable dust will ensure that use of this product is within limits established for respirable quartz.

**Ingestion** : May cause mild irritation.  
**Inhalation** : Addressed above  
**Eye Contact** : May cause mild irritation.  
**Skin Contact** : May cause mild irritation.

**Hazard Description****Medical conditions generally aggravated by exposure :**

Asthma, chronic lung conditions diseases and skin rashes.

**Toxicological Data** : See item 11

**Carcinogenicity** : Quartz is listed by the IARC and NTP as known to be carcinogenic to humans.  
: Classified 1 - Proven for humans (IARC)

**Section 4 First Aid Measures**

**Ingestion** : No specific intervention is indicated. If discomfort is experienced, a physician or other qualified medical personnel should be consulted.  
**Inhalation** : Remove to fresh air. If irritation develops consult a physician or other qualified medical personnel.  
**Eye Contact** : Flush eyes with ample amounts of water for at least 15 minutes. Consult a physician or other qualified medical personnel if irritation develops and persists.  
**Skin Contact** : Wash with soap and water to remove any contamination.

**Section 5 Fire Fighting Measures****Fire / Explosion Hazards:**

This product does not present fire or explosion hazards as supplied.

**Extinguishing Media:**

As deemed suitable by the environment.

#### **Fire Fighting Equipment:**

Respiratory and eye protection required for fire fighting personnel. Full protective equipment (Bunker Gear) and self-contained breathing apparatus (SCBA) should be used for all indoor fires and any significant outdoor fires.

### **Section 6 Accidental Release Measures (Steps For Spills)**

Person-related Safety Precautions: : Avoid contact with skin and eyes.  
Cleaning and Collecting Spills : Vacuum or sweep material and place in a disposal container.  
Avoid dusting. Ensure adequate ventilation.

### **Section 7 Handling and Storage**

**Handling** : Ensure good ventilation in all work areas. Minimize dusting and dust accumulation.  
**Storage** : No special requirements.

### **Section 8 Exposure Control / Personal Protection**

#### **Exposure Guidelines**

19490-68-2 Zircon (Zirconium Silicate)

ACGIH TLV : 5 mg/m<sup>3</sup>, 8 hr. TWA, as Zr

STEL : 10 mg/m<sup>3</sup>, as Zr

OSHA PEL : 5 mg/m<sup>3</sup>, 8 hr. TWA, as Zr

LD50 = N/A : LC50 = N/A

**Respiratory Protection:** : Avoid breathing dust. Use NIOSH/MSHA approved respiratory protection  
: in case of insufficient ventilation and where exposure guidelines may be exceeded.

**Skin Protection:** : Wear suitable gloves and appropriate clothing to avoid skin irritation or injury.

**Eye Protection:** : Use of safety glasses with full side shields is always recommended. Where  
air turbulence may be present, goggles are also recommended.

### **Section 9 Physical & Chemical Properties**

Physical State: : Solid  
Odor: : None  
Melting Point: : 2200°C  
Boiling Point: : Not determined.  
Flash Point: : Not applicable.  
Solubility in Water: : Negligible (less than 0.1%)  
Density: : Not determined.  
Bulk Density: : Not determined.  
pH - 20°C: : Not determined.  
Autoignition: : Product is not self igniting.  
Danger of Explosion: : None present.  
Vapor Pressure: : Not applicable.  
Vapor Density: : Not applicable.  
Evaporation Rate: : Not applicable.  
Oxidizing Properties: : Not applicable.  
Lower Flammable Limit: : None.  
Upper Flammable Limit: : None.  
Odor Threshold: : Not determined.  
Partition Coefficient: : Not applicable.  
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### **Section 10 Stability And Reactivity**

Stability : Product is stable.  
Corrosivity: : Non-corrosive.  
Conditions to Avoid : None noted.

Incompatibilities with Other Materials	: None noted.
Hazardous Decomposition Products	: Zircon will disassociate to Zirconium Oxide (ZrO <sub>2</sub> ) and Silicon Dioxide (SiO <sub>2</sub> ) : when heated of 1540 °C
Hazardous Polymerization	: Will not occur.

