

According to Regulation (EC) No 1907/2006

According to Regulation (EC) No 2020/878

Samarium (II) iodide, 0.1M solution in THF



Version number: 3.0
Issued: 2024-01-24
Replaces SDS: 2021-11-26

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

1.1. Product identifier

Trade name

Samarium (II) iodide, 0.1M solution in THF

Article No.

90026340

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

Relevant identified uses

Research and development.

Not suitable for use in

Not suitable for human consumption or veterinary purposes.

1.3. Details of the supplier of the safety data sheet

Supplier

Molekula Group

Address

Molekula Ltd, Lingfield Way, Darlington,
DL1 4XX Darlington
United Kingdom

Telephone

+44 (0) 3302 000 333

Email

info@molekula.com

Web site

www.molekula.com

Contact person

Kevin Banks

Email

+44 (0) 7769276927

1.4. Emergency telephone number

Poison center/Additional emergency number

0344 892 0111 - National Poisons Information Service (Newcastle Centre)

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SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

Classification

Flammable liquids, hazard category 2
 Acute toxicity, oral, hazard category 4
 Eye irritation, hazard category 2
 Specific Target Organ Toxicity — Single exposure, hazard category 3 - respiratory tract irritation
 Specific Target Organ Toxicity — Single exposure, hazard category 3 - narcosis
 Carcinogenicity, hazard category 2

Hazard statements

H225, H302, H319, H336, H351

Supplemental hazard statements

EUH019

2.2. Label elements

Labelling according to Regulation (EC) No 1272/2008

Hazard pictograms



Signal word

Danger

Hazard statements

H225 Highly flammable liquid and vapour.
 H302 Harmful if swallowed.
 H319 Causes serious eye irritation.
 H336 May cause drowsiness or dizziness.
 H351 Suspected of causing cancer.

Supplemental hazard statements

EUH019 May form explosive peroxides.

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Precautionary statements

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P233 Keep container tightly closed.

P240 Ground and bond container and receiving equipment.

P243 Take action to prevent static discharges.

P260 Do not breathe vapour.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P301 + P312 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P308 + P313 IF exposed or concerned: Get medical advice/attention.

P337 + P313 If eye irritation persists: Get medical advice/attention.

2.3. Other hazards

No data available

SECTION 3: Composition/information on ingredients

3.2. Mixtures

| Chemical name | CAS No. EC No. REACH No. Index No. | Concentration | Classification | H-phrase M factor acute M factor chronic | Note |
|----------------------|---|---------------|--|---|---|
| tetrahydrofuran | 109-99-9 203-726-8 01-2119444314-46 603-025-00-0 | >95 - <97% | Flam. Liq. 2, Acute Tox. 4 - oral, Eye Irrit. 2, STOT SE 3 - resp. tract irrit., STOT SE 3 - nar- cosis, Carc. 2 | H225, H302, H319, H335, H336, H351, EUH019 - - | STOT SE 3; H335: C ≥ 25 % Eye Irrit.2; H319: C ≥ 25 %; |
| Samarium (II) Iodide | 32248-43-4 684-249-6 - - | >3 - <5% | Water react. 3, Acute Tox. 5 - oral, Skin Irrit. 2, Eye Irrit. 2 | H261, H303, H315, H319 - - | - |

Substance additional information

For the complete text of H- / EUH-statements mentioned in this section, see section 16.

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SECTION 4: First aid measures

4.1. Description of first aid measures

Get medical attention if any discomfort continues. Show this Safety Data Sheet (SDS) to medical personnel.

Inhalation

IF INHALED: Remove person to fresh air and keep comfortable for breathing. In case of persistent throat irritation or coughing: Seek medical attention and bring these instructions.

Skin contact

IF ON SKIN: Wash with plenty of soap and water. Continue to rinse for at least 15 minutes. Get medical advice/attention if you feel unwell.

Eye contact

Remove contact lenses if present. Rinse eyes with water. Continue to rinse for at least 15 minutes and seek medical attention.

Ingestion

Rinse mouth. Do NOT induce vomiting. Get medical advice/attention if you feel unwell.

