

**Safety Data Sheet**  
according to 1907/2006/EC, Article 31

Printing date 20.08.2014

Version number 4

Revision: 11.06.2014

\* **SECTION 1: Identification of the substance/mixture and of the company/undertaking**

1.1. Product identifier

Trade name: **CESIUM IODIDE (THALLIUM)**

Article code: CsI(Tl)

Registration number:

The registration number is not available, since the substance/mixture or its use is excluded from registration according to article 2 of the REACH Regulation (EC) No. 1907/2006, the annual tonnage does not require a registration or the registration is planned for a later date.

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

Application of the substance / the mixture: Scintillating crystals for radiations detection.

Uses advised against: Other uses than the identified uses indicated above.

1.3. Details of the supplier of the safety data sheet

Manufacturer/Supplier:

Saint-Gobain Cristaux & Détecteurs

104, Route de Larchant

F-77140 Saint-Pierre-Les-Nemours

Telephone: 0033 (0) 1 64 45 10 10

Fax: 0033 (0) 1 64 45 10 01

Further information obtainable from: [customer.service.SGCD@saint-gobain.com](mailto:customer.service.SGCD@saint-gobain.com)

1.4. Emergency telephone number:

Centre anti poison et de toxicovigilance (Intoxication centre)

Telephone: Paris: +33 (0) 1 40 05 48 48, Marseille: +33 (0) 1 91 75 25 25

\* **SECTION 2: Hazards identification**

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008:



GHS08 health hazard

Repr. 2

H361 Suspected of damaging fertility or the unborn child.



GHS09 environment

Aquatic Acute 1 H400 Very toxic to aquatic life.

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Trade name: **CESIUM IODIDE (THALLIUM)**

GHS07

Acute Tox. 4 H302 Harmful if swallowed.  
Acute Tox. 4 H332 Harmful if inhaled.  
Skin Irrit. 2 H315 Causes skin irritation.  
Eye Irrit. 2 H319 Causes serious eye irritation.  
Skin Sens. 1 H317 May cause an allergic skin reaction.  
STOT SE 3 H335 May cause respiratory irritation.

Classification according to Directive 67/548/EEC or Directive 1999/45/EC:



Xn; Harmful

R20/22-62: Harmful by inhalation and if swallowed. Possible risk of impaired fertility.



Xi; Irritant

R36/37/38: Irritating to eyes, respiratory system and skin.



Xi; Sensitising

R43: May cause sensitisation by skin contact.



N; Dangerous for the environment

R50: Very toxic to aquatic organisms.

## 2.2. Label elements

Labelling according to Regulation (EC) No 1272/2008:

The product is classified and labelled according to the CLP regulation.

Hazard pictograms:



GHS07 GHS08 GHS09

Signal word: Warning

Hazard-determining components of labelling:

cesium iodide  
thallium iodide

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**Hazard statements:**

- H302+H332 Harmful if swallowed or if inhaled.  
H315 Causes skin irritation.  
H319 Causes serious eye irritation.  
H317 May cause an allergic skin reaction.  
H361 Suspected of damaging fertility or the unborn child.  
H335 May cause respiratory irritation.  
H400 Very toxic to aquatic life.

**Precautionary statements:**

- P261 Avoid breathing dust/fume/gas/mist/vapours/spray.  
P280 Wear protective gloves/protective clothing/eye protection/face protection.  
P273 Avoid release to the environment.  
P264 Wash thoroughly after handling.  
P270 Do not eat, drink or smoke when using this product.  
P271 Use only outdoors or in a well-ventilated area.  
P272 Contaminated work clothing should not be allowed out of the workplace.  
P201 Obtain special instructions before use.  
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P362 Take off contaminated clothing and wash before reuse.  
P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.  
P363 Wash contaminated clothing before reuse.  
P332+P313 If skin irritation occurs: Get medical advice/attention.  
P333+P313 If skin irritation or rash occurs: Get medical advice/attention.  
P337+P313 If eye irritation persists: Get medical advice/attention.  
P330 Rinse mouth.  
P391 Collect spillage.  
P405 Store locked up.  
P403+P233 Store in a well-ventilated place. Keep container tightly closed.  
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

**2.3. Other hazards**

Results of PBT and vPvB assessment:

The components do not meet the criteria for classification as PBT or vPvB.