## Section 11 Toxicological Information

### Acute Toxicity –

#### Primary Irritant Effect

Inhalation	: Irritant to the upper respiratory tract. LC50 = N/A
On the skin	: Irritant to skin and mucous membranes. LD50 = N/A
On the eyes	: Irritating effect.
Sensitization	: No sensitizing effects known.

### Chronic Toxicity-

Inhalation	: Repeated inhalation of excessive amounts of dust may produce granulomas, varying degrees of respiratory irritation, silicosis and/or lung cancer.
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Additional Toxicological Information:  
RTECS No. ZH9000000 – Zircon

## Section 12 Ecological Information

### General Notes:

Generally, no adverse conditions are anticipated, but may require compliance with governmental restrictions and permitting requirements prior to release.

## Section 13 Disposal Consideration

### Product -

<b>Recommendation</b>	: Collect in containers or covered dumpsters. If reuse or recycling is not possible, material may be disposed of at an industrial landfill, subject to local regulations and restrictions. Based on radionuclide content, some localities and jurisdictions may require disposal as NORM (naturally occurring radioactive material).
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### Uncleaned packaging -

Recommendation:	: Disposal must be made according to official regulations.
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RCRA Status	: If discarded in its purchased form, this product would not be a hazardous waste either by listing or characteristic nor is it federally (USA) regulated. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal whether a material containing the product or derived from the product should be classified as a hazardous waste (40 CFR 261.20-24 or state equivalent in the USA).
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## Section 14 Transport Information

U.S. Department of Transportation (DOT):	: Not Regulated
Canadian TDGR Hazard Class and PIN:	: Not Regulated
Land Transport ADR/RID (cross-boarder):	: Not Regulated
Maritime Transport IMDG:	: Not Regulated
Marine Pollutant:	: Not Listed
Air transport ICAO-TI and IATA-DGR:	: Not Regulated
Placards:	: Applicable

## Section 15 Regulatory Information

### U.S. Federal Regulations:

TSCA Chemical Inventory Status: All components of this product are listed.

CERCLA Reportable Quantity: None.

SARA Title III:

Section 302 Extremely Hazardous Substances: None.

Section 304 Emergency Release Reporting: None.

Section 311/312 Hazardous Categories: Chronic.

Section 313 Toxic Categories: None.

Clean Air Act of 1990 – Title VI: This material does not contain nor was it manufactured using ozone depleting chemicals.

### Canadian Regulations:

WHMIS Classification: D-2A Very toxic material causing other effects.

DSL (Domestic Substance List): All components of this product are listed on the DSL.

NPRI (National Pollutant Release Inventory): Not subject to mandatory reporting requirements.

IDL (Ingredient Disclosure List): Zircon and quartz are listed on the IDL.

Note : This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (Canada) and this MSDS contains all the information required by the Controlled Products Regulations (Canada).

### European Union Classification:

EINECS	:	Zircon	Rutile
		239-019-6	215-282-2

### USA State Regulations:

California Proposition 65: Radionuclides are currently listed on the California List of Known . Carcinogens causing cancer.

Massachusetts Right to Know List: Zircon is listed.

Massachusetts Hazardous Substance Code: None

New Jersey Right to Know List: Zircon is listed

Pennsylvania Right to Know List: Zircon and Rutile are listed.

### Section 16 Other Information

Hazard Ratings -

NFPA ® Ratings	Health	: 2	HMIS ® III Codes	Health	: 2
	Flammability	: 0		Flammability	: 0
	Reactivity	: 0		Physical Hazard	: 0
	Special	E		PPE	: *

\*Note: PPE (Personal Protective Equipment) designation to be supplied by user depending upon use in their specific situation. HMIS guidelines do not permit this designation to be specified by the manufacturer/supplier – only by the end user.

For more information contact Product Safety at

PT Monokem Surya  
Technical Service Department  
62 267 848 5 214

*The information contained in this Health and Safety Data Sheet should be used only as a guide to the safe handling of the product, and is not intended as a technical specification.*