Information for doctors

No data available.

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

The severity of the symptoms described will vary dependant of the concentration and the length of exposure.

Inhalation

Single exposure may cause the following adverse effects: Upper respiratory irritation. May cause drowsiness or dizziness.

Skin contact

Single exposure may cause the following adverse effects: May cause skin irritation/eczema.

Eye contact

May cause temporary eye irritation.

Ingestion

Single exposure may cause the following adverse effects: Nausea, vomiting.

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

Treat symptomatically. No special treatment requirement.

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SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

Use carbon dioxide or dry powder to extinguish.

Unsuitable extinguishing media

Foam. Water.

5.2. Special hazards arising from the substance or mixture

Specific hazards: FLAMMABLE. Reacts with water.

Vapours are heavier than air and may travel along the floor and in the bottom of containers.

Vapours may form explosive mixture with air at room temperature.

Do not allow contact with water.

Development of hazardous combustion gases or vapours possible in the event of fire. Carbon dioxide (CO₂). Carbon monoxide (CO). Hydrogen iodide Oxides of: Samarium

Pay attention to flashback.

5.3. Advice for firefighters

Special protective equipment for fire-fighters

Evacuate area. Avoid breathing gas, fume, vapours or spray. Prevent skin contact by maintaining a safe distance and by wearing suitable protective equipment/ clothing. Cool containers exposed to heat with water spray and remove container, if no risk is involved.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Avoid inhalation of vapours and spray mist and contact with skin and eyes. For personal protection, see section 8. Provide adequate ventilation. Remove sources of ignition. Beware of the explosion danger. Take action to prevent static discharges.

6.2. Environmental precautions

Avoid discharge into drains, water courses or onto the ground. Risk of explosion.

6.3. Methods and material for containment and cleaning up

Collect with absorbent, non-combustible material into suitable containers. Remove sources of ignition. Beware of the explosion danger. Use spark-proof tools and explosion-proof equipment.

6.4. Reference to other sections

For personal protection, see section 8. For waste disposal, see section 13.

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SECTION 7: Handling and storage

7.1. Precautions for safe handling

Preventive handling precautions

For precautions see section 2.2. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take action to prevent static discharges. Use spark-proof tools and explosion-proof equipment. Wear protective clothing, gloves, eye and face protection. Avoid contact with skin and eyes. Avoid ingestion and inhalation.

General hygiene

Observe good chemical hygiene practices. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove contaminated clothing and launder thoroughly before re-use. Wash skin thoroughly after handling.

7.2. Conditions for safe storage, including any incompatibilities

Store in a cool place. Store in a dry place. Store in a closed container.

Moisture Sensitive. Handle and store contents under inert gas.

Never allow product to get in contact with water during storage. Residue is explosive when dry. Test for peroxide formation periodically and before distillation.

7.3. Specific end use(s)

No specific usage precautions noted.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure limits

No occupational exposure limit assigned.

National occupational exposure limits

| Ingredient | CAS No. EC No. | Exposure limit ppm / mg/m ³ | Short-term exposure limit ppm / mg/m ³ | Source | Remark | Year |
|-----------------|-------------------|---|---|--------|--------|------|
| tetrahydrofuran | 109-99-9 | - | 100 | - | - | - |
| | 203-726-8 | - | 300 | - | - | - |

DNEL/DMEL

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| Product/Substance name (CAS No./EC No.) | Type | Exposure | Value | Population | Effects |
|--|------|-----------------------------------|-----------------------|------------|----------|
| tetrahydrofuran (109-99-9/203-726-8) | DNEL | Chronic (long term) Dermal | 12.6 mg/kg bw/day | Workers | Systemic |
| tetrahydrofuran (109-99-9/203-726-8) | DNEL | Acute (short term) Inhalation | 300 mg/m ³ | Workers | Local |
| tetrahydrofuran (109-99-9/203-726-8) | DNEL | Acute (short term) Inhalation | 96 mg/m ³ | Workers | Systemic |
| tetrahydrofuran (109-99-9/203-726-8) | DNEL | Chronic (long term) Inhalation | 150 mg/m ³ | Workers | Local |
| tetrahydrofuran (109-99-9/203-726-8) | DNEL | Chronic (long term) Inhalation | 3.5 mg/m ³ | Workers | Systemic |