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**\* SECTION 3: Composition/information on ingredients****3.1. Substances**

CAS No. Description

7789-17-5 Cesium iodide

Identification number(s):

EC number: 232-145-2

Description: White crystal, doped with thallium

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Dangerous components:		
CAS: 7789-17-5 EINECS: 232-145-2	cesium iodide Xn R62 Xi R36/37/38 Xi R43 N R50 Repr. Cat. 1 ----- Repr. 2, H361 Aquatic Acute 1, H400 Skin Irrit. 2, H315; Eye Irrit. 2, H319; Skin Sens. 1, H317; STOT SE 3, H335	> 95%
CAS: 7790-30-9 EINECS: 232-199-7	thallium iodide T+ R26/28 N R51/53 R33 ----- Acute Tox. 2, H300; Acute Tox. 2, H330 STOT RE 2, H373 Aquatic Chronic 2, H411	< 1%

\* **SECTION 4: First aid measures**

4.1. Description of first aid measures

After inhalation:

Take affected persons into fresh air and keep quiet.

Seek immediate medical advice.

In case of unconsciousness place patient stably in side position for transportation.

In case of breathing difficulties administer oxygen.

In case of irregular breathing or respiratory arrest provide artificial respiration.

In case of allergic symptoms in the breathing area, seek medical advice immediately.

Do not use mouth to mouth or mouth to nose resuscitation.

After skin contact:

Take off all contaminated clothing.

Immediately wash with water and soap and rinse thoroughly.

If skin irritation continues, consult a doctor.

After eye contact:

Protect unharmed eye.

Rinse opened eye for several minutes under running water.

Remove contact lenses, if present and easy to do. Continue rinsing.

Call a doctor immediately.

After swallowing:

Rinse mouth.

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Do not induce vomiting; call for medical help immediately.

4.2. Most important symptoms and effects, both acute and delayed:

Allergic reactions

Irritating effect

Headache

Fever

Erythema (reddening)

Inflammation of the skin

Prolonged/repetitive skin contact may cause skin defatting or dermatitis.

Hazards:

Harmful if swallowed.

Harmful if inhaled.

4.3. Indication of any immediate medical attention and special treatment needed

First Aid, decontamination, treatment of symptoms.

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\* **SECTION 5: Firefighting measures**

5.1. Extinguishing media

Suitable extinguishing agents: Use fire extinguishing methods suitable to surrounding conditions.

For safety reasons unsuitable extinguishing agents: Water with full jet

5.2. Special hazards arising from the substance or mixture

The product is non flammable.

In certain fire conditions, traces of other toxic gases cannot be excluded, e.g.:

Hydrogen iodide (HI)

Metal oxide fume

5.3. Advice for firefighters

Protective equipment:

Do not inhale explosion gases or combustion gases.

Wear self-contained respiratory protective device.

Wear fully protective suit.

Additional information:

Move undamaged containers from immediate hazard area if it can be done safely.

Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

Collect contaminated fire fighting water separately. It must not enter the sewage system.

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\* **SECTION 6: Accidental release measures**

6.1. Personal precautions, protective equipment and emergency procedures

Wear protective equipment. Keep unprotected persons away.

Avoid formation of dust.

Avoid any contact with eyes or skin.

Do not inhale dust / smoke / mist.

Ensure adequate ventilation.

Remove persons from danger area.

6.2. Environmental precautions:

Dumping into the environment must be prevented.

Do not allow to penetrate the ground/soil.

Do not allow product to reach sewage system or any water course.

6.3. Methods and material for containment and cleaning up

Remove mechanically, placing in appropriate containers for disposal.

Use approved industrial vacuum cleaner for removal.

