

SAFETY DATA SHEET



In accordance with 453/2010 and 1272/2008

(All references to EU regulations and directives are abbreviated into only the numeric term)

Issued 2015-06-05

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

1.1. Product identifier

Trade name

***n*-Hexane**

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

Identified uses

Laboratory chemicals

Industrial use

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

+46 20 15 22 00

info@larodan.com

www.larodan.com

Telephone

E-mail

Website

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

Flammable Liquid (Category 2)

Aspiration Hazard (Category 1)

Skin Irritant (Category 2)

STOT SE 3; Specific target organ toxicity - single exposure (Category 3)

Aquatic Acute (Category 1)

Aquatic Chronic (Category 1)

2.2. Label elements

Label information in accordance with 1272/2008

Hazard pictograms



Signal words

Danger

Hazard statements

H225

Highly flammable liquid and vapour

| | |
|------|--|
| H304 | May be fatal if swallowed and enters airways |
| H315 | Causes skin irritation |
| H336 | May cause drowsiness or dizziness |
| H400 | Very toxic to aquatic life |
| H410 | Very toxic to aquatic life with long-lasting effects |

Precautionary statements

| | |
|----------|--|
| P210 | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. |
| P261 | Avoid breathing dust/fumes/gas/mist/vapours/spray. |
| P273 | Avoid release to the environment. |
| P301+310 | IF SWALLOWED: Immediately call a POISON CENTER/doctor/. |
| P331 | Do NOT induce vomiting. |

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 | n-Hexane |
| Chemical formula | C ₈ H ₁₆ |
| Molecular weight | 114.23 |

| Constituent | Classification | Concentration |
|---|---|---------------|
| n-OCTANE | | |
| CAS No 111-65-9 EC No 203-892-1 Index No 601-009-00-8 | Flam. Liquid 2, Asp. Tox. 1, Skin Irrit. 2, STOT Single Exp. 3, Aquatic Acute 1, Aquatic Chronic 1. Hazard Statement Code(s): H225, H304, H315, H336, H400, H410. | >99% |

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

Generally

IF SWALLOWED: Immediately call a POISON CENTER/doctor. Never leave a injured person alone. Their condition may rapidly worsen, sometimes several hours after the poisoning. For those providing assistance to an injured person should avoid exposure and if risk of exposure exists, use appropriate respiratory protection.

Upon breathing in

Bring the injured person out into fresh air. Give artificial respiration if breathing has stopped. If breathing is difficult let trained personnel administer oxygen. Let the injured person rest in a warm place with fresh air and seek medical advice immediately.

Upon contact with the eyes

Rinse the eye for several minutes with lukewarm water. Contact a physician.

Upon skin contact

Remove contaminated clothes. Clean with soap and abundant water. Please contact a doctor.

Upon ingestion

Immediately contact a doctor (Emergency phone 112). Do not induce vomiting. Flush nose, mouth and throat with water.

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

Effects of Short-term Exposure: The substance is irritating to the eyes, the skin and the respiratory tract. Swallowing the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis. Exposure to high concentrations of vapor could cause lowering of consciousness. Effects of Long-term Exposure: Repeated or prolonged contact with skin may cause dermatitis. The liquid defats the skin.

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

If the injured person is unconscious or drowsy, place them in the recovery position.

Symptomatic treatment.

When contacting a physician, take this SDS with you.

SECTION 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing media

Recommended extinguishing agents

All normal extinguishing agents may be used.

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, and, in case of incomplete combustion, aldehydes and other toxic, harmful, irritant or environmentally harmful substances.

Toxic substances can be spread in case of fire.

Note that the extinguishing water may contain toxic substances or other hazardous substances.

Inflammable.

5.3. Advice for fire-fighters

In case of fire use a respirator mask.

When extinguishing a fire, use over-all coverage clothing which protects against toxic substances.

Protective measures should be taken regarding other material at the site of the fire.

Evacuate all not-authorized personnel.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Use recommended safety equipment, see section 8.

Do not inhale vapours and avoid contact with skin, eyes and clothes when cleaning up spill.

Ensure good ventilation.

After splashing immediately follow the instructions in section 4.

Switch off equipment which has an exposed flame, glows, or has a heat source of some other kind.

Keep unauthorized and unprotected people at a safe distance.

6.2. Environmental precautions

Avoid discharge into soil, water or sewers.

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.

After thoroughly removing the spill, clean contaminated surfaces with water.

Do not try to clean up yourself, unless you are properly trained for decontaminating this product.

Residues left behind after cleaning shall be treated as hazardous waste. For further information, contact the local authority sanitisation works. Present this safety data sheet.

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

Do not inhale the fumes and avoid exposure to skin, eyes and clothing.

Take off work clothes and protective gear before meals.

Do not mix with other products. Read and follow the manufacturer's instructions.