PNEC/PEC

| Product/Substance name (CAS No./EC No.) | Type | Environmental compartment | Value |
|--|------|---------------------------|------------|
| tetrahydrofuran (109-99-9/203-726-8) | PNEC | Freshwater | 4.32 mg/l |
| tetrahydrofuran (109-99-9/203-726-8) | PNEC | Marine water | 0.432 mg/l |
| tetrahydrofuran (109-99-9/203-726-8) | PNEC | Sediment (freshwater) | 23.3 mg/kg |
| tetrahydrofuran (109-99-9/203-726-8) | PNEC | Sediment (marine water) | 2.33 mg/kg |
| tetrahydrofuran (109-99-9/203-726-8) | PNEC | Intermittent releases | 21.6 mg/l |
| tetrahydrofuran (109-99-9/203-726-8) | PNEC | Sewage Treatment Plant | 4.6 mg/l |
| tetrahydrofuran (109-99-9/203-726-8) | PNEC | Soil | 2.13 mg/kg |

8.2. Exposure controls

Personal Protective Equipment Symbols



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Eye / face protection

Wear eye protection. Eye glasses with side protection

Hand protection

Wear protective gloves. No specific hygiene procedures noted, but good personal hygiene practices are always advisable, especially when working with chemicals.
Wash contaminated skin thoroughly after handling.

Other skin protection

Wash skin thoroughly after handling.

Respiratory protection

Provide adequate ventilation. If ventilation is insufficient, suitable respiratory protection must be provided.

Environmental exposure controls

Avoid discharge into drains. Risk of explosion.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state

Liquid

Colour

No data available

Odour

Ether.

Melting point / freezing point

No data available

Boiling point or initial boiling point and boiling range

66 °C

Flammability

No data available

Lower and upper explosion limit

No data available

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Flash point

-19 °C

Method

CC (Closed cup).

Auto-ignition temperature

No data available

Decomposition temperature

No data available

pH

No data available

Kinematic viscosity

No data available

Solubility

No data available

Partition coefficient n-octanol/water

No data available

Vapour pressure

No data available

Density and/or relative density

0.922 g/cm³

Method

(25°C)

Relative vapour density

No data available

Particle characteristics

No data available

9.2. Other information

No data available

SECTION 10: Stability and reactivity

10.1. Reactivity

Vapours may form explosive mixture with air at room temperature. Formation of peroxides possible.

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10.2. Chemical stability

Stable under normal temperature conditions. Stable under the prescribed storage conditions.

10.3. Possibility of hazardous reactions

There are no known conditions that are likely to result in a hazardous situation.

10.4. Conditions to avoid

Heat, sparks, flames.

10.5. Incompatible materials

Avoid contact with oxidising agents. Strong acids. Water.

10.6. Hazardous decomposition products

See section 5.

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity

| Product / Substance name CAS / EC no. | Dose descriptor | Value / Dose | Exposure route | Duration of exposure | Test animals |
|--|-----------------------------------|--------------|----------------|----------------------|--------------|
| tetrahydrofuran 109-99-9 / 203-726-8 | Acute Toxicity (Oral LD50): | 1650 mg/kg | - | - | Rat |
| tetrahydrofuran 109-99-9 / 203-726-8 | Acute Toxicity (Inhalation LC50): | 14.7 mg/l | vapour | 6 hours | Rat |
| tetrahydrofuran 109-99-9 / 203-726-8 | Acute Toxicity (Dermal LD50): | > 2,000mg/kg | - | - | Rabbit |

Aspiration hazard

Based on available data, the classification criteria are not met.

