Safety Data Sheet

Section 1: Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product identifier

Product Name • **Cesium Iodide (Tl) Scintillation Crystal**

1.2 Relevant identified uses of the substance or mixture and uses advised against

Relevant identified use(s) •

1.3 Details of the supplier of the safety data sheet

Manufacturer • Luxium Solutions

17900 Great Lakes Parkway
Hiram, OH 44234
United States
www.luxiumsolutions.com

Telephone (General) • 440-834-5600

1.4 Emergency telephone number

Contract # 6493674

U.S. & Canada • 1-800-255-3924 – VelocityEHS

International • +1-813-248-0585 – VelocityEHS

Section 2: Hazards Identification

EU/EEC

According to: Regulation (EC) No 1272/2008 (CLP)/REACH 1907/2006 [amended by 2015/830]
According to: EU Directive 67/548/EEC (DSD) or 1999/45/EC (DPD)

2.1 Classification of the substance or mixture

CLP • Due to formed nature of this product, no airborne concentrations are expected.
Acute Toxicity Oral 4 - H302

DSD/DPD • Due to formed nature of this product, no airborne concentrations are expected.
Harmful (Xn)
R20/22

2.2 Label Elements

CLP

WARNING

Hazard statements • H302 - Harmful if swallowed

Precautionary statements

Prevention • P264 - Wash thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.

Response • P301+P312 - IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician if you feel unwell.
P330 - Rinse mouth.

Storage/Disposal • P501 - Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

DSD/DPD

Risk phrases • R20/22 - Harmful by inhalation and if swallowed.

2.3 Other Hazards

CLP • According to Regulation (EC) No. 1272/2008 (CLP) this material is considered hazardous.

DSD/DPD • According to European Directive 1999/45/EC this material is considered dangerous.

United States (US)

According to: OSHA 29 CFR 1910.1200 HCS

2.1 Classification of the substance or mixture

OSHA HCS 2012 • Due to formed nature of this product, no airborne concentrations are expected.
Acute Toxicity Oral 4

2.2 Label elements

OSHA HCS 2012

WARNING

Hazard statements • Harmful if swallowed

Precautionary statements

Prevention • Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.

Response • IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician if you feel unwell.
Rinse mouth.

Storage/Disposal • Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

2.3 Other hazards

OSHA HCS 2012 • Under United States Regulations (29 CFR 1910.1200 - Hazard Communication Standard), this product is considered hazardous.

Canada

According to: WHMIS

2.1 Classification of the substance or mixture

WHMIS

- Due to formed nature of this product, no airborne concentrations are expected. Not classified

2.2 Label elements

WHMIS

- No label element(s) required.

2.3 Other hazards

WHMIS

- In Canada, the product mentioned above is not considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).

Section 3 - Composition/Information on Ingredients

3.1 Substances

- Material does not meet the criteria of a substance.

3.2 Mixtures

Composition					
Chemical Name	**Identifiers**	**%**	**LD50/LC50**	**Classifications According to Regulation/Directive**	**Comments**
Cesium iodide	**CAS:**7789-17-5 **EINECS:**232-145-2	99% TO 100%	NDA	**EU DSD/DPD:** Self Classified: Xn; R22 **EU CLP:** Self Classified: Acute Tox. 4, H302 **OSHA HCS 2012:** Acute Tox. 4 (orl)	NDA
Thallium iodide	**CAS:**7790-30-9 **EINECS:**232-199-7	< 1%	Ingestion/Oral-Rat LD50 • 24100 µg/kg	**EU DSD/DPD:** Annex VI, Table 3.2: T+; R26/28; R33; N; R51-53 **EU CLP:** Annex VI, Table 3.1: Acute Tox. 2*, H330; Acute Tox. 2*, H300; STOT RE 2*, H373; Aquatic Chronic 2, H411 **OSHA HCS 2012:** Acute Tox. 2 (orl); STOT RE 1 (liver, kidney, nervous system, gastrointestinal system, endocrine system)	NDA

See Section 16 for full text of H-statements and R-phrases.

Section 4 - First Aid Measures

4.1 Description of first aid measures

Inhalation

- Move victim to fresh air. Give artificial respiration if victim is not breathing. Administer oxygen if breathing is difficult. If signs/symptoms continue, get medical attention.

Skin

- Wash skin with soap and water. If irritation develops and persists, get medical attention.

Eye

- Flush eyes with water for at least 15 minutes while holding eyelids open. If eye irritation persists: Get medical advice/attention.

Ingestion

- Obtain medical attention immediately if ingested.

