

## Zinc Selenide Material Safety Data Sheet

### 1. Product Identification

Product Name	Zinc Selenide (ZnSe)
Synonyms	Raytran ZnSe, Kodak Itran-4
CAS Number	1315-09-9
EU Number	034-002-00-8
Product Use	Optic elements
Manufacturer/Supplier	II-VI Incorporated
Address	375 Saxonburg Blvd. Saxonburg, PA 16056
General Information Phone	724-352-4455
Transportation Emergency Number	CHEMTREC: 800-424-9300

### 2. Hazards Identification

#### GHS Classification

Health	Environmental	Physical
Non-Toxic	Non-Toxic	Non-Hazardous

#### GHS Label

Name	Contains
Zinc Selenide	Selenium Compounds

#### Symbols: None Required

Hazard Statements	Precautionary Statements
None	Do not eat, drink or use tobacco when using this product. Do not breathe dust.

### 3. Composition / Information on Ingredients

#### Substance/Preparation: Substance

Component	CAS Number	Weight %
Zinc	7440-66-6	45.3
Selenium	7782-49-2	54.7

(See Section 8 for Exposure Limits)

### 4. First Aid Measures

**Eye:** Eye irritation. Flush immediately with large amounts of water for at least 15 minutes. Consult physician if irritation develops or persists.

**Skin:** Wash with soap and water. Consult physician if irritation develops or persists.

**Inhalation:** Remove from exposure, treat symptomatically, consult physician

**Ingestion:** Consult physician.

## 5. Fire Fighting Measures

**Suitable Extinguishing Media:** Use extinguishing media that can safely extinguish fuel of fire. Zinc Selenide is not flammable and not explosive

**Fire Fighting Procedures:** Exposed firefighters must wear NIOSH-approved positive pressure self-contained breathing apparatus with full-face mask and full protective clothing.

**Unusual Fire and Explosion Hazards:** Extreme heat greater than 500 °C could result in decomposition. Decomposition products include Selenium/Oxides of Selenium, Zinc Oxide, and Hydrogen Selenide.

**Combustion Products:** This product is not combustible.

## 6. Accidental Release Measures

**Solid Form:** If parts are dropped or otherwise broken, sweep up pieces as one would clean up glass (use caution with sharp edges) and use caution when transferring to disposal container. Cut resistant gloves and NIOSH approved dust mask or particulate respirator are recommended.

**Dust Form:** Avoid getting Zinc Selenium dust in eyes. Use safety glasses with side-shields or goggles. Use a NIOSH approved dust mask or particulate respirator. If the dust is airborne allow time for the dust to settle. Clean up the dust with a damp mop or cloth.

**In Case of Vaporization:** Leave room and allow dust to settle. Clean all surfaces while wearing protective gloves. If room has ventilation, allow for several air changes. Locate exhaust near location of ZnSe processing or use if failure by melting is likely.

## 7. Handling and Storage

**Handling:** If the material is to be machined, ground or polished, it should be done wet to prevent dust that could be inhaled. Good work practices such as using impermeable gloves, keeping hands cleaned, and not letting slurry splash significantly should be followed so that potential contamination of food is avoided. Always wash hands and face after handling material and before eating, drinking, or smoking.

Keep away from heat that could raise the material's temperature to 500 °C or higher.

**Storage:** Do not store this material with acids, bases, or oxidizing agents.

## 8. Exposure Controls / Personal Protection

### Exposure Limits

Material	OSHA 8 hr. TWA	ACGIH 8 hr. TWA	NIOSH REL 8 hr. TWA
Particles – Total Dust	15 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>
Particles - Respirable	5 mg/m <sup>3</sup>	3 mg/m <sup>3</sup>	---
Selenium and compounds, as Se	0.2 mg/m <sup>3</sup>	0.2 mg/m <sup>3</sup>	0.2 mg/m <sup>3</sup>

### Other Exposure Limits

Exposure Limits	Selenium Compounds
"VME" France	TWA: 0.2 mg/m <sup>3</sup>
"MAK" Germany	TWA: 0.1 mg/m <sup>3</sup>
"MAC" Netherlands	TWA: 0.1 mg/m <sup>3</sup>
Italy	TWA: 0.1 mg/m <sup>3</sup>

**Engineering Controls:** If the material is to be machined, ground or polished, processes should be done wet as to prevent dust that could be inhaled. Local exhaust ventilation may be necessary to control air contaminants below their exposure limits.

**Personal Protective Equipment (PPE):**

Eye Protection: Safety Glasses or Goggles.

Skin Protection: Impervious gloves, protective work clothing.

