

# SAFETY DATA SHEET

## ZINC SELENIDE OPTIC WITH THORIUM COATING

According to Regulation (EC) No.1907/2006 (REACH)



Revision 2015 : Issued 17th December 2015

### 1. IDENTIFICATION OF THE SUBSTANCE AND THE COMPANY

#### 1.1. PRODUCT IDENTIFIERS:

Product Name: Zinc Selenide Optical Crystal with Thorium Fluoride (ThF<sub>4</sub>) Antireflection Coating  
Synonyms, Trade Names: ZnSe, Infratran, Lasertran, Raytran, Irtran-4

#### 1.2. RELEVANT IDENTIFIED USES OF THE SUBSTANCE OR MIXTURE AND USES ADVISED AGAINST

Identified Uses: Optical Material fabricated as Optical Components.

#### 1.3. DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

Company: **CRYSTRAN LTD**, 1 Broom Road Business Park, Poole, Dorset UK BH12 4PA  
☎ +44 1202 307650

#### 1.4. EMERGENCY TELEPHONE NUMBER

Emergency Phone: ☎ +44 1202 307650 (Monday to Friday 08:30 to 17:00 GMT)  
Emergency Action: In the event of a medical enquiry involving this product, please contact your doctor or local hospital accident and emergency department. The attending health professional will be able to contact the National Poisons Information Service.

### 2. HAZARDS IDENTIFICATION

#### 2.1. CLASSIFICATION OF THE SUBSTANCE OR MIXTURE

Class 6.1 Poison. Toxic by ingestion and inhalation with a danger of cumulative effects. Liberates highly toxic hydrogen selenide in contact with gastric juices. Dermatitis may result from prolonged contact. Particular care must be exercised when machining and creating dust or particles. Symptoms include garlic odour on breath. Dangerous for the environment. The optical coating is defined as a Radioactive Sealed Source with a layer of Thorium Fluoride embedded in the structure. The dosage is extremely low and well below any notifiable levels but care must be taken not to scratch the coating and release any Thorium Fluoride. Low level Radioactive sealed source component – read the notes in addendum.



#### 2.2. LABEL ELEMENTS

Signal Word: **Danger**  
H301 Toxic if swallowed  
H331 Toxic if inhaled  
H410 Very toxic to aquatic life with long lasting effects  
Precautionary Statements:  
P260 Do not breathe dust/fume/gas/mist/vapours/spray.  
P264 Wash thoroughly after handling.  
P270 Do not eat, drink or smoke when handling this product  
P273 Avoid release to the environment.  
P301+P310 IF SWALLOWED: Immediately call a poison centre or doctor. Rinse mouth.  
P304+P312 IF INHALED: Call a poison centre or doctor/physician if you feel unwell.



#### 2.3. OTHER HAZARDS

Low level radioactive component in coating. Read additional notes attached.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

#### 3.1. SUBSTANCES

Component Name	CAS number	%	EC number (EINECS)	EU index	UN number
Zinc Selenide	1315-09-9	>99.999%	215-259-7	034-002-00-8	3283
Thorium Fluoride	13709-59-6	<0.001%	237-259-6	-	2910

### 4. FIRST AID MEASURES

#### 4.1. DESCRIPTION OF FIRST AID MEASURES

GENERAL: Consult a doctor for specific advice.  
EYES: Irrigate thoroughly with water for at least 15 minutes. Obtain medical attention.  
SKIN: Wash thoroughly with soap and water. Dry area with clean towel. Remove contaminated clothing and wash clothing before re-use.  
INHALATION: Remove to fresh air. Perform artificial respiration if breathing has stopped. When breathing is difficult, properly trained personnel may administer oxygen. Keep affected person warm and at rest. Obtain medical attention.  
INGESTION: Do not induce vomiting. Wash out mouth thoroughly with water and give 2 cups of water to drink. Do not give carbonated drinks. Never give anything by mouth to an unconscious person. Obtain medical attention immediately.

#### 4.2. MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED

Refer to Section 2.2 and to section 11.

#### 4.3. INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED

No Data.

### 5. FIRE FIGHTING MEASURES

#### 5.1. EXTINGUISHING MEDIA

This product does not burn.

#### 5.2. SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE

Material may evolve toxic fumes in a fire, with decomposition at temperatures greater than 400°C in air and greater than 800°C in an inert atmosphere. The material sublimates into zinc & selenium fumes.

#### 5.3. ADVICE FOR FIREFIGHTERS

Use breathing apparatus if necessary.

### 6. ACCIDENTAL RELEASE MEASURES

#### 6.1. PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Wear suitable protective clothing & equipment as listed under Section 8. Avoid making dust.

#### 6.2. ENVIRONMENTAL PRECAUTIONS

Prevent further leakage or spillage. Do not let product enter drains. Do not discharge to the environment.

#### 6.3. METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP

Take up and containerize for proper disposal. Containerize any cleaning materials used for proper disposal.

#### 6.4. REFERENCE TO OTHER SECTIONS

Refer to the addendum attached regarding treatment and handling of the radioactive coating.

## CRYSTRAN LTD

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### 7. HANDLING AND STORAGE

#### 7.1. PRECAUTIONS FOR SAFE HANDLING:

Handling of the Thorium Fluoride Coating is perfectly safe if the coating is not physically scratched or damaged. Refer to the attached addendum regarding handling of damaged coatings. Keep away from heat. Avoid contact with skin and eyes. Protect against physical damage. Avoid generating dust.