4.2 Most important symptoms and effects, both acute and delayed

- Refer to Section 11 - Toxicological Information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to Physician

- All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

Section 5 - Firefighting Measures

5.1 Extinguishing media

Suitable Extinguishing Media

- Use water, carbon dioxide or foam.

Unsuitable Extinguishing Media

- No data available.

5.2 Special hazards arising from the substance or mixture

Unusual Fire and Explosion Hazards

- Not a fire or explosion hazard. However, toxic emissions are possible in a fire situation.

Hazardous Combustion Products

- No data available

5.3 Advice for firefighters

- Wear positive pressure self-contained breathing apparatus (SCBA).
  Structural firefighters' protective clothing will only provide limited protection.
  Fire fighters should wear complete protective clothing including self-contained breathingapparatus.

Section 6 - Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal Precautions

- Ventilate the area before entry. Do not walk through spilled material. Wear appropriate personal protective equipment, avoid direct contact.

Emergency Procedures

- As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) in all directions. Keep unauthorized personnel away.

6.2 Environmental precautions

- Avoid release to the environment.

6.3 Methods and material for containment and cleaning up

Containment/Clean-up Measures

- Avoid generating dust.
  SMALL DRY SPILLS: With clean shovel place material into clean, dry container and cover loosely; move containers from spill area.
  LARGE SPILLS: Cover powder spill with plastic sheet or tarp to minimize spreading.

6.4 Reference to other sections

- Refer to Section 8 - Exposure Controls/Personal Protection and Section 13 - Disposal Considerations.

Section 7 - Handling and Storage

7.1 Precautions for safe handling

Handling

- Use only with adequate ventilation. Minimize dust generation and accumulation. Wear appropriate personal protective equipment, avoid direct contact. Avoid breathing dust. Avoid contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco.

7.2 Conditions for safe storage, including any incompatibilities

Storage

- Store in a tightly closed container. Store in a cool, dry, well ventilated area.

7.3 Specific end use(s)

- Refer to Section 1.2 - Relevant identified uses.

Section 8 - Exposure Controls/Personal Protection

8.1 Control parameters

Exposure Limits/Guidelines			
	Result	**ACGIH**	**Poland**
Thallium iodide	STELs	Not established	0.3 mg/m3 STEL [NDSCh] (as Tl) *as Thallium compounds*
	TWAs	0.02 mg/m3 TWA (inhalable fraction, as Tl) *as Thallium compounds*	0.1 mg/m3 TWA [NDS] (as Tl) *as Thallium compounds*

Exposure Control Notations

ACGIH

- Thallium iodide as Thallium compounds: **Skin:** (Skin - potential significant contribution to overall exposure by the cutaneous route)

Exposure Limits Supplemental

ACGIH

- Thallium iodide as Thallium compounds: **TLV Basis - Critical Effects:** (gastrointestinal damage; peripheral neuropathy)

8.2 Exposure controls

Engineering Measures/Controls

- Adequate ventilation systems as needed to control concentrations of airborne contaminants below applicable threshold limit values. Ensure that dust handling systems (such as exhaust ducts, dust collectors, vessels and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is not leakage from the equipment).

Personal Protective Equipment

Respiratory

- For limited exposure use an N95 dust mask. For prolonged exposure use an air-purifying respirator with high efficiency particulate air (HEPA) filters. Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or symptoms are experienced.

Eye/Face

- Wear safety goggles.

Skin/Body

- Wear appropriate gloves. Wear long sleeves and/or protective coveralls.

Environmental Exposure Controls

- Follow best practice for site management and disposal of waste.

Key to abbreviations

ACGIH = American Conference of Governmental Industrial Hygiene

STEL = Short Term Exposure Limits are based on 15-minute exposures

TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures

Section 9 - Physical and Chemical Properties

9.1 Information on Basic Physical and Chemical Properties

Material Description			
Physical Form	Solid	Appearance/Description	White crystal; odorless.
Color	White	Odor	Odorless
Odor Threshold	Data lacking		
General Properties			

Boiling Point	1280 °C(2336 °F)	Melting Point/Freezing Point	621 °C(1149.8 °F)
Decomposition Temperature	Data lacking	pH	Not relevant
Specific Gravity/Relative Density	= 4.5 Water=1	Water Solubility	Soluble
Viscosity	Data lacking	Explosive Properties	Data lacking
Oxidizing Properties:	Data lacking		
Volatility			
Vapor Pressure	Data lacking	Vapor Density	Data lacking
Evaporation Rate	Data lacking		
Flammability			
Flash Point	Not relevant	UEL	Not relevant
LEL	Not relevant	Autoignition	Data lacking
Flammability (solid, gas)	Data lacking		
Environmental			
Octanol/Water Partition coefficient	Data lacking		

9.2 Other Information

- No additional physical and chemical parameters noted.