Respiratory Protection: Use a NIOSH approved dust mask or particulate respirator.

### 9. Physical and Chemical Properties

Form	Solid
Color	Yellow Transparent
Odor	Odorless
Boiling Point	Sublime
Melting Point @ 760 mm Hg	1525°C
Vapor Pressure	Not Applicable
Vapor Density (Air=1)	Not Applicable
% Solubility in Water	Insoluble
Pour Point	Not Applicable
Molecular Formula	ZnSe
Lower Flammability Limit	Not Applicable
Upper Flammability Limit	Not Applicable
Specific Gravity	5.27
% Volatile	0
Evaporation Rate	Not Applicable
pH	Not Applicable due to insolubility
Molecular Weight	143.3

### 10. Stability and Reactivity

**Stability/Incompatibility:** Stable; not reactive. Materials to avoid are strong acids, strong bases, and oxidizers.

**Hazardous Reactions/Decomposition Products:** Decomposition products include Selenium, Oxides of Selenium, Zinc Oxide, and Hydrogen Selenide.

### 11. Toxicological Information

**Signs and Symptoms of Overexposure: EFFECTS OF OVEREXPOSURE:**

ZnSe - Effects are not known except that Zinc Selenide as a compound was found to be non-toxic at 5g/1kg in an "Acute Oral Limit Toxicity Study" conducted by Toxikon. The test was initiated on January 7, 1993 by II-VI Inc. and it was performed according to Federal Hazardous Substances Act, 16CFR, Part 1500.3, January 1990.

Additional toxicological information (selenium compounds, zinc oxide/zinc oxide fumes):

- EPA-D: Not classifiable as to human carcinogenicity: Inadequate human and animal evidence of carcinogenicity or no data are available.
- IARC-3: Unclassifiable as to carcinogenicity in humans.
- MAK-3B: In vitro tests or animal studies have yielded evidence of carcinogenic effects that is not sufficient for classification of the substance in one of the other categories. Further studies are required before a final classification can be made.

Acute Target Organ Effects:

- Eye Contact: Dust may cause eye irritation
- Skin Contact: May cause mild, reversible skin irritation if it contacts skin while in slurry physical state.
- Inhalation: May cause irritation.
- Ingestion: May cause discomfort.

Chronic Target Organ Effects: Unknown

Acute Toxicity Values: Oral LD<sub>50</sub> (Rat) = Non Toxic @ 5g/kg

### **12. Ecological Information**

**LC<sub>50</sub> (Fathead Minnows):** Not available

**EC<sub>50</sub> (Daphnia):** Not available

**Bioaccumulation:** No information found in selected references

### **13. Disposal Considerations**

Dispose of used laser optics in a licensed industrial waste facility in compliance with all local, state and federal regulations. If you do not have access to a licensed industrial waste facility, the used laser optics may be returned to II-VI Incorporated for proper disposal. Contact II-VI Incorporated before returning any used laser optics

### **14. Transport Information**

ZnSe material should be wrapped in lens tissue or optical tissue and placed in individual plastic boxes to avoid possible breakage.

Not a DOT hazardous material for transportation.

IATA Proper Shipping Name: This product is not classified according to IATA

International Maritime Organization (IMDG) Proper Shipping Name: This product is not classified according to IMDG

**15. Regulatory Information****U.S. Federal Regulations**

Comprehensive Environmental Response and Liability Act of 1980 (CERCLA) RQ: No

EPCRA Section 313 Toxic Chemical: Yes

EPCRA Section 304 (EHS) RQ: No

SARA Section 311/312 (40 CFR 370) Hazard Categories:

Immediate Hazard: X

Delayed Hazard:

Fire Hazard:

Pressure Hazard:

Reactivity Hazard:

This product contains the following toxic chemical(s) subject to reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

Component	Category Code	Maximum %
Selenium	N725	54.7
Zinc	N982	45.3

Toxic Substances Control Act (TSCA): Listed on inventory

Clean Air Act (CAA) 112 (r) TQ: No

**International Regulations**

European Inventory of Existing Chemicals (EINECS): All of the components of this product are included on EINECS.

Label Name: Zinc Selenide (Contains Selenium Compounds)

EU Risk (R) and Safety (S) Phrases:

R33: Danger of cumulative effects

S20/21: When using do not eat, drink, or smoke

S28: After contact with skin, wash immediately with plenty of soap and water

S45: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible)

**16. Other Information****National Fire Protection Association (NFPA) Ratings**

Health	Flammability	Reactivity
1	0	0

This information is intended solely for the use of individuals trained in the NFPA system.

**HMIS Ratings**

Health	Flammability	Reactivity	PPE
1	0	0	X

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