MATERIAL SAFETY DATA SHEET
ACCORDING TO EC-REGULATIONS 1907/2006 (REACH), 1272/2008 (CLP) & 2015/830

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

1.1 Product identifier
Product Name: CsPbBr₃ Quantum Dots - Octane solution (10 mg/ml)
Synonyms: Caesium lead bromide – octane solution
Chemical Name: Caesium lead tribromide – octane solution
Chemical Formula: CsPbBr₃
Product code: M2124B1
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
Postal code: S4 7WB
Telephone: 011429999180
E-mail: info@ossila.com

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 in contact with skin.
Aquatic Acute 1: Very toxic to aquatic life.
Aquatic Chronic 1: Very toxic to aquatic life with long lasting effects.
Asp. Tox. 1: May be fatal if swallowed and enters airways.
Carc. 1B: May cause cancer.
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  GHS06  GHS08  GHS07
Signal Word(s): Danger
Hazard Statement(s): H225: Highly flammable liquid and vapour.
H301: Toxic if swallowed.
H304: May be fatal if swallowed and enters airways.
H311: Toxic in contact with skin.
H315: Causes skin irritation.
H336: May cause drowsiness or dizziness.
H350: May cause cancer.
H360: May damage the unborn child.
H373: May cause damage to organs through prolonged or repeated exposure.
H410: Very toxic 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. Restricted to professional users.

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>
</table>
| Octane                  | 111-65-9 | 203-892-1 | ≤97  | Flam. Liq. 2 H225  
Asp. Tox. 1 H304  
Skin Irrit. 2 H315  
STOT SE 3 H336  
Aquatic Acute 1 H400  
Aquatic Chronic 1 H410 |
| Caesium bromide         | 7787-69-1 | 232-130-0 | <10  | Skin Irrit. 2 H315  
Eye Irrit. 2 H319  
STOT SE 3 H335 |
| Lead dibromide          | 10031-22-8 | 233-084-4 | <10  | Acute Tox. 4 H302  
Acute Tox. 4 H332  
Repr. 1A H360Df  
STOT RE 2 H373  
Aquatic Acute 1 H400  
Aquatic Chronic 1 H410 |

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/PERSONAL PROTECTION

8.1 Control parameters

8.1.1 Occupational Exposure Limits

No Occupation Exposure Limits assigned.

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 Controls

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
-57 °C

Initial boiling point and boiling range
125 °C

Flash Point
Not known.

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
Calculation method: Toxic if swallowed
Calculated acute toxicity estimate (ATE) Calc ATE - 100.0000

Acute toxicity - Skin Contact
Calculation method: Toxic in contact with skin
Calculated acute toxicity estimate (ATE) Calc ATE - 300.0000

Acute toxicity - Inhalation
Not classified
Calculated acute toxicity estimate (ATE) Calc ATE - 300.0000

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
Calculation method: May cause cancer.

Reproductive toxicity
Calculation method: May damage the unborn child.

Lactation
Not classified.

STOT - single exposure
Calculation method: May cause drowsiness or dizziness.

STOT – repeated exposure
Calculation method: May cause damage to organs through long or repeated exposure
Aspiration hazard  May be fatal if swallowed and enters airways.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity  Very toxic 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, reclaimer 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  1262
UN No.

14.2 UN proper shipping name  Octane solution
UN proper shipping name

14.3 Transport hazard class(es)  ADR/RID
ADR/RID Class  3
IMDG
IMDG Class  3
ICAO/IATA
IATA Proper Shipping Name  Octane solution
Excepted Quantities  E2
Labels
Labels  3

14.4 Packing group  II
Packing group

14.5 Environmental hazards  Classified as a Marine Pollutant.
Environmental hazards
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
Octane (111-65-9), lead dibromide (10031-22-8)
Community Rolling Action Plan (CoRAP)
Octane (111-65-9)
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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