Section 10: Stability and Reactivity

10.1 Reactivity

- No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

- Stable under normal temperatures and pressures.

10.3 Possibility of hazardous reactions

- Hazardous polymerization not indicated.

10.4 Conditions to avoid

- None expected.

10.5 Incompatible materials

- Bromine trifluoride, perchloric acid.

10.6 Hazardous decomposition products

- When heated to decomposition, emits toxic fumes of iodine.

Section 11 - Toxicological Information

11.1 Information on toxicological effects

Components		
Cesium iodide (99% TO 100%)	7789-17-5	**Acute Toxicity:** Ingestion/Oral-Rat LD50 • 1400 mg/kg
Thallium iodide (< 1%)	7790-30-9	**Acute Toxicity:** Ingestion/Oral-Rat LD50 • 24100 µg/kg

GHS Properties	Classification
Acute toxicity	**EU/CLP** • Acute Toxicity - Oral 4 - ATEmix(Oral)=893 mg/kg **OSHA HCS 2012** • Acute Toxicity - Oral 4

Skin corrosion/Irritation	**EU/CLP** • Data lacking **OSHA HCS 2012** • Data lacking
Serious eye damage/Irritation	**EU/CLP** • Data lacking **OSHA HCS 2012** • Data lacking
Skin sensitization	**EU/CLP** • Data lacking **OSHA HCS 2012** • Data lacking
Respiratory sensitization	**EU/CLP** • Data lacking **OSHA HCS 2012** • Data lacking
Aspiration Hazard	**EU/CLP** • Data lacking **OSHA HCS 2012** • Data lacking
Carcinogenicity	**EU/CLP** • Data lacking **OSHA HCS 2012** • Data lacking
Germ Cell Mutagenicity	**EU/CLP** • Data lacking **OSHA HCS 2012** • Data lacking
Toxicity for Reproduction	**EU/CLP** • Data lacking **OSHA HCS 2012** • Data lacking
STOT-SE	**EU/CLP** • Data lacking **OSHA HCS 2012** • Data lacking
STOT-RE	**EU/CLP** • Data lacking **OSHA HCS 2012** • Data lacking

Potential Health Effects

Inhalation

Acute (Immediate)
- Processes such as cutting, grinding, crushing, or impact may result in generation of excessive amounts of airborne dusts in the workplace. Nuisance dust may affect the lungs but reactions are typically reversible.

Chronic (Delayed)
- No data available

Skin

Acute (Immediate)
- Exposure to dust may cause mechanical irritation.

Chronic (Delayed)
- No data available.

Eye

Acute (Immediate)
- Excessive concentrations of nuisance dust in the workplace may reduce visibility and may cause unpleasant deposits in eyes.

Chronic (Delayed)
- No data available.

Ingestion

Acute (Immediate)
- Harmful if swallowed. Excessive concentrations of nuisance dust in the workplace may cause mechanical irritation to mucous membranes.

Chronic (Delayed)
- No data available.

Key to abbreviations

LD = Lethal Dose

Section 12 - Ecological Information

12.1 Toxicity

- Material data lacking.

12.2 Persistence and degradability

- Material data lacking.

12.3 Bioaccumulative potential

- Material data lacking.

12.4 Mobility in Soil

- Material data lacking.

12.5 Results of PBT and vPvB assessment

- No PBT and vPvB assessment has been conducted.

12.6 Other adverse effects

- No studies have been found.

Section 13 - Disposal Considerations

13.1 Waste treatment methods

Product waste
- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Packaging waste
- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Section 14 - Transport Information

	14.1 UN number	14.2 UN proper shipping name	14.3 Transport hazard class(es)	14.4 Packing group	14.5 Environmental hazards
DOT	NDA	Not Regulated	NDA	NDA	NDA
TDG	NDA	Not Regulated	NDA	NDA	NDA
IMO/IMDG	NDA	Not Regulated	NDA	NDA	NDA
IATA/ICAO	NDA	Not Regulated	NDA	NDA	NDA

14.6 Special precautions for user
- None specified.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code
- Data lacking.

