

1. Identification of the substance/ mixture and of the company/undertaking

Item description: ELEMENTS Zirconium blanks Shine 3DML

Product reference: 311-010010 to 311-152020

Distributor: **Dentify GmbH**
Scheffelstr. 22
78234 Engen / Germany

Emergency: Tel: + 49-7733-977 62 40
(Mo – Thu 8:00 – 16:30, Fr 8:00 – 15:00)

2. Hazards identification

Information

Physical /chemical hazards: Not applicable

Human health hazards: Heated material may cause burns to unprotected skin.
Heated material may release volatile ingredients and cause irritation and burns to unprotected eyes.

Environmental Hazards: Not applied

3. Composition / Information on Ingredients

COMPONENT	PERCENT*	FORMULA	CAS
ZIRCONIUM OXIDE	91.6	ZrO ₂	1314-23-4
HAFNIUM OXIDE	3.0	HfO ₂	12055-23-1
YTTRIUM OXIDE	5~6	Y ₂ O ₃	1314-36-9

4. First aid measures

Effects and symptoms

inhalation: Slightly hazardous in case of inhalation

ingestion: Slightly hazardous in case of ingestion

skin contact: Heated material may cause burns to unprotected skin.

eye contact: Heated material may release volatile ingredients and cause irritation and burns to unprotected eyes.

First Aid measures:

Inhalation: Allow the victim to rest in a well-ventilated area. Seek medical attention if irritation persists.

Ingestion: If large quantities are swallowed, wash out mouth and call physician.

Skin contact: Warm water must be used.

Eye contact: Flush eyes with plenty of water for 15 minutes, occasionally lifting upper and lower eyelids. Warm water must be used.

5. Firefighting measures

NFPA Rating:	Not known
Extinguishing Media	
Suitable/Not suitable:	
SMALL FIRE:	Use DRY chemical powder
LARGE FIRE:	Use extinguishing media suitable for the surrounding materials.
Special firefighting procedures:	No special measures required
Unusual Fire/Explosion Hazards:	None
Hazardous thermal decomposition products:	No dangerous substances are released.
Protection for fire fighters:	No special measures are required

6. Accidental release measures

Personal precautions:	No special precautions
Environmental Precautions and Clean Up Methods:	No special precautions

7. Handling and Storage

Handling:	Heated material may release volatile ingredients and cause irritation and burns to unprotected eyes.
Storage:	No special precautions

8. Exposure controls/ personal protection

Engineering controls:	Ventilation is normally required when handling or using this product.
Personal Protective Equipment	
Respiratory system:	Provide adequate ventilation.
Skin and body:	Laboratory coat
Hands:	No special protective clothing is required
Eyes:	Safety glasses always

9. Physical and chemical properties

Chemical Compositions		
ZrO ₂ +HfO ₂ +Y ₂ O ₃	99,6	≥99%
ZrO ₂	91,6	
Y ₂ O ₃	5,0	4,5 to 5,4
HfO ₂	3,0	≤5
Al ₂ O ₃	0,25	≤0,5
Other oxide	≤0,15	≤0,5
3Point Bending strength	1200+/-50MPa	≥500MPa
Sintering density	6,07-6,09g/cm ³	≥0,6g/cm ³
Young`s modulus	210GPa	
Crystallite size	32nm	
Particle size	0,43um	
Granule size	52um	
Fracture toughness	9MPa 1/2	
Thermal conductivity	3,0W/mK	
Coefficient of thermal expansion	10,5*10 ⁻⁶ /K	
Chemical solubility	2,5µg/cm ²	≤100µ/cm ²
radioactivity	0,015Bq/g	≤0,2Bq/g

No Hazards Ingredients

NFPA Rating: Not known

10. Stability and reactivity

Chemical Stability: The product is stable

Conditions to Avoid: None

Incompatibility with: None known

Hazardous Products of Deposition: Not expected to form hazardous materials.

Reactions with Air and Water: Does not react with air, water, or other common materials.

11. Toxicological information

Summary: Not considered to be toxic to humans or animals.

Skin Effects: Non-irritant for skin.

Eye Irritation: Non-irritating to the eyes

Sensitization: Non-sensitizer for skin

Chronic toxicity: There is no known effect from the chronic exposure to this product

12. Ecological information

Ecotoxicity:	Ecotoxicity is expected to be low based on the low water to nearly zero solubility of these blocks in water.
Environmental Fate:	No information found in our selected references.
Bio accumulation:	Not expected to occur

13. Disposal considerations

This material is NOT classified as a hazardous material by RCRA. Use only licensed transporters and permitted disposal facilities and conform to all laws. Recycle to process, if possible.

Germany water class:	
VCI WGK:	No products were found.
Methods of disposal:	waste of residues.
contaminated packaging:	Waste must be disposed of in accordance with federal state and local environmental control regulations.

14. Transport information

Proper Shipping Name:	Non-Regulated, No dangerous cargo
DOT Hazard Class:	Non-Regulated, No dangerous cargo
UN/NA ID:	Not Regulated, No dangerous cargo
Packing Group:	Not Applicable
Labels:	Not Regulated
Marine Pollutant:	No
NAER Guidebook:	Not Regulated
DOT Status:	Not Regulated
Land-Road/Railway:	
ADR/RID Class:	No dangerous cargo
Sea:IMDG Class:	No dangerous cargo
Air: IATA-DGR Class:	No dangerous cargo

15. Regulatory information

TSCA: All components of this product are listed on the TSCA 8(b) inventory. If identified components of this product are listed under the TSCA 12(b) Export Notification Rule, they will be listed below.

TSCA 12(b) Component Listed under TSCA Section

SARA-Section 313 Emissions Reporting:
Component Reporting Threshold

SARA-Section 311/312:
No components present in this product are subject to the reporting requirements of this statute.

CERCLA Hazardous Substances and their reportable Quantities:
Component Reportable Quantity

EU Regulations:
Risk Phrases: This product is not classified according to the EU regulations.
Safety Phrases: Not applicable
Contains: Not applicable

16. Other information

This information is based on the state of knowledge and experience pertaining on the date of issue. The information is not to be taken as a guarantee of product properties and do not constitute the basis for a contractual legal relationship. The details must not be changed or transferred to other products. Duplication in an unchanged state is permissible.

Key to abbreviations

ATE:	Acute toxicity estimate
BCF:	Bioconcentration factor
IATA:	International Air Transport Association
GHS:	Globally Harmonized System of Classification and Labelling of Chemicals
IBC:	Intermediate Bulk container
IMDG:	International maritime dangerous goods
Log Pow	logarithm of the octane/water partition coefficient
MARPOL:	International convention for the pollution from ships, 1973 as modified by the protocol of 1978(marine pollution)
UN	United Nations

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