11.2. Information on other hazards

No data available

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SECTION 12: Ecological information

12.1. Toxicity

Acute fish toxicity

| Product / Substance name CAS / EC no. | Measurement type | Value / Result | Duration of exposure | Species |
|--|------------------|----------------|----------------------|--|
| tetrahydrofuran 109-99-9 / 203-726-8 | LC50 | 2160 mg/l | 96 hours | Pimephales promelas (Fat-head Minnow) |

Acute crustacean toxicity

| Product / Substance name CAS / EC no. | Measurement type | Value / Result | Duration of exposure | Species |
|--|------------------|----------------|----------------------|---------------|
| tetrahydrofuran 109-99-9 / 203-726-8 | EC50 | 3485 mg/l | 48 hours | Daphnia magna |

Chronical toxicity

| Product / Substance name CAS / EC no. | Measurement type | Value / Result | Duration of exposure | Species |
|--|------------------|----------------|----------------------|--|
| tetrahydrofuran 109-99-9 / 203-726-8 | NOEC | 216 mg/l | 33 days | Pimephales promelas (Fat-head Minnow) |

12.2. Persistence and degradability

Persistence and degradability

| Product / Substance name CAS / EC no. | Type of test | Duration | Result |
|--|--------------|----------|----------------------------------|
| tetrahydrofuran 109-99-9 / 203-726-8 | aerobic | 28 days | 39% - Not readily biodegradable. |

12.3. Bioaccumulative potential

No data available

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12.4. Mobility in soil

No data available

12.5. Results of PBT and vPvB assessment

No data available

12.6. Endocrine disrupting properties

This product does not contain any known or suspected endocrine disruptors.

12.7. Other adverse effects

No data available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Disposal considerations

Dispose of contents/container in accordance with local regulations.

SECTION 14: Transport information

14.1. UN number

2056

14.2. UN proper shipping name

ADR / RID / ADN proper shipping name

TETRAHYDROFURAN, SOLUTION

IMDG proper shipping name

TETRAHYDROFURAN, SOLUTION

IATA proper shipping name

Tetrahydrofuran, solution

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14.3. Transport hazard class(es)

Label

ADR/RID/ADN



3

IMDG



3

IATA



3

ADR / RID Class

3

ADR / RID Classification code

F1

ADR / RID hazard identification number

33

IMDG Class

3

IATA Class

3

ADN Class

3

ADN Class Code

F1

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14.4. Packing group

ADR / RID / ADN: II
 IMDG: II
 IATA: II

14.5. Environmental hazards

IMDG EmS
 F-E, S-D

14.6. Special precautions for user

Tunnel restriction code: D/E
 Transport category: 2

14.7. Maritime transport in bulk according to IMO instruments

IBC Instruction: IBC02

SECTION 15: Regulatory information

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

EU regulations

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.
 This material safety data sheet complies with the requirements of Regulation (EU) 2020/878.

National regulations

No data available

15.2. Chemical safety assessment

No chemical safety assessment has been carried out.

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SECTION 16: Other information

Phrase meaning

Acute Tox. 4 - oral - Acute toxicity, oral, hazard category 4

Eye Irrit. 2 - Eye irritation, hazard category 2

STOT SE 3 - resp. tract irrit. - Specific Target Organ Toxicity — Single exposure, hazard category 3 - respiratory tract irritation

STOT SE 3 - narcosis - Specific Target Organ Toxicity — Single exposure, hazard category 3 - narcosis

Carc. 2 - Carcinogenicity, hazard category 2

Flam. Liq. 2 - Flammable liquids, hazard category 2

Water react. 3 - Substances and mixtures, which in contact with water, emit flammable gases, hazard category 3

Acute Tox. 5 - oral - Acute toxicity, oral, hazard category 5

Skin Irrit. 2 - Skin irritation, hazard category 2

H225 Highly flammable liquid and vapour.

H261 In contact with water releases flammable gases.

H302 Harmful if swallowed.

H303 May be harmful if swallowed.

H315 Causes skin irritation.

H319 Causes serious eye irritation.

H335 May cause respiratory irritation.

H336 May cause drowsiness or dizziness.

H351 Suspected of causing cancer.

EUH019 May form explosive peroxides.