

ACCORDING TO EC-REGULATIONS 1907/2006 (REACH), 1272/2008 (CLP) &amp; 2015/830

**SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING**
**1.1 Product identifier**

Product Name CsPbBr<sub>3</sub> Quantum Dot Powder  
 Synonyms Caesium lead bromide quantum dots  
 Chemical Name Caesium Lead Tribromide  
 Chemical Formula CsPbBr<sub>3</sub>  
 CAS No. 15243-48-8  
 EC No. Not Applicable  
 Index No. 082-001-00-6  
 REACH Registration No. Not applicable.

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

Identified Use(s) PC21 Laboratory chemicals, Research and development use *only*

**1.3 Details of the supplier of the safety data sheet**

Company Identification Ossila Limited  
 Address of Supplier Solpro Business Park  
 Windsor Street  
 Sheffield  
 Postal code S4 7WB, UK  
 Telephone: +441 142999180  
 E-mail info@ossila.com  
 Office hours 08:00 - 17:00

**1.4 Emergency telephone number**

Emergency Phone # +44 (0) 20 3885 0382 (CHEMTREC)

Other Regions	Emergency Phone Number (CHEMTREC)
Europe, Middle East, Africa	+44 20 3885 0382
North America	+1 703 527 3887
Central America	+52 55 8526 4930
South America	+55 11 4349 1359
Asia, India, and Oceania	+65 3163 8374

**SECTION 2: HAZARDS IDENTIFICATION**
**2.1 Classification of the substance or mixture**

Regulation (EC) No. 1272/2008 (CLP) Acute Tox. 3: Toxic if swallowed.  
 Acute Tox. 3: Toxic if inhaled  
 Carc. 1B: May cause cancer  
 Repr. 1B: May damage fertility or the unborn child  
 STOT RE 2: May cause damage to organs through prolonged or repeated exposure  
 Aquatic Acute 1: Very toxic to aquatic life  
 Aquatic Chronic 1: Very toxic to aquatic life with long lasting effects

**2.2 Label elements**

Product Name According to Regulation (EC) No. 1272/2008 (CLP)  
 CsPbBr<sub>3</sub> Quantum Dot Powder

Hazard Pictogram(s)



GHS06

GHS08

GHS09

Signal Word(s)

Danger

Hazard Statement(s)

H301+H331: Toxic if swallowed or if inhaled  
 H350: May cause cancer  
 H360DF: May damage fertility or the unborn child  
 H373: May cause damage to organs through prolonged or repeated exposure  
 H400: Very toxic to aquatic life  
 H410: Very toxic to aquatic life with long lasting effects

Precautionary Statement(s)

P202 Do not handle until all safety precautions have been read and understood.  
 P273 Avoid release to the environment.  
 P280 Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.

P301 + P310 + P330: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Rinse mouth.  
 P302 + P352 IF ON SKIN: Wash with plenty of water.  
 P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.  
 P308 + P313: IF exposed or concerned: Get medical advice/attention.

### 2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

### 2.4 Additional Information

Not applicable.

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## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

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### 3.1 Substances

Hazardous ingredient(s)	CAS No.	EC No.	%W/W	Hazard Statement(s)
Caesium lead tribromide Index No. 082-001-00-6	15243-48-8	Not Applicable	≤100	Acute Tox. 3 H301 Acute Tox. 3 H331 Carc. 1B H350 Repr. 1B H360 STOT RE 2 H373 Aquatic Acute 1 H400 Aquatic Chronic 1 H410

### 3.2 Mixtures

Not applicable.

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## SECTION 4: FIRST AID MEASURES

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### 4.1 Description of first aid measures

General Advice	First aiders should ensure they have taken adequate steps to protect themselves from exposure (see Section 8 for recommended personal protection equipment) Show this safety data sheet to the doctor in attendance.
Inhalation	Remove person to fresh air and keep comfortable for breathing. If not breathing give artificial respiration. Call a POISON CENTER or doctor/physician.
Skin Contact	Wash with soap and flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a POISON CENTER or doctor/physician.
Eye Contact	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Ingestion	Immediately call a POISON CENTER or doctor/ physician. Rinse mouth.

### 4.2 Most important symptoms and effects, both acute and delayed

Lead salts have been reported to cross the placenta and to induce embryo- and feto- mortality. They also have teratogenic effect in some animal species. No teratogenic effects have been reported with exposure to organometallic lead compounds. Adverse effects of lead on human reproduction, embryonic and fetal development, and postnatal (e.g., mental) development have been reported. Excessive exposure can affect blood, nervous, and digestive systems. The synthesis of hemoglobin is inhibited and results in anemia. If left untreated, neuromuscular dysfunction, possible paralysis, and encephalopathy can result. Additional symptoms of overexposure include: joint and muscle pain, weakness of the extensor muscles (frequently the hand and wrist), headache, dizziness, abdominal pain, diarrhea, constipation, nausea, vomiting, blue line on the gums, insomnia, and metallic taste. High body levels produce increased cerebrospinal pressure, brain damage, and stupor leading to coma and often death.

