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

1.1. Product identifier
   Trade name
   13(R,S)-Hydroxy-9(Z),11(E)-octadecadienoic Acid

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

1.3. Details of the supplier of the safety data sheet
   Company
   Larodan AB
   Karolinska Institutet Science Park
   Retzius väg 8
   SE-171 65 SOLNA
   Sweden

   Telephone
   +46 20 15 22 00

   E-mail
   info@larodan.com

   Website
   www.larodan.com

1.4. Emergency telephone number
   In case of emergency contact toxicological information, emergency tel 112 (within Europe) or 1-800-222-1222 (for USA). For other countries, use the built-in emergency number in your cell phone
   For non-emergency poison information, see http://www.who.int/gho/phe/chemical_safety/poisons_centres/en/

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture
   Classification in accordance with 1272/2008
   Upon assessment, this substance is not classified as hazardous according to 1272/2008.

2.2. Label elements
   Label information in accordance with 1272/2008
   Hazard pictograms
   Not applicable

   Signal words
   Not applicable

   Hazard statements
   Not applicable

2.3. Other hazards
   Not relevant.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

This product is composed of a pure or almost pure substance.

3.1. Substances
   Synonyms
   13-Hydroxy-9-cis-11-trans-octadecadienoic acid, α-Artemisolic acid

   Chemical formula
   C_{18}H_{32}O_{3}

   Molecular weight
   296.44

<table>
<thead>
<tr>
<th>Constituent</th>
<th>Purity</th>
</tr>
</thead>
<tbody>
<tr>
<td>13(R,S)-HYDROXY-9(Z),11(E)-OCTADECADIENOIC ACID</td>
<td>&gt;98%</td>
</tr>
</tbody>
</table>

Occurrence of any impurity, stabilising additive, or individual ingredients other than the main ingredient is indicated by the chemical name and the purity level.

Explanations to the classification and labelling of the ingredients are given in Section 16e. Official abbreviations are printed in normal
SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

Generally
In case of concern, or if symptoms persist, call doctor/physician.

Upon breathing in
Inhalation of fumes from heated product: let the injured rest at a warm place with fresh air. Contact the doctor if symptoms persist.

Upon contact with the eyes
As a precaution, rinse the eye thoroughly with water; If symptoms occur, call a doctor/physician.

Upon skin contact
Normal washing of the skin is considered sufficient; If nevertheless symptoms do occur, contact a physician.
Remove contaminated clothes.

Upon ingestion
Flush nose, mouth and throat with water.
Upon ingestion of larger amounts, consult a doctor/physician.

4.2. Most important symptoms and effects, both acute and delayed
Ingestion of large amounts of the product may cause nausea and vomiting.

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

SECTION 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing media

Recommended extinguishing agents
Extinguish with materials intended for the surrounding fire.

Unsuitable extinguishing agents
Among common extinguishing agents there are none that are overtly unsuitable.

5.2. Special hazards arising from the substance or mixture
Produces fumes containing harmful gases (carbon monoxide and carbon dioxide) when burning.
The product is not hazardous in the flammable sense.

5.3. Advice for fire-fighters
In case of fire use a respirator mask.
Wear full protective clothing.
Protective measures should be taken regarding other material at the site of the fire.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures
Use recommended safety equipment, see section 8.
Note that there is a risk of slipping if product is leaking/spilling.

6.2. Environmental precautions
At amounts considered in this case, the product may be released into the natural environment without serious environmental consequences. Large emissions should however be reported to the emergency services and the Environment Agency.

6.3. Methods and material for containment and cleaning up
Small spills can be wiped up with a cloth or similar. Then flush the spill site with water. Larger spills should first be covered with sand or earth and then be collected. Collected material should be disposed according to Section 13.

6.4. Reference to other sections
See section 8 and 13 for personal protection equipment and disposal considerations
SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling
Read and follow the manufacturer's instructions.
Avoid spillage, inhalation and contact with eyes and skin.
Keep well closed.
The usual precautions for handling chemicals should be observed.

7.2. Conditions for safe storage, including any incompatibilities
Store in dry and cool area.
Store in a ventilated space.

7.3. Specific end uses
See identified uses in Section 1.2.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

8.1.1. National limit values, United Kingdom
All ingredients (cf. Section 3) lack occupational exposure limit values.

8.2. Exposure controls
In terms of minimizing risks, no special attention is needed for this product besides the general obligations that follow EU directive 89/391 and national occupational legislation.
Eye protection is not necessary during normal use.
Protective gloves are normally not needed due to the properties of this product, but may be necessary for other reasons, e.g. mechanical risks, temperature conditions or microbiological risks.
Special measures for protection of the skin are necessary only in rare working situations. In case of doubt, consult occupational expertise. Show this safety data sheet.
Protective breathing equipment should only be required in extreme work-situations. Consult the manufacturer if this is the case.
For limitation of environmental exposure, see Section 12.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

a) Appearance
Form: liquid
Colour: clear

b) Odour
Not applicable

c) Odour threshold
Not applicable

d) pH
Not applicable

e) Melting point/freezing point
Not applicable

f) Initial boiling point and boiling range
Not applicable

g) Flash point
Not applicable

h) Evaporation rate
Not applicable

i) Flammability (solid, gas)
Not applicable

j) Upper/lower flammability or explosive limits
Not applicable

k) Vapour pressure
Not applicable

l) Vapour density
Not applicable

m) Relative density
Not applicable

n) Solubility
Solubility in water: Insoluble

o) Partition coefficient: n-octanol/water
Not applicable

p) Auto-ignition temperature
Not applicable

q) Decomposition temperature
Not applicable

r) Viscosity
Not applicable

s) Explosive properties
Not applicable

t) Oxidising properties
Not applicable
SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity
The product contains no substances which can lead to hazardous reactions at normal use.