The product should be stored in a manner which prevents hazards to health and the environment. Avoid exposure to humans and animals and do not discharge the product in a sensitive environment.

Store this product separately from food items and keep it out of the reach of children and pets.

Do not eat, drink or smoke in premises where this product is stored.

Work in order to avoid spillage. If spillage does occur, address it immediately in accordance with the directions specified in Section 6 of this safety data sheet.

Avoid open fire, hot items, sparks or other ignition sources. The product must not be left without supervision during handling.

Wash your hands after using the product. Remove clothes which have been splattered. Wash contaminated clothing before reuse.

Handle and open container with care. Take precautionary measures against static discharge.

7.2. Conditions for safe storage, including any incompatibilities

Store in dry and cool area.

Handle in a fume cupboard or in a space which is equally safe.

Handle in premises which have modern ventilation standards.

Store in a location suited for toxic substances, preferably locked.

An evacuation plan should be available and evacuation routes must not be blocked.

Emergency showers and eye-rinsing facilities must be available at the workplace.

Store only in the original package.

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

n-OCTANE

TWA: 300 (ppm), TWA: 1450 (mg/m³), STEL: 375 (ppm)

Other ingredients (cf. Section 3) have no occupational exposure limit values.

8.2. Exposure controls

For the safety and health protection of workers according to EU directives 89/391 , 98/24 and 98/24 and national occupational legislation, measures due to both the physical and general health hazards of this product and the carcinogenic and/or mutagenic properties of any of the ingredients (see Sections 2, 3, 10 and 11) must be considered.

Use protective glasses, safety goggles, or a visor.

Use protective gloves of butyl rubber, Viton or fluorine rubber, or get advice from an occupational medical expert about alternative materials. Show this safety data sheet.

Only under exceptional circumstance shall protective gloves be worn for longer time than one hour. For service work or work lasting more than 30 minutes, choose gloves of high quality (Class 4-6). For work up to 30 minutes use gloves of Class 2. Class 1 gloves are sufficient for up to 10 minutes. The gloves shall cover as much of the forearms as needed for the work.

Choose a mechanical wear strength in line with the nature of the work in accordance to this pictogram with four digits that indicate resistance against abrasion, cutting effects, tear and puncture, where 1 is the lowest and 4 or 5 is the best.

Protect all exposed skin from coming into contact with the product.

Use proper protective breathing protection.

A breathing mask of the A filter (brown) type, may be required.

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, colorless |
| b) Odour | Gasoline-like |
| c) Odour threshold | 150 ppm |
| d) pH | Not applicable |
| e) Melting point/freezing point | -56.76 °C |
| f) Initial boiling point and boiling range | 125.67 °C Condition: Press: 760 Torr |
| g) Flash point | 13°C |
| h) Evaporation rate | Not applicable |
| i) Flammability (solid, gas) | Not applicable |
| j) Upper/lower flammability or explosive limits | Not applicable |
| k) Vapour pressure | 1.5 kPa (20°C) |
| l) Vapour density | 3.9 (Air = 1) |
| m) Relative density | 0.69862 g/cm ³ Condition: Temp: 25 °C |
| n) Solubility | In water: 0.007 mg/dm ³ (at 20 °C), Soluble in diethyl ether, acetone. |
| 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 | Explosive limits, vol% in air: 1.0-6.5. |
| t) Oxidising properties | Not applicable |

9.2. Other information

No data available

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

Not indicated

10.2. Chemical stability

The product is stable at normal storage and handling conditions.

10.3. Possibility of hazardous reactions

No hazardous reactions known during normal use.

10.4. Conditions to avoid

Avoid heat, sparks and open flames.

10.5. Incompatible materials

Reactive with oxidizing agents. Avoid contact with acids, bases, transition metals (and salts of transition metals), reducing agents, organic materials and other contaminants.

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

Slightly hazardous in case of skin contact (irritant, permeator), of ingestion, of inhalation.

Acute effects

Skin: May cause skin irritation. It may be absorbed through the skin in harmful amounts.

Eyes: Causes mild to moderate eye irritation.

Inhalation: May cause respiratory tract (nose, throat, lungs) irritation. Inhalation of high concentration of mist or vapor may cause headache, nausea, vomiting, central nervous system depression with headache, dizziness, lightheadness, giddiness, vertigo, drowsiness, confusion, anesthetic stupor, and passing out. May also cause cardiac arrhythmias.

Ingestion: May cause nausea, vomiting. Aspiration may result in pulmonary damage. It may affect behavior/central nervous system with symptoms similar to acute inhalation.

Repeated dose toxicity

Skin: Repeated or prolonged skin contact may cause drying and cracking of skin.

Ingestion: Repeated or prolonged ingestion may affect the liver, kidneys.

Inhalation: Repeated or prolonged inhalation may affect the liver, kidneys, behavior/central nervous system.

Corrosive and irritating effects

Irritating to eyes and skin.