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

Treat symptomatically.

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## SECTION 5: FIREFIGHTING MEASURES

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### 5.1 Extinguishing media

Suitable Extinguishing media	As appropriate for surrounding fire.
Unsuitable extinguishing media	As appropriate for surrounding fire.

### 5.2 Special hazards arising from the substance or mixture

Caesium/caesium oxides  
 Lead oxides  
 Hydrogen bromide gas

### 5.3 Advice for firefighters

Fire fighters should wear complete protective clothing including self-contained breathing apparatus.

**SECTION 6: ACCIDENTAL RELEASE MEASURES**

**6.1 Personal precautions, protective equipment and emergency procedures**

Follow safe handling advice and personal protective equipment recommendations (as per section 8). Provide adequate ventilation.

**6.2 Environmental precautions**

Avoid release to the environment.

**6.3 Methods and material for containment and cleaning up**

Sweep up spilled substance - avoid making dust. Use vacuum equipment for collecting spilt materials, where practicable. Dispose of contents in accordance with local, state or national legislation.

**6.4 Reference to other sections**

See Also Section 8, 13.

**SECTION 7: HANDLING AND STORAGE**

**7.1 Precautions for safe handling**

Advice on safe handling

Avoid inhalation, ingestion, and contact with skin and eyes. Use only in a well-ventilated area. Wear protective clothing as per section 8.

Hygiene measures

Keep away from food and drink. Wash hands after handling, before breaks, and at the end of workday.

**7.2 Conditions for safe storage, including any incompatibilities**

Storage temperature

Store in a well-ventilated place. Keep container tightly closed. Store locked up.

Storage life

3-5 °C

Incompatible materials

Product is light and moisture sensitive. Store in the dark. Handle and store under inert gas.

**7.3 Specific end use(s)**

None known.

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

**SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**

**8.1 Control parameters**

8.1.1 Occupational Exposure Limits

No Occupational Exposure Limit assigned.

Chemical Agents Directive – Annex II: Binding biological limit values

Biological Occupational Exposure Limits				
SUBSTANCE.	CAS No.	Parameters	Value	Biological specimen
Caesium lead tribromide	15243-48-8	Lead	0.7 mg/l	Blood
	Remarks	Biological monitoring must include measuring the blood-lead level (PbB) using absorption spectrometry or a method giving equivalent results., Medical surveillance is carried out if: - exposure to a concentration of lead in air is greater than 0,075 mg/m3, calculated as a time-weighted average over 40 hours per week, or - a blood-lead level greater than 40 µg Pb/100 ml blood is measured in individual workers., Practical guidelines for biological monitoring and medical surveillance must be developed in accordance with article 12, paragraph 2. These include recommendations of biological indicators (e.g. ALAU, ZPP, ALAD) and biological monitoring strategies.		

**8.2 Exposure controls**

8.2.1. Appropriate engineering controls

Ensure adequate ventilation and/or exhaust. A washing facility/water for eye and skin cleaning purposes should be present.

8.2.2. Personal protection equipment

Eye Protection

Wear eye protection with side protection tested and approved under appropriate government standards such as EN166 (EU).

Hand protection

Handle with gloves. Gloves must be inspected prior to use and proper glove removal techniques should be used. The selected protective gloves have to satisfy the specifications of Regulation (EU) 2016/425 and the standard EN 374 derived from it.

Body protection

Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N99 (US) or type P2 (EN 143) respirator cartridges as a backup to engineering controls.

Thermal hazards

None known.

8.2.3. Environmental Exposure Controls

Avoid release to the environment.

**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

**9.1 Information on basic physical and chemical properties**

Physical State

Solid: Powder.

Colour

Yellow.

Odour	Not known.
Odour threshold	Not known.
Melting point/freezing point	Not known.
Initial boiling point and boiling range	Not known.
Flammability	Not known.
Lower and upper explosion limit	Not known.
Flash Point	Not known.
Auto-ignition temperature (°C)	Not known.
Decomposition temperature (°C)	Not known.
pH	Not known.
Kinematic viscosity	Not known.
Solubility(ies)	Solubility (Water): Not known. Solubility (Other): Not known.
Partition coefficient: n-octanol/water (log value)	Not known.
Vapour pressure	Not known.
Density	Not known.
Relative density	Not known.
Relative vapour density	Not known.
Particle characteristics	Not known.
<b>9.2 Other information</b>	None.