10.2. Chemical stability
The product is stable at normal storage and handling conditions.

10.3. Possibility of hazardous reactions
Not indicated

10.4. Conditions to avoid
Not indicated

10.5. Incompatible materials
Avoid contact with oxidizers.

10.6. Hazardous decomposition products
Carbon monoxide (CO), carbon dioxide (CO2) and harmful and irritating substances.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects
General or unspecific toxicity
The product is not classified as toxic.

Acute effects
Not classified as an acutely toxic substance.

Harmfulness
The product is not classified as harmful to health.

Repeated dose toxicity
No chronic effects have been reported for this product.

Carcinogenicity
No carcinogenic effects have been reported for this product.

CMR effects
No mutagenic or reproductive toxic effects have been reported for this substance.

Sensibilisation
Not sensitising.

Corrosive and irritating effects
The product is not corrosive. Minor irritation may arise for persons who are prone/susceptible.

Synergism and antagonism
No information is available.

Effect on judgement and other psychological effects
Does not affect the judgement.

Relevant toxicological properties
13(R,S)-Hydroxy-9(Z),11(E)-octadecadienoic Acid No data

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity
13(R,S)-Hydroxy-9(Z),11(E)-octadecadienoic Acid
No ecological damage is known or expected in the event of normal use.

12.2. Persistence and degradability
The components of the product degrades in the natural environment.
Not applicable

12.4. Mobility in soil
The product is not soluble in water and will spread on aquatic surfaces.
12.5. Results of PBT and vPvB assessment
No chemical safety report has been executed.

12.6. Other adverse effects
Not indicated

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods
Waste handling for the product
The product is not classified as hazardous waste.
Also take local regulations for dealing with waste into account.
Avoid discharge into sewers.
Recycling of the product
This product is not usually recycled.
Send to landfill.
Transportation of waste
Waste class J(0) - Does not have adverse effects on health or the environment.

SECTION 14: TRANSPORT INFORMATION

This product is only supposed to be transported by road or railway and just the transport regulations ADR/RID thus apply. If other means of transport are to be used, contact the publisher of this safety data sheet.

14.1. UN number
Not classified as dangerous goods

14.2. UN proper shipping name
Not applicable

14.3. Transport hazard class(es)
Not applicable

14.4. Packing group
Not applicable

14.5. Environmental hazards
Not applicable

14.6. Special precautions for user
Not applicable

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
Not applicable

SECTION 15: REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture
Not applicable.

15.2. Chemical safety assessment
Assessment and chemical safety report in accordance with 1907/2006 Annex I has not yet been performed.

SECTION 16: OTHER INFORMATION

16a. Indication of where changes have been made to the previous version of the safety data sheet
Revisions of this document
This is the first version.

16b. Legend to abbreviations and acronyms used in the safety data sheet
Full texts for Hazard Class and Category Code mentioned in section 3
No tox haz Not classified as toxic
No phys haz Non-assigned physical hazard
No environmental hazard Not classified as being environmentally hazardous

Explanations of the abbreviations in Section 14
ADR European Agreement concerning the International Transport of Dangerous Goods by Road
RID Regulations concerning the International Transport of Dangerous Goods by Rail
16c. Key literature references and sources for data

Sources for data
Primary data for the calculation of the hazards has preferentially been taken from the official European classification list, 1272/2008 Annex I, as updated to 2015-06-05.

Where such data was lacking, on the second hand the documentation on which this official classification is based was used, e.g. IUCLID (International Uniform Chemical Information Database). On the third hand, information was used from reputable international chemical suppliers, and on the fourth hand from other available information, e.g. safety data sheets from other suppliers or information from non-profit associations, whereby the reliability of the source was judged by an expert. If, in spite of this, reliable information was not found, the hazards were judged by expert opinions based on the known properties of similar substances, and according to the principles in 1907/2006 and 1272/2008.

Full texts for Regulations mentioned in this Safety Data Sheet


89/391 COUNCIL DIRECTIVE (89/391/EEC of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work


16d. Methods of evaluating information referred to in 1272/2008 Article 9 which was used for the purpose of classification

The calculation of the hazards of this mixture has been performed as an evaluation by applying a weight of evidence determination using expert judgement in accordance with 1272/2008 Annex I, weighing all available information having a bearing on the determination of the hazards of the mixture, and in accordance with 1907/2006 Annex XI.

16e. List of relevant hazard statements and/or precautionary statements

16f. Advice on any training appropriate for workers to ensure protection of human health and the environment

Warning for misuse
This product is not expected to cause severe harm to humans or the environment. However the manufacturer, the distributor or the supplier cannot be responsible for unusual or criminal use of the product.

Other relevant information