Synergism and antagonism

No information is available.

Effect on judgement and other psychological effects

No information is available.

Effect on human microflora

Effects on human micro flora have not been proven, or are negligible.

Relevant toxicological properties

n-OCTANE

LC50 mouse (Inhalation) 4h = 118000 mg/m³

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

n-HEXANE

EC50 *Mytilus edulis* = 120 µg/l (for <1.67 hr)

LC50 *Daphnia* (Water flea) 48 h = 0.38 mg/l

12.2. Persistence and degradability

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise. The products of degradation are more toxic.

12.3. Bioaccumulative potential

There is no information regarding bioaccumulation.

12.4. Mobility in soil

Information about mobility in nature is not available.

12.5. Results of PBT and vPvB assessment

No chemical safety report has been executed.

12.6. Other adverse effects

This substance may be hazardous to the environment; special attention should be given to aquatic organisms.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste handling for the product

Product as well as packaging must be disposed as hazardous waste.

Not completely empty packaging can contain remnants of dangerous substances and should therefore be handled as hazardous waste according to the above. Completely empty packaging can be recycled.

Spillage disposal: Evacuate danger area! Ventilation. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT wash away into sewer. Do NOT let this chemical enter the environment.

Observe local regulations.

Recycling of the product

Empty, rinsed packaging is sent for recycling where practicable.

Residual, old or contaminated product should be disposed of at a waste management facility.

Transportation of waste

Waste class J(1) - Substances classified as harmful or irritating.

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

1262

14.2. UN proper shipping name

OCTANES

14.3. Transport hazard class(es)

Class 3: Flammable liquids

Classification code (ADR/RID)

F1 : Flammable liquid

Subsidiary risk (IMDG) Labels



14.4. Packing group

Packing group: II

14.5. Environmental hazards

Not applicable

14.6. Special precautions for user

Tunnel restrictions

Tunnel category: (D/E).

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Not applicable

14.8 Other transport information

Transport category: 2

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

| | |
|---------------------------|--|
| <i>Flam. Liquid 2</i> | Flammable Liquid (Category 2) |
| <i>Asp. Tox. 1</i> | Aspiration Hazard (Category 1) |
| <i>Skin Irrit 2</i> | Skin Irritant (Category 2) |
| <i>STOT Single Exp. 3</i> | STOT SE 3; Specific target organ toxicity - single exposure (Category 3) |
| <i>Aquatic Acute 1</i> | Aquatic Acute (Category 1) |
| <i>Aquatic Chronic 1</i> | Aquatic Chronic (Category 1) |

Comprehensive definition of the hazards mentioned in Section 2

Flam. Liquid 2

Flammable liquids (2) have a flash point below 23 °C and a boiling point below 35 °C.

The vapor is heavier than air and may travel along the ground; distant ignition possible. As a result of flow, agitation etc., electrostatic charges can be generated. Reacts with strong oxidants causing fire and explosion hazard.

Asp. Tox. 1

If there is human evidence that the individual substance induces specific respiratory hypersensitivity and/or positive results from an appropriate animal test.

Inhalation Risk: A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20 °C.

Skin Irrit 2

One or more criteria 1-3 for irritation of skin is applicable. Repeated or prolonged contact with skin may cause dermatitis. The liquid defats the skin.

(1) Mean value of $> 2.3 - < 4.0$ for erythema/eschar or for oedema in at least 2 of 3 tested animals from gradings at 24, 48 and 72 hours after patch removal or, if reactions are delayed, from grades on 3 consecutive days after the onset of dermal reactions, or

(2) Inflammation that persists to the end of the observation period normally 14 days in at least 2 animals, particularly taking into account alopecia (limited area), hyperkeratosis, hyperplasia, and scaling, or

(3) In some cases where there is pronounced variability of response among animals, with very definite positive effects related to chemical exposure in a single animal but less than the criteria above.

STOT Single Exp. 3

Specific target organ toxicity - single exposure (Category 3)

May cause drowsiness or dizziness.

Aquatic Acute 1

Category: Acute I may be subdivided for some regulatory systems to include a lower band at $L(E)C50 \leq 0.1$ mg/l.

Acute toxicity: 96 hr LC50 (for fish) ≤ 1 mg/l and/or
48 hr EC50 (for crustacea) ≤ 1 mg/l and/or
72 or 96hr ErC50 (for algae or other aquatic plants) ≤ 1 mg/l.

Aquatic Chronic 1

Chronic toxicity: 96 hr LC50 (for fish) ≤ 1 mg/l and/or
48 hr EC50 (for crustacea) ≤ 1 mg/l and/or
72 or 96hr ErC50 (for algae or other aquatic plants) ≤ 1 mg/l

and the substance is not rapidly degradable and/or the log Kow ≥ 4 (unless the experimentally determined BCF < 500).

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

Tunnel restriction code: D/E; Transport by bulk or via tank: Passage