

MATERIAL SAFETY DATA SHEET

Version No. 001 Revision Date: 31.05.2012

1. IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY

Product name : **(-) Levoglucosenone**
Company : Circa Group Pty Ltd
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2. HAZARDS IDENTIFICATION

Harmful (Xn)

3. COMPOSITION / INFORMATION ON INGREDIENTS

Synonyms : Levoglucosenone
(-)-Levoglucosenone
(1S, 5R)-6,8-dioxabicyclo[3.2.1]oct-2-en-4-one
(1S)-6,8-dioxabicyclo[3.2.1]oct-2-en-4-one
1,6-Anhydro-3,4-dideoxy-β-D-glycero-hex-3-enopyranos-2-
ulose

Formula : C₆H₆O₃
Molecular Weight : 126.11 g/mol
CAS Registry No. : 37112-31-5

4. FIRST AID MEASURES**If inhaled:**

If breathed in, move person into fresh air. If not breathing give artificial respiration. If symptoms are severe and/or persistent, **SEEK MEDICAL ATTENTION**

If in case of skin contact:

Remove all contaminated articles of clothing, shoes, gloves, safety glasses and immediately wash contaminated skin with soap and large amounts of water and continue flushing with water for at least 15 minutes. If symptoms are severe and/or persistent, **SEEK MEDICAL ATTENTION**

In case of eye contact:

Immediately flush affected eye(s) with large amounts of water and continue flushing for at least 15 minutes. If symptoms are severe and/or persistent, **SEEK MEDICAL ATTENTION**

If swallowed:

Rinse mouth out thoroughly with large amounts of water and continue to do so for at least 15 minutes. Never give anything by mouth to an unconscious person. If symptoms are severe and/or persistent, **SEEK MEDICAL ATTENTION**

5. FIRE FIGHTING MEASURES

Suitable extinguishing media

In the event of a fire involving this material, extinguish using carbon dioxide, dry chemical powder, alcohol-resistant chemical foam, sand or similar. DO NOT USE WATER.

Special protective equipment for fire-fighters

Protective clothing and breathing apparatus should be worn if the fire is large.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Avoid breathing vapours, mist, or gas

Environmental precautions

Do not allow material to enter drains, water courses or to contaminate soil

Methods for cleaning up

Evacuate area. Absorb on sand, vermiculite, diatomaceous earth or any inert absorbent material then place in a suitable closed container for disposal. Store container containing spillage outdoors in a secure, cool, ventilated area away from people. Contact a licensed hazardous waste disposal company for disposal.

7. Handling and Storage

Handling

This material should only be handled by persons suitably qualified and competent in the handling of potentially hazardous chemicals. The toxicological and physiological properties of this material are not known and so normal chemical hygiene precautions should be exercised by all personnel handling this material (see Section 8).

Storage

Store in a tightly closed container in a cool, dry, well-ventilated area

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

We are not aware of any national exposure limit for this material.

Personal protective equipment

Respiratory protection

This material has a low vapour pressure and respiratory protection is not required when handling small quantities under ambient conditions. Manipulation of small samples of the material should be performed in approved fume cupboards whenever possible. For large quantities, or handling at elevated temperatures, use multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges. Use respirators and components tested and approved under appropriate government standards.

Hand protection

Wear gloves that are not permeable to the material and any carrier solvent

Eye protection

Wear approved safety spectacles when handling small quantities and a full face shield for larger quantities.

9. PHYSICAL AND CHEMICAL PROPERTIES

| | | |
|------------------------------------|---|--|
| Appearance | : | Clear, pale yellow liquid |
| Odour | : | Mild fetid, pungent odour |
| pH | : | no data available |
| Boiling point | : | 130-132°C at 65 millibar |
| Melting point | : | <-78°C |
| Purity | : | >99% (nmr and specific rotation) |
| Flash point | : | no data available |
| Ignition temperature | : | no data available |
| Lower explosion limit | : | no data available |
| Upper explosion limit | : | no data available |
| Molecular formula | : | C ₆ H ₆ O ₃ |
| Molecular weight | : | 126.11 g/mol |
| Density | : | 1.25 g/cm ³ at 20°C |
| Solubility in water | : | low: no quantitative data available |
| Solubility in ethyl acetate | : | completely miscible |

10. STABILITY AND REACTIVITY

Storage stability

Stable when stored, as supplied, under nitrogen at temperatures below 30°C

Conditions to avoid

Do not store under conditions of high (or variable) temperature. Keep away from sources of ignition. Exposure to moisture, direct sunlight and/or air should be kept to a minimum.

Materials to avoid

Strong oxidizing agents and strong reducing agents

Hazardous decomposition products

Carbon monoxide and carbon dioxide are formed under fire conditions

11. TOXICOLOGICAL INFORMATION

| | | |
|----------------------------------|---|--|
| Acute toxicity | : | no data available |
| Irritation and corrosion | : | no data available |
| Sensitisation | : | no data available |
| Chronic exposure | : | no data available |
| Carcinogenicity | : | negative - dermal administration to mouse (CCRIS Record No. 4274) |
| Chromasomatic aberrations | : | aberrations and reduced mitosis in a dose-dependent fashion at around 4ug/mL <i>in vitro</i> (Chinese hamster v79 cells) |

11. TOXICOLOGICAL INFORMATION (continued)

Potential Health Effects

| | | |
|-------------------|---|--|
| Inhalation | : | may be harmful if inhaled. May cause respiratory tract irritation |
| Skin | : | may be harmful if absorbed through skin. May cause skin irritation |
| Eyes | : | may cause eye irritation, mildly lachrymatory to some individuals |
| Ingestion | : | may be harmful if swallowed |

12. ECOLOGICAL INFORMATION

Elimination information (persistence and degradability)

No data available

Ecotoxicity effects

No data available

Further information on ecology

No data available

13. DISPOSAL CONSIDERATIONS

Product

Waste material should be collected and disposed of by a licensed disposal contractor. All waste disposal must be carried out in accord with all national, state, and local environmental regulations.

Contaminated packaging

Dispose of as for Product

14. TRANSPORT INFORMATION

| | | |
|---------------------------|---|-------------------|
| UN Number | : | no data available |
| IATA Class | : | no data available |
| IATA Packing Group | : | no data available |
| IATA Sub Risk | : | no data available |
| EINECS Number | : | no data available |

15. REGULATORY INFORMATION

We are not aware of any regulations under any national code governing this material.

| | | |
|---------------------|---|---|
| Risk Phrases | : | R20/21/22 - Harmful by inhalation in contact with skin and if swallowed |
|---------------------|---|---|

| | | |
|-----------------------|---|--|
| Safety Phrases | : | S23 - Do not breathe gas/fumes/vapour/spray S24/25 - Avoid contact with skin and eyes S36/37/39 - Wear suitable protective clothing gloves and eye/face protection |
|-----------------------|---|--|

16. OTHER INFORMATION

Circa Group believes the above information to be correct but does not claim that it is comprehensive. The information provided is intended to be used as a guide only. The information is based on the present state of Circa's knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Circa Group Pty. Ltd., shall not be held liable for any damage resulting from handling or from contact with the above product.