1. IDENTIFICATION OF THE SUBSTANCE AND THE COMPANY

1.1. PRODUCT IDENTIFIERS:
- **Product Name:** Germanium Optical Crystal
- **Synonyms, Trade Names:** Ge

1.2. RELEVANT IDENTIFIED USES OF THE SUBSTANCE OR MIXTURE AND USES ADVISED AGAINST
- **Identified Uses:** Optical Material for manufacture of 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
- **Emergency Phone:** +44 1202 307650

1.4. EMERGENCY TELEPHONE NUMBER
- **Emergency Phone:** +44 1202 307650 (Monday to Friday 08:30 to 17:00 GMT)

2. HAZARDS IDENTIFICATION

2.1. CLASSIFICATION OF THE SUBSTANCE OR MIXTURE
- **No Hazardous Product as specified in Directive 67/548/EEC.**

2.2. LABEL ELEMENTS
- **H315** Causes skin irritation
- **H319** Causes serious eye irritation.
- **H332** Harmful if inhaled
- **Precautionary Statements:**
  - P262 Do not breathe dust/fume/gas/mist/vapours/spray.

2.3. OTHER HAZARDS
- **None**

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1. SUBSTANCES
<table>
<thead>
<tr>
<th>Component Name</th>
<th>CAS number</th>
<th>%</th>
<th>EC number (EINECS)</th>
<th>EU index</th>
<th>UN number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germanium</td>
<td>7440-56-4</td>
<td>100%</td>
<td>231-164-3</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

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. If discomfort persists obtain medical attention.
- **SKIN:** Wash thoroughly with soap and water.
- **INHALATION:** Remove to fresh air. Obtain medical attention.
- **INGESTION:** Wash out mouth thoroughly with water. In severe cases obtain Medical Attention.

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
- **None Known.**

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
- Dispose as in Section 13.

7. HANDLING AND STORAGE

7.1. PRECAUTIONS FOR SAFE HANDLING:
- Protect against physical damage and avoid generating dust.

7.3. CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES
- No special precautions needed.

7.4. SPECIFIC END USES
- Optical Material for Manufacture of Optical Components.
SAFETY DATA SHEET

GERMANIUM OPTICAL CRYSTAL

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

Revision 2016 : Issued 25th May 2016

8. EXPOSURE CONTROL AND PERSONAL PROTECTION

8.1. CONTROL PARAMETERS

ACGIH TLV (United States 1/2009)

OCCUPATIONAL EXPOSURE LIMITS (OEL) = 10mg/m³ Inhalable; Particulates (Insoluble) (PNOS) 8 hour Time Weighted Average (TWA) = 5mg/m³ Respirable; Particulates (Insoluble) (PNOS) 8 hour Time Weighted Average (TWA)

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: Grey-black geometric shapes, no odour. FLASH POINT: Not Applicable

BOILING POINT (760mm Hg) 2830°C FLAMMABILITY: Not Applicable

MELTING POINT: 937.4°C EXPLOSIVE PROPERTIES: Not Applicable

SPECIFIC GRAVITY: 5.323 g/mL VAPOUR PRESSURE: Negligible at 25°C

SOLUBILITY IN WATER: Insoluble pH IN AQUEOUS SOLUTION: Not determined

9.2. OTHER SAFETY INFORMATION

None

10. STABILITY AND REACTIVITY

10.1. REACTIVITY

Reacts slowly with mineral acids.

Alkaline H₂O₃ or aqueous NaClO rapidly causes oxidation.

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

Avoid strong acids and oxidising agents

10.5. INCOMPATIBLE MATERIALS

Strong Mineral Acids.

10.6. HAZARDOUS DECOMPOSITION PRODUCTS

Normally none.

11. TOXICOLOGICAL INFORMATION

11.1. INFORMATION ON TOXICOLOGICAL EFFECTS

Animal experiments have shown that lungaveolitis may occur after subacute high exposure (50mg/m³) to dust. No toxicological effects were observed after 4 weeks subacute exposure at 10mg/m³. Nevertheless, particular care should be exercised when machining and creating dust or particles.

TOXIC DOSE: 1LD₅₀ = 5000 mg/kg (oral/rat)

CARCINOGENICITY: No evidence of carcinogenic properties.

MUTAGENICITY/TERATOGENICITY: No evidence of reproductive effects.

12. ECOLOGICAL INFORMATION

12.1. TOXICITY

No Data

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

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: None

14.2. UN PROPER SHIPPING NAME: Not subject to transportation regulations.

14.3. TRANSPORT HAZARD CLASS: None

14.4. PACKING GROUP: None

14.5. ENVIRONMENTAL HAZARDS: None

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: Not determined

16. OTHER INFORMATION

REVISION DATE: 10th June 2016 ©2016 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.