Ensure adequate ventilation.

Dispose of the material collected according to regulations.

6.4. Reference to other sections

See section 1 for emergency contact details.

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

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\* **SECTION 7: Handling and storage**

7.1. Precautions for safe handling

Avoid any contact with eyes or skin. Wear personal protective equipment.

Do not breathe dust/fume/gas/mist/vapours/spray.

Provide for sufficient ventilation and punctiform suction at critical points.

Prevent formation of dust.

Information about fire - and explosion protection:

No special measures required.

Usual measures for fire prevention.

7.2. Conditions for safe storage, including any incompatibilities

Requirements to be met by storerooms and receptacles:

Store only in the original container.

Access is only to be granted to authorised personal.

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Information about storage in one common storage facility:  
 Keep away from food, drink and animal feeding stuffs.  
 Do not store together with oxidizing and acidic materials.  
 Store away from water.

Further information about storage conditions:  
 Store in cool, dry conditions in well sealed containers.  
 Protect from humidity and water.  
 Protect from heat and direct sunlight.  
 This product is hygroscopic.  
 Store under lock and key and with access restricted to technical experts or their assistants only.

Storage class: 13 Incombustible solids

7.3. Specific end use(s): See section 1.

\* **SECTION 8: Exposure controls/personal protection**

Additional information about design of technical facilities:  
 Technical measures and the application of adequate working methods take priority over the use of personal protection equipment.

8.1. Control parameters

Ingredients with limit values that require monitoring at the workplace:		
<b>7790-30-9 thallium iodide</b>		
OEL (Ireland)	Long-term value: 0.1 mg/m <sup>3</sup> as TI; Sk	
DNELs		
<b>7789-17-5 cesium iodide</b>		
Dermal	DNEL - long term - systemic	6.5 mg/kg bw (worker)
Inhalative	DNEL - long term - systemic	2.3 mg/m <sup>3</sup> (worker)
PNECs		
<b>7789-17-5 cesium iodide</b>		
PNEC	0.0409 mg/l (fresh water) 0.0409 mg/l (intermittent release) 0.1228 mg/l (marine water) 3.92 mg/kg sedi mg/l (sediment fresh water) 0.392 mg/kg sed mg/l (sediment marine water) 0.196 mg/kg soi mg/l (soil) 100 mg/l (sewage treatment plant)	

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Additional information: The lists valid during the making were used as basis.

## 8.2. Exposure controls

Personal protective equipment:

General protective and hygienic measures:

Avoid contact with the eyes and skin.

Do not inhale dust / smoke / mist.

Ensure that washing facilities are available at the work place.

Wash hands before breaks and at the end of work.

Do not eat, drink, smoke or sniff while working.

Immediately remove all soiled and contaminated clothing

Store protective clothing separately.

The usual precautionary measures are to be adhered to when handling chemicals.

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Respiratory protection:

If technical suction or ventilation measures are not possible or are insufficient, protective breathing apparatus must be worn.

The filter class must be suitable for the maximum contaminant concentration (gas/vapour/aerosol/particulates) that may arise when handling the product. If the concentration is exceeded, closed-circuit breathing apparatus must be used!

Suitable respiratory protective equipment:

Half-mask (EN 140) with filter FFP1 or P2 (EN 149)

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Protection of hands:

Tested protective gloves are to be worn. When handling chemical substances, chemical protective gloves must be worn with CE label including a four digit code. Type of chemical protective gloves to choose depends on the concentration and quantity of dangerous substances as well as on work place specifications. In the cases of special applications, it is recommended to check the chemical resistance with the manufacturer of the gloves.

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation.

Material of gloves:

Recommendation:

Nitrile rubber, NBR

Butyl rubber, BR

Recommended thickness of the material:  $\geq 0.35$  mm

Penetration time:

> 480 min (EN 374)

Penetration time of glove material:

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

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Eye protection:

Tightly sealed goggles

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(EN 166)

## Body protection:

Only wear fitting, comfortable and clean protective clothing.

