

Safety Data Sheet

1. Product Identification

1.1 Product Name	Zinc Selenide (ZnSe)
Chemical Family	Solid Inorganic Poly-crystalline Pieces
Form	Solid Optical Element (Ceramic, Glass)
1.2 Use	Optical Material
1.3 Supplier / Manufacturer	KM innovation Co.,Ltd.
Address	71, Pyeongdongsandan 6beon-ro, Gwangsan-gu, Gwangju-Si, Republic of KOREA. (62453)
Phone Number	+82 62-945-8882
1.4 Emergency Number	+82 62-945-8882

2. Hazards Identification

2.1 Classification	
OSHA / HCS	This optical material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), in its solid (Crystalline) state , however; the hazards of powder/dust have not been fully analyzed (except in regard to acute toxicity; see Section 11 of this SDS). This SDS was therefore created using information for selenium compounds, and contains valuable information for the safe handling and proper use of this product (particularly in a powder/dust form).
GHS-US	Acute Dust Toxicity, Category 5 Acute Oral Toxicity, Category 5 (As Slurry) Mild Skin Irritation, Category 5 (Dust and Slurry) Mild Eye Irritant, Subcategory 5
EC regulation No. 1272/2008 and its amendments	The substance is not classified according to the CLP regulation.
2.2 Label Elements	
Hazard pictogram	GHS - Symbol N/A
Signal Word	GHS – Warning
Hazard Statements	GHS – H333: May be harmful if inhaled. H303: May be harmful if swallowed H313: May be harmful in contact with skin

	May cause eye irritation
Precautionary Statements - Prevention	GHS- P261: Avoid breathing dust/fume/gas/mist/vapors/spray. P262: Do not get in eyes, on skin, or on clothing. P264: Wash hands thoroughly after handling. P270: Do not eat, drink or smoke when using this product.
Response	GHS- P304 + P341 IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P301 + P313: If swallowed get medical advice/attention. P332 + P352: If skin irritation occurs, wash with plenty of water.
Storage	Do not store with strong acids, strong bases or strong oxidants. Do not store with food.
Disposal	GHS – P501: Dispose of contents/container in accordance with local/regional/national/international regulation
2.3 Other hazards	None identified

3. Composition / Information on Ingredients

3.1 Substances			
Chemical Name	CAS Number	EC Number	Percent
Zinc Selenide	1315-09-9	215-259-7	100%

4. First Aid Measures

4.1 Description of first aid measures	
Inhalation	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.
Skin Contact	Wash with soap and water.
Eye Contact	Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains. Get medical attention if irritation persists.
Ingestion	If a large amount is swallowed, get medical attention.
4.2 Symptoms	Irritation of eyes and/or skin. Severe inhalation overexposure may cause coughing or difficulty breathing.
4.3 Immediate or special treatment	For inhalation, consider oxygen for severe cases.

5. Firefighting Measures

5.1 Extinguishing Media	Choose extinguishing media based on what is burning around this non-combustible substance.
Unsuitable Extinguishing Media	None identified
5.2 Special Hazards Arising from Substance	This substance can produce a toxic release if exposed to temperatures between 400° C and 800° C.
5.3 Advice for firefighters	Keep unnecessary people away, isolate hazard area and deny entry. If the substance is close to or in the fire, self-contained breathing apparatus (SCBA) must be worn.

6: Accidental Release Measures

6.1 Personal precautions	Wear suitable personal protective equipment based on Section 8 of this SDS.
6.2 Environmental precautions	If waste water is generated, remove any substance solids prior to releasing it to a wastewater treatment plant.
6.3 Methods of containment and clean-up	Handle with care. Use engineering controls to prevent generating dust. Sweep up broken pieces into a pile and containerize them. Wear gloves. If dust is generated, recover it with a HEPA vacuum.
6.4 References to other sections	Section 8

7. Handling and Storage

7.1 Precautions for safe handling	Do not let it contact strong acids, strong bases or strong oxidant.
7.2 Conditions for safe storage	Do not store with strong acids, strong bases and strong oxidant.
7.3 Specific end uses	No special measures required.

8. Exposure Controls / Personal Protection

8.1 Control parameters – occupational exposure limits, Selenium Compounds (as Se)	0.2 mg/m ³ OSHA PEL TWA 0.2 mg/m ³ 2015 ACGIH TLV TWA 0.2 mg/m ³ NIOSH REL TWA 0.1 mg/m ³ Chinese OELs PC-TWA
8.2. Exposure controls	Minimize creating dust when working with material.

Engineering Controls	Provide local exhaust or process enclosure ventilation system. Use wet processes for working material.
Eye Protection	Not required.
Clothing	Protective coverings for dust if engineering controls are inadequate. Launder work clothing if contaminated.
Gloves	General gloves to protect skin from direct contact. Use cut resistant if handling sharp pieces.
Respirator	Not required in solid state. Refer to NIOSH guidelines if creating dust from material.

