SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Product Name: CsPbBr3 Quantum Dots - Toluene solution (10 mg/ml)
Synonyms: Caesium lead bromide – toluene solution
Chemical Name: Caesium lead tribromide – toluene solution
Chemical Formula: CsPbBr3
Product code: M2124
CAS No.: 15243-48-8
EC No.: Not applicable
REACH Registration No.: Not applicable

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

Identified Use(s): Laboratory chemicals

1.3 Details of the supplier of the safety data sheet

Supplier
Company Identification: Ossila Limited
Address of Supplier: Solpro Business Park
Windsor Street
Postal code: S4 7WB
Telephone: 01142999180
E-mail: info@ossila.com

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Regulation (EC) No. 1272/2008 (CLP)
Aquatic Acute 3 :Harmful to aquatic life.
Aquatic Chronic 3 :Harmful to aquatic life with long lasting effects.
Asp. Tox. 1 : May be fatal if swallowed and enters airways.
Eye Irrit. 2 : Causes serious eye irritation.
Flam. Liq. 2 : Highly flammable liquid and vapour.
Repr. 1A : May damage the unborn child. Suspected of damaging fertility.
Skin Irrit. 2 : Causes skin irritation.
STOT RE 2 : May cause damage to organs through prolonged or repeated exposure.
STOT SE 3 : May cause respiratory irritation. May cause drowsiness and dizziness

2.2 Label elements

According to Regulation (EC) No. 1272/2008 (CLP)
Product Name: CsPbBr3 Quantum Dots - Toluene solution (10 mg/ml)

Hazard Pictogram(s): GHS02, GHS08, GHS07

Signal Word(s): Danger

Hazard Statement(s): H225: Highly flammable liquid and vapour.
H304: May be fatal if swallowed and enters airways.
H315: Causes skin irritation.
H319: Causes serious eye irritation.
H335: May cause respiratory irritation.
H336: May cause drowsiness or dizziness.
H360Df: May damage the unborn child. Suspected of damaging fertility.
H373: May cause damage to organs through prolonged or repeated exposure.
H412: Harmful to aquatic life with long lasting effects.

Precautionary Statement(s)

P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P260: Do not breathe dust/fume/gas/mist/vapours/spray.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P301+P310: IF SWALLOWED: Immediately call a POISON CENTER/doctor.
P403+P233: Store in a well-ventilated place. Keep container tightly closed.

2.3 Other hazards
None known.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures

<table>
<thead>
<tr>
<th>Hazardous ingredient(s)</th>
<th>CAS No.</th>
<th>EC No.</th>
<th>%W/W</th>
<th>Hazard Statement(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toluene</td>
<td>108-88-3</td>
<td></td>
<td>≤97</td>
<td>Flam. Liq. 2 H225</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Asp. Tox. 1 H304</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Skin Irrit. 2 H315</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>STOT SE 3 H336</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Repr. 2 H361d</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>STOT RE 2 H373</td>
</tr>
<tr>
<td>Caesium bromide</td>
<td>7787-69-1</td>
<td>232-130-0</td>
<td>&lt;10</td>
<td>Skin Irrit. 2 H315</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Eye Irrit. 2 H319</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>STOT SE 3 H335</td>
</tr>
<tr>
<td>Lead dibromide</td>
<td>10031-22-8</td>
<td>233-084-4</td>
<td>&lt;10</td>
<td>Acute Tox. 4 H302</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Acute Tox. 4 H332</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Repr. 1A H360Df</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>STOT RE 2 H373</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Aquatic Acute 1 H400</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Aquatic Chronic 1 H410</td>
</tr>
</tbody>
</table>

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
Skin Contact: Rinse skin with water. If skin irritation occurs: Get medical advice/attention.
Eye Contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
Ingestion: Treat symptomatically.

4.2 Most important symptoms and effects, both acute and delayed

Section 11: Most important symptoms and effects, both acute and delayed.

4.3 Indication of any immediate medical attention and special treatment needed

Specific treatment (see Medical Advice on this label). Call a POISON CENTER/doctor if you feel unwell.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable Extinguishing media: As appropriate for surrounding fire.
Unsuitable extinguishing media: None.

5.2 Special hazards arising from the substance or mixture

May decompose in a fire, giving off toxic and irritant vapours.

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
Provide adequate ventilation. Avoid breathing mist/vapours/spray.

6.2 Environmental precautions
Avoid release to the environment.

6.3 Methods and material for containment and cleaning up
Contain spillages with sand, earth or any suitable adsorbent material. Sweep up spilled substance. Dispose of contents in accordance with local, state or national legislation. Ensure full personal protection (including respiratory protection) during removal of spillages.

6.4 Reference to other sections
See Also Section 8, 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid breathing mist/vapours/spray. Avoid contact with skin and eyes. Provide adequate ventilation. Keep away from sources of ignition.

7.2 Conditions for safe storage, including any incompatibilities
Store in a well-ventilated place. Keep container tightly closed. Store locked up.
Storage temperature
Ambient.
Storage life
Stable under normal conditions.
Incompatible materials
None known.