## Recommendation:

Protective work clothing

Boots

Limitation and supervision of exposure into the environment: Dumping into the environment must be prevented.

**\* SECTION 9: Physical and chemical properties**

## 9.1. Information on basic physical and chemical properties

## General Information

## Appearance:

Form:	Solid Crystalline
Colour:	White
Odour:	Odourless
Odour threshold:	Not determined.

pH-value: Not applicable.

## Change in condition

Melting point/Melting range:	621 °C
Boiling point/Boiling range:	1280 °C

Flash point: Not applicable.

Flammability (solid, gaseous): Product is not flammable.

Ignition temperature: Not determined.

Decomposition temperature: Not determined.

Self-igniting: Product is not selfigniting.

Danger of explosion: Not explosive.

Vapour pressure: Not applicable.

Density at 25 °C: 4.5 g/cm<sup>3</sup>

Vapour density: Not applicable.

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Evaporation rate: Not applicable.

Solubility in / Miscibility with  
water at 20 °C: ~670 g/l

Partition coefficient (n-octanol/water): Not determined.

Viscosity:

Dynamic: Not applicable.

Kinematic: Not applicable.

9.2. Other information Hygroscopic crystal.

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\* **SECTION 10: Stability and reactivity**

10.1. Reactivity: The product is stable under standard conditions (temperature, pressure) of storage and handling.

10.2. Chemical stability: The product is hygroscopic.

10.3. Possibility of hazardous reactions: No dangerous reactions known.

10.4. Conditions to avoid:

Avoid generation of dust.

Protect from direct sunlight.

Heat

Water / moisture

10.5. Incompatible materials:

Acids

Oxidizing agents

10.6. Hazardous decomposition products:

In case of fire, the following products can be released:

Iodine compounds

Hydrogen iodide (HI)

Metal oxid fume

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Trade name: **CESIUM IODIDE (THALLIUM)**

\* **SECTION 11: Toxicological information**

11.1. Information on toxicological effects

Acute toxicity:

LD/LC50 values relevant for classification:		
<b>7789-17-5 cesium iodide</b>		
Oral	LD50	2386 mg/kg (rat)
Dermal	LD50	> 2000 mg/kg (rat)
<b>7790-30-9 thallium iodide</b>		
Oral	LD50	24.1 mg/kg bw (rat)

Primary irritant effect:

on the skin: Irritating to skin.

on the eye:

Irritating effect.

on the respiratory tract:

May cause respiratory irritation.

Sensitization: Sensitization possible through skin contact.

Additional toxicological information: Harmful

CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction):

Carcinogenicity: No indications of human carcinogenicity exist.

Mutagenicity: No indications of human germ cell mutagenicity exist.

Reproductive toxicity: Suspected of damaging fertility or the unborn child.

Repr. 2

\* **SECTION 12: Ecological information**

12.1. Toxicity

Aquatic toxicity:	
<b>7789-17-5 cesium iodide</b>	
EC50	> 100 mg/l (Pseudokirchneriella subcapitata) (72h)
	> 1000 mg/l (activated sludge) (3h)
	0.51 mg/l (Daphnia magna) (48h)
	> 15.8 mg/l (daphnia) (21d)
LC50	> 100 mg/L (Danio rerio) (96h)
NOEC	43 mg/l (Danio rerio) (35d)

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12.2. Persistence and degradability: No further relevant information available.

12.3. Bioaccumulative potential: No indication of bio-accumulation potential.

12.4. Mobility in soil: No further relevant information available.

General notes:

Water hazard class 2 (German Regulation) (Self-assessment): hazardous for water  
The material is harmful to the environment.  
Avoid transfer into the environment.

12.5. Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

12.6. Other adverse effects: No further relevant information available.

\* **SECTION 13: Disposal considerations**

13.1. Waste treatment methods

Recommendation:

Must be specially treated adhering to official regulations.  
Must not be disposed together with household garbage. Do not allow product to reach sewage system.  
Hand over to officially registered waste disposal company.  
Waste disposal according to official state regulations.