#### 7.2. CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

Keep away from foodstuffs. Keep away from acids and strong bases.

#### 7.3. SPECIFIC END USES

Optical Material Manufactured as Optical Components.

### 8. EXPOSURE CONTROL AND PERSONAL PROTECTION

#### 8.1. CONTROL PARAMETERS

OCCUPATIONAL EXPOSURE LIMITS (OEL) = 0.1 mg/m<sup>3</sup> as Se in 8 hour Time Weighted Average (TWA)

#### 8.2. EXPOSURE CONTROLS

Protective gloves made of PVA are required. Use of a laboratory coat is suggested. Safety goggles or safety glasses with side shields are required if there is any possibility of chipping or dust creation. Respirators must be worn when the threshold limit is exceeded. Provide adequate general mechanical ventilation, and local exhaust ventilation. Wash hands immediately after handling the product.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

#### 9.1. INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE :	Reddish-yellow geometric shapes, no odour.	FLASH POINT:	Not Applicable
BOILING POINT (760mm Hg)	Not Applicable	FLAMMABILITY:	Not Applicable
MELTING POINT:	1525°C *	EXPLOSIVE PROPERTIES:	Not Applicable
SPECIFIC GRAVITY:	5.27 g/mL	VAPOUR PRESSURE:	Negligible at 25°C
SOLUBILITY IN WATER:	Practically Insoluble	pH IN AQUEOUS SOLUTION:	Not determined

#### 9.2. OTHER SAFETY INFORMATION

\* Oxidises at 300°C, exhibits plastic deformation at 500°C and dissociates at about 700°C

### 10. STABILITY AND REACTIVITY

#### 10.1. REACTIVITY

Reacts with strong mineral acids and strong oxidising materials

#### 10.2. CHEMICAL STABILITY

Stable under normal conditions of storage and use

#### 10.3. POSSIBILITY OF HAZARDOUS REACTIONS

None known

#### 10.4. CONDITIONS TO AVOID

Can react with oxidising agents. Avoid strong acids

#### 10.5. INCOMPATIBLE MATERIALS

Strong Mineral Acids. Strong oxidising materials

#### 10.6. HAZARDOUS DECOMPOSITION PRODUCTS

Decomposition product is Hydrogen Selenide gas.

### 11. TOXICOLOGICAL INFORMATION

#### 11.1. INFORMATION ON TOXICOLOGICAL EFFECTS

Toxic by ingestion and inhalation of dust, with a cumulative effect. Affects nervous system. Particular care must be exercised when machining and creating dust or particles. Inhalation of dust may irritate respiratory system.

TOXIC DOSE - LD50 > 5 g/kg

CARCINOGENICITY: No evidence of carcinogenic properties.

MUTAGENICITY/TERATOGENICITY: Some evidence of reproductive effects.

### 12. ECOLOGICAL INFORMATION

#### 12.1. TOXICITY

Danger to drinking water. Poisonous to Fish

#### 12.2. PERSISTENCE AND DEGRADABILITY

No Data

#### 12.3. BIOACCUMULATIVE POTENTIAL

No Data

#### 12.4. MOBILITY IN SOIL

No Data

#### 12.5. RESULTS OF PBT AND vPvB ASSESSMENT

Not required or conducted

#### 12.6. OTHER ADVERSE AFFECTS

Do not allow product to reach ground water, water course or sewage system. Only release to environment with proper government permit.

### 13. DISPOSAL CONSIDERATIONS

#### 13.1. WASTE TREATMENT METHODS

Chemical residues are generally classified as special waste, and are covered by regulations which vary according to location. Contact your local waste disposal authority for advice, or pass to a chemical disposal company.

### 14. TRANSPORT INFORMATION

#### 14.1. UN NUMBER: 3283

#### 14.2. UN PROPER SHIPPING NAME:

Selenium Compound, Solid, N.O.S. (Zinc Selenide).

#### 14.3. TRANSPORT HAZARD CLASS: 6.1

#### 14.4. PACKING GROUP: III

#### 14.5. ENVIRONMENTAL HAZARDS: Marine Pollutant

#### 14.6. SPECIAL PRECAUTIONS FOR USER: None

#### 14.7. TRANSPORT IN BULK MARPOL / IBC: No Data

### 15. REGULATORY INFORMATION

#### 15.1. SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS / LEGISLATION SPECIFIC FOR THE SUBSTANCE OR MIXTURE

TSCA: Zinc Selenide Listed in the TCSA Inventory. Thorium Fluoride listed in the TSCA inventory

SARA: 311/312: Acute health hazard, Chronic health hazard.

SARA (TITLE 313): Zinc Selenide

WHMIS: This is a controlled product under the Canadian Workplace Hazardous Materials Information System

OSHA: Hazardous product under the OSHA Hazard Communication Standard (29 CFR 1910.1200)

### 16. OTHER INFORMATION

REVISION DATE: 17<sup>th</sup> December 2015 ©2015 Crystran Ltd.

The above information is believed to be correct but does not purport to be all inclusive and must be used only as a guide.

## CRYSTRAN LTD

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