7.3 Specific end use(s)
Laboratory chemicals.

SECTION 8: EXPOSURE CONTROLS/PERSOINAL PROTECTION

8.1 Control parameters
8.1.1 Occupational Exposure Limits

<table>
<thead>
<tr>
<th>SUBSTANCE</th>
<th>CAS No.</th>
<th>LTEL (8 hr TWA ppm)</th>
<th>LTEL (8 hr TWA mg/m³)</th>
<th>STEL (ppm)</th>
<th>STEL (mg/m³)</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toluene</td>
<td>108-88-3</td>
<td>50</td>
<td>191</td>
<td>100</td>
<td>384</td>
<td>Sk</td>
</tr>
<tr>
<td>Toluene</td>
<td>108-88-3</td>
<td>50</td>
<td>192</td>
<td>100</td>
<td>384</td>
<td>IOELV, Skin</td>
</tr>
</tbody>
</table>

Region
EU
United Kingdom
Source
EU Occupational Exposure Limits

Remark
Notes
Sk
Can be absorbed through the skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity.
IOELV
Indicative Occupational Exposure Limit Values.
Skin
The possibility of significant uptake through the skin.

8.2 Exposure controls
8.2.1. Appropriate engineering controls Use non-sparking ventilation systems, approved explosion-proof equipment, and intrinsically safe electrical systems. Use with ventilation, local exhaust ventilation or breathing protection. 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 (EN166).

Skin protection
Wear protective clothing and gloves: Impervious gloves (EN 374).
Respiratory protection  A suitable mask with filter type A (EN14387 or EN405) may be appropriate.

8.2.3. Environmental Exposure  Avoid release to the environment.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties
Appearance  Form: Liquid. Colour: Yellow
Odour  Not known.
Odour threshold  Not known.
pH  Not known.
Melting point/freezing point  -95 °C
Initial boiling point and boiling range  110 °C
Flash Point  8 °C
Evaporation rate  Not known.
Flammability (solid, gas)  Not known.
Flammability or explosive limits  Not known.
Vapour pressure  Not known.
Vapour density  Not known.
Density (g/ml)  Not known.
Relative density  Not known.
Solubility(ies)  Solubility (Water) : Not known.
Solubility (Other) : Not known.
Partition coefficient: n-octanol/water  Not known.
Auto-ignition temperature  Not known.
Decomposition Temperature (°C)  Not known.
Viscosity  Not known.
Explosive properties  Not known.
Oxidising properties  Not known.

9.2 Other information  None.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity  None anticipated.
10.2 Chemical Stability  Stable under normal conditions.
10.3 Possibility of hazardous reactions  No hazardous reactions known if used for its intended purpose.
10.4 Conditions to avoid  None anticipated.
10.5 Incompatible materials  Not known.
10.6 Hazardous decomposition products  No hazardous decomposition products known.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects
Acute toxicity - Ingestion  Not classified.
Calculated acute toxicity estimate (ATE) Calc ATE - 50000.00000
Acute toxicity - Skin Contact  Not classified.
Acute toxicity - Inhalation  Not classified.
Calculated acute toxicity estimate (ATE) Calc ATE - 1100.00000
Skin corrosion/irritation  Calculation method : Causes skin irritation.
Serious eye damage/irritation  Calculation method : Causes serious eye irritation.
Skin sensitization data  Not classified.
Respiratory sensitization data  Not classified.
Germ cell mutagenicity  Not classified.
Carcinogenicity  Not classified.
Reproductive toxicity  Calculation method: May damage the unborn child. Suspected of damaging fertility.
Lactation  Not classified.
STOT - single exposure  Calculation method: May cause respiratory irritation. May cause drowsiness or dizziness.

11.2 Other information  Not known.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity  Harmful to aquatic life. Harmful to aquatic life with long lasting effects.
Toxicity - Aquatic invertebrates  Not known.
Toxicity - Fish  Not known.
Toxicity - Algae  Not known.
Toxicity - Sediment Compartment  Not classified.
Toxicity - Terrestrial Compartment  Not classified.

12.2 Persistence and Degradation  Not known.
12.3 Bioaccumulative potential  Not known.
12.4 Mobility in soil  Not known.
12.5 Results of PBT and vPvB assessment  Not known.
12.6 Other adverse effects  Not known.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods  Dispose of contents in accordance with local, state or national legislation. Send to a licensed recycler, reclamer or incinerator. Dispose at suitable refuse site.
13.2 Additional Information  Disposal should be in accordance with local, state or national legislation.

SECTION 14: TRANSPORT INFORMATION

14.1 UN number  UN No. 1294
14.2 UN proper shipping name  UN proper shipping name TOLUENE solution
14.3 Transport hazard class(es)  ADR/RID
ADR/RID Class 3
IMDG 3
ICAO/IATA
IATA Proper Shipping Name TOLUENE solution
Excepted Quantities E2
Labels
Labels 3
14.4 Packing group
Packing group II

14.5 Environmental hazards
Environmental hazards Not classified as a Marine Pollutant.

14.6 Special precautions for user
Special precautions for user Not known.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code
No information available

SECTION 15: REGULATORY INFORMATION

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
Not listed
REACH: Annex XVII
Toluene (108-88-3), lead dibromide (10031-22-8)
Community Rolling Action Plan (CoRAP)
Toluene (108-88-3)
Regulation (EC) N° 850/2004
Not listed
Not listed
Regulation (EU) N° 649/2012
Not listed
National regulations
Other – Not known

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

SECTION 16: OTHER INFORMATION

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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