Section 15 - Regulatory Information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

SARA Hazard Classifications
- Acute

State Right To Know		
Component	**CAS**	**PA**
Cesium iodide	7789-17-5	No
Thallium iodide	7790-30-9	No

Inventory						
Component	**CAS**	**Canada DSL**	**Canada NDSL**	**China**	**EU EINECS**	**EU ELNICS**
Cesium iodide	7789-17-5	No	Yes	Yes	Yes	No

Thallium iodide	7790-30-9	No	Yes	Yes	Yes	No

Inventory (Con't.)			
Component	**CAS**	**Korea KECL**	**TSCA**
Cesium iodide	7789-17-5	Yes	Yes
Thallium iodide	7790-30-9	Yes	Yes

Canada

Labor

Canada - WHMIS - Classifications of Substances

• Cesium iodide	7789-17-5	Uncontrolled product according to WHMIS classification criteria
• Thallium iodide	7790-30-9	Not Listed

Canada - WHMIS - Ingredient Disclosure List

• Cesium iodide	7789-17-5	Not Listed
• Thallium iodide	7790-30-9	1 %

Environment

Canada - CEPA - Priority Substances List

• Cesium iodide	7789-17-5	Not Listed
• Thallium iodide	7790-30-9	Not Listed

United States

Labor

U.S. - OSHA - Process Safety Management - Highly Hazardous Chemicals

• Cesium iodide	7789-17-5	Not Listed
• Thallium iodide	7790-30-9	Not Listed

U.S. - OSHA - Specifically Regulated Chemicals

• Cesium iodide	7789-17-5	Not Listed
• Thallium iodide	7790-30-9	Not Listed

Environment

U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants

• Cesium iodide	7789-17-5	Not Listed
• Thallium iodide	7790-30-9	Not Listed

U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities

• Cesium iodide	7789-17-5	Not Listed
• Thallium iodide	7790-30-9	Not Listed

U.S. - CERCLA/SARA - Radionuclides and Their Reportable Quantities

• Cesium iodide	7789-17-5	Not Listed
• Thallium iodide	7790-30-9	Not Listed

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs

• Cesium iodide	7789-17-5	Not Listed
• Thallium iodide	7790-30-9	Not Listed

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs

• Cesium iodide	7789-17-5	Not Listed
• Thallium iodide	7790-30-9	Not Listed

U.S. - CERCLA/SARA - Section 313 - Emission Reporting

• Cesium iodide	7789-17-5	Not Listed
• Thallium iodide	7790-30-9	Not Listed

U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing

• Cesium iodide	7789-17-5	Not Listed
• Thallium iodide	7790-30-9	Not Listed

United States - California

Environment

U.S. - California - Proposition 65 - Carcinogens List

• Cesium iodide	7789-17-5	Not Listed
• Thallium iodide	7790-30-9	Not Listed

U.S. - California - Proposition 65 - Developmental Toxicity

• Cesium iodide	7789-17-5	Not Listed
• Thallium iodide	7790-30-9	Not Listed

U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)

• Cesium iodide	7789-17-5	Not Listed
• Thallium iodide	7790-30-9	Not Listed

U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)

• Cesium iodide	7789-17-5	Not Listed
• Thallium iodide	7790-30-9	Not Listed

U.S. - California - Proposition 65 - Reproductive Toxicity - Female

• Cesium iodide	7789-17-5	Not Listed
• Thallium iodide	7790-30-9	Not Listed

U.S. - California - Proposition 65 - Reproductive Toxicity - Male

• Cesium iodide	7789-17-5	Not Listed
• Thallium iodide	7790-30-9	Not Listed

United States - Pennsylvania

Labor

U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List

• Cesium iodide	7789-17-5	Not Listed
• Thallium iodide	7790-30-9	Not Listed

U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances

• Cesium iodide	7789-17-5	Not Listed
• Thallium iodide	7790-30-9	Not Listed

15.2 Chemical Safety Assessment

- No Chemical Safety Assessment has been carried out.

Section 16 - Other Information

Relevant Phrases (code & full text)

- H330 - Fatal if inhaled
  H300 - Fatal if swallowed

H373 - May cause damage to organs through prolonged or repeated exposure.
H411 - Toxic to aquatic life with long lasting effects

R26/28 - Very toxic by inhalation and if swallowed.
R33 - Danger of cumulative effects.
R51 - Toxic to aquatic organisms.
R53 - May cause long-term adverse effects in the aquatic environment.

Revision Date

- 22/May/2023

Preparation Date

- 08/January/2015

Disclaimer/Statement of Liability

- Reasonable care has been taken in the preparation of this information, but the supplier gives no warranty of merchantability or of fitness for a particular purpose. Any product purchased is sold on the assumption the purchaser will make his own tests to determine the quality and suitability of the product. Supplier expressly disclaims any and all liability for incidental and/or consequential property damage arising out of the use of this product. No information provided shall be deemed to be a recommendation to use any product in conflict with any existing patent rights. Read the Safety Data Sheet before handling product.

Key to abbreviations

NDA = No data available