Uncleaned packaging:

Recommendation:

Empty contaminated packagings thoroughly. They may be recycled after thorough and proper cleaning.  
Packagings that may not be cleansed are to be disposed of in the same manner as the product.  
Disposal must be made according to official regulations.

\* **SECTION 14: Transport information**

14.1. UN-Number

ADR, IMDG, IATA

UN3077

14.2. UN proper shipping name

ADR

3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID,  
N.O.S. (cesium iodide, thallium iodide)  
ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.  
(cesium iodide, thallium iodide), MARINE POLLUTANT

IMDG

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IATA ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.  
(cesium iodide, thallium iodide)

14.3. Transport hazard class(es)

ADR, IMDG, IATA

Class 9 Miscellaneous dangerous substances and articles.  
Label 9

14.4. Packing group

ADR, IMDG, IATA III

14.5. Environmental hazards:

Product contains environmentally hazardous substances: caesium iodide  
Marine pollutant: Yes  
Symbol (fish and tree)  
Special marking (ADR): Symbol (fish and tree)  
Special marking (IATA): Symbol (fish and tree)

14.6. Special precautions for user

Warning: Miscellaneous dangerous substances and articles.  
Danger code (Kemler): 90  
EMS Number: F-A,S-F

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Not applicable.

Transport/Additional information:

ADR  
Limited quantities (LQ) 5 kg  
Transport category 3  
Tunnel restriction code E

UN "Model Regulation":

UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (cesium iodide, thallium iodide), 9, III

\* **SECTION 15: Regulatory information**

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

EU-Regulations  
Regulation (EC) No 1907/2006 (REACH)  
Regulation (EC) No 1272/2008 (CLP)  
Directives 67/548/EEC and 1999/45/EC  
Directive 89/656/EEC

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Labelling according to Regulation (EC) No 1272/2008: GHS label elements

National regulations:

Information about limitation of use:

Employment restrictions concerning juveniles must be observed.

Employment restrictions concerning pregnant and lactating women must be observed.

Employment restrictions concerning women of child-bearing age must be observed.

Other regulations, limitations and prohibitive regulations: National legislation has to be observed!

15.2. Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

\* **SECTION 16: Other information**

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.

Relevant phrases

- H300 Fatal if swallowed.  
H315 Causes skin irritation.  
H317 May cause an allergic skin reaction.  
H319 Causes serious eye irritation.  
H330 Fatal if inhaled.  
H335 May cause respiratory irritation.  
H361 Suspected of damaging fertility or the unborn child.  
H373 May cause damage to organs through prolonged or repeated exposure.  
H400 Very toxic to aquatic life.  
H411 Toxic to aquatic life with long lasting effects.
- 
- R26/28 Very toxic by inhalation and if swallowed.  
R33 Danger of cumulative effects.  
R36/37/38 Irritating to eyes, respiratory system and skin.  
R43 May cause sensitisation by skin contact.  
R50 Very toxic to aquatic organisms.  
R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.  
R62 Possible risk of impaired fertility.

Training hints

The product should only be handled by persons, who were informed sufficiently about the nature of the product and about the necessary safety precautions.

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**Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

DNEL: Derived No-Effect Level (REACH)

PNEC: Predicted No-Effect Concentration (REACH)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

Acute Tox. 2: Acute toxicity, Hazard Category 2

Acute Tox. 4: Acute toxicity, Hazard Category 4

Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2

Eye Irrit. 2: Serious eye damage/eye irritation, Hazard Category 2

Skin Sens. 1: Sensitisation - Skin, Hazard Category 1

Repr. 2: Reproductive toxicity, Hazard Category 2

STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3

STOT RE 2: Specific target organ toxicity - Repeated exposure, Hazard Category 2

Aquatic Acute 1: Hazardous to the aquatic environment - AcuteHazard, Category 1

Aquatic Chronic 2: Hazardous to the aquatic environment - Chronic Hazard, Category 2

\* Data compared to the previous version altered.