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**SECTION 10: STABILITY AND REACTIVITY**


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<b>10.1 Reactivity</b>	None anticipated.
<b>10.2 Chemical Stability</b>	Stable under recommended storage conditions.
<b>10.3 Possibility of hazardous reactions</b>	Not known.
<b>10.4 Conditions to avoid</b>	Not known.
<b>10.5 Incompatible materials</b>	Not known.
<b>10.6 Hazardous decomposition products</b>	In the event of fire: see Section 5

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**SECTION 11: TOXICOLOGICAL INFORMATION**


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<b>11.1 Information on toxicological effects</b>	
Acute toxicity - Ingestion	No data available.
Acute toxicity - Skin Contact	No data available.
Acute toxicity - Inhalation	No data available.
Skin corrosion/irritation	No data available.
Serious eye damage/irritation	No data available.
Skin sensitization data	No data available.
Respiratory sensitization data	No data available.
Germ cell mutagenicity	No data available.
Carcinogenicity	No data available.
Reproductive toxicity	No data available.
Lactation	No data available.
STOT - single exposure	No data available.
STOT - repeated exposure	No data available.
Aspiration hazard	No data available.
<b>11.2 Information on other hazards</b>	
11.2.1 Endocrine disrupting properties	None known.
11.2.2. Information on other hazards	None known.

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**SECTION 12: ECOLOGICAL INFORMATION**


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<b>12.1 Toxicity</b>	
No data available.	
Toxicity - Aquatic invertebrates	Not known.
Toxicity - Fish	Not known.
Toxicity - Algae	Not known.
Toxicity - Sediment Compartment	Not known.
Toxicity - Terrestrial Compartment	Not known.
<b>12.2 Persistence and Degradation</b>	Not known.

<b>12.3 Bioaccumulative potential</b>	Not known.
<b>12.4 Mobility in soil</b>	Not known.
<b>12.5 Results of PBT and vPvB assessment</b>	This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.
<b>12.6 Endocrine disrupting properties</b>	Not known.
<b>12.7 Other adverse effects</b>	Not known.

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**SECTION 13: DISPOSAL CONSIDERATIONS**


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<b>13.1 Waste treatment methods</b>	Dispose of contents in accordance with local, state or national legislation. Recycle only completely emptied packaging. Normal disposal is via incineration operated by an accredited disposal contractor. Send to a licensed recycler, reclaimer or incinerator.
<b>13.2 Additional Information</b>	Disposal should be in accordance with local, state or national legislation.

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**SECTION 14: TRANSPORT INFORMATION**


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<b>14.1 UN number</b>	2291
UN No.	2291
<b>14.2 UN proper shipping name</b>	Lead compounds, soluble, n.o.s.
UN proper shipping name	Lead compounds, soluble, n.o.s.
<b>14.3 Transport hazard class(es)</b>	
ADR/RID	6.1
IMDG	6.1
IATA	6.1
<b>14.4 Packing group</b>	III
Packing group	III
<b>14.5 Environmental hazards</b>	Classified as a Marine Pollutant.
Environmental hazards	Classified as a Marine Pollutant.
<b>14.6 Special precautions for user</b>	Not known.
Special precautions for user	Not known.
<b>14.7 Maritime transport in bulk according to IMO instruments</b>	Not known.
	Not known.

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**SECTION 15: REGULATORY INFORMATION**


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

European Regulations - Authorisations and/or Restrictions On Use

Candidate List of Substances of Very High Concern for Authorisation Not listed

REACH: ANNEX XIV list of substances subject to authorisation Not listed

REACH: Annex XVII Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles Not listed

Community Rolling Action Plan (CoRAP) Regulation (EC) N° 850/2004 of the European Parliament and of the Council on persistent organic pollutants Not listed

Regulation (EC) N° 1005/2009 on substances that deplete the ozone layer Not listed

Regulation (EU) N° 649/2012 of the European Parliament and of the Council concerning the export and import of hazardous chemicals Not listed

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<b>15.2 Chemical Safety Assessment</b>	A REACH chemical safety assessment has not been carried out.
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**SECTION 16: OTHER INFORMATION**


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The following sections contain revisions or new statements:

**LEGEND**

## Acronyms

ADN : European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways  
ADR : European Agreement concerning the International Carriage of Dangerous Goods by Road  
CAS : Chemical Abstracts Service  
CLP : Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures  
DNEL : Derived No Effect Level  
EC : European Community  
EINECS : European Inventory of Existing Commercial Chemical Substances  
IATA : International Air Transport Association  
IBC : Intermediate Bulk Container  
ICAO : International Civil Aviation Organization  
IMDG : International Maritime Dangerous Goods  
LTEL : Long term exposure limit  
PBT : Persistent, Bioaccumulative and Toxic  
PNEC : Predicted No Effect Concentration  
REACH : Registration, Evaluation, Authorisation and Restriction of Chemicals  
RID : Regulations concerning the International Carriage of Dangerous Goods by Rail  
STEL : Short term exposure limit  
STOT : Specific Target Organ Toxicity  
UN : United Nations  
vPvB : very Persistent and very Bioaccumulative

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