9. Physical and Chemical Properties

Physical State	Solid
Color	Light Yellow
Odor	None
Odor Threshold	N/A
Molecular Weight	144.34
Molecular Formula	ZnSe
Specific Gravity (water=1)	5.27
Water Solubility	Insoluble
Melting Point	1525° C (Plastic deformation at 500°C)

10. Stability and Reactivity

10.1 Reactivity	None.
10.2 Chemical stability	Stable.
10.3 Possibility of hazardous reactions	Will not polymerize. No flammable. May react with strong acids
10.4 Conditions to avoid	Temperatures above 400°C.
10.5 Incompatible materials	Strong acids and bases.
10.6 Hazardous decomposition products	Thermal decomposition between 400°C and 800°C may generate hydrogen selenide. At higher temperatures selenium, selenium oxides, and zinc oxides may be produced

11. Toxicological Information

Acute toxicity	The classification criteria are not met, based on Acute Oral Toxicity, Rat, NOAEL > 5 g/Kg per testing done in compliance with Federal Hazardous Substance Act , 16 CFR, Part 1500.3, January 1999
Skin corrosion/irritation	Based on available data, the classification criteria are not met.

Serious eye damage/irritation	Based on available data, the classification criteria are not met.
Respiratory or skin sensitization	Based on available data, the classification criteria are not met.
Germ cell mutagenicity	Based on lack of data, the substance is not classified for this hazard class.
Carcinogenicity	Based on lack of data, the substance is not classified for this hazard class.
Reproductive toxicity	Based on lack of data, the substance is not classified for this hazard class.
Summary of evaluation of the CMR properties	This material is not classifiable as to human carcinogenicity, mutagenicity, or reproductive toxicity and it has not been classified as a carcinogen, mutagen, or reproductive toxicant.
STOT-single exposure	No data found
STOT-Repeated exposure	Specific Organ Toxicity, Repeated Exposure, Category 2 (central nervous system, liver, digestive system (route: swallowed, inhaled))
Aspiration hazard	No data found

12. Ecological Information

12.1 Toxicity	Toxicity to daphnia and other aquatic invertebrates EC ₅₀ – Daphnia magna - >100mg/L -48h (OECD 202) Toxicity to fish LC ₅₀ – Pimephales promelas - >100mg/L – 96h (OECD203)
12.2 Persistence and degradability	No data found
12.3 Bioaccumulative potential	No data found
12.4 Mobility in soil	No data found
12.5 Results of PBT and vPvB assessment	No data found
12.6 Other adverse effects	No data found
12.6 Additional information	No data found

13. Disposal Considerations

Product/package disposal	Dispose of in accordance with local applicable regulations
Waste treatment-relevant information	Non-hazardous
Sewage disposal-relevant information	Waste should not be disposed of by release to sewers
Other disposal recommendations	None.

14. Transport Information

14.1 UN Number	Not applicable because it is Non-Hazardous: 49 CFR 172.101C(12)(iv) Non-Hazardous for Air Transport: IATA Non-Hazardous for Sea Transport: IMO
14.2 UN proper shipping name	Not applicable because it is Non-Hazardous: 49 CFR 172.101C(12)(iv) Non-Hazardous for Air Transport: IATA Non-Hazardous for Sea Transport: IMO
14.3 Transport hazard class	Not applicable because it is Non-Hazardous: 49 CFR 172.101C(12)(iv) and test report in China Non-Hazardous for Air Transport: IATA Non-Hazardous for Sea Transport: IMO
14.4 Packing group	Not applicable because it is Non-Hazardous: 49 CFR 172.101C(12)(iv) Non-Hazardous for Air Transport: IATA Non-Hazardous for Sea Transport: IMO
14.5 Environmental hazards	None.
14.6 Special precautions for user	None.
14.7 Transport in bulk	Not intended to be transported in bulk

15. Regulatory Information

15.1 Safety, health and environmental regulations/legislation specific for the substance:		
This product contains the following chemicals subject to reporting requirements of U.S. EPCRA Section 313 (40 CFR 372)		
Component	Category Code	Maximum %
Selenium	N725	54.7
Zinc	N982	45.3
15.2 Chemical Safety Assessment:		
No Chemical Safety Assessment has been carried out for this substance by the supplier.		

16. Other Information

NFPA Ratings (Scale 0-4)	Health=1, Fire=0, Reactivity=0
HMIS Ratings (Scale 0-4)	Health=1, Fire=0, Reactivity=0

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The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of the data or the results to be obtained from the use thereof. Additionally, "KM innovation" assumes no responsibility for injury to the vendee or third person proximately caused by the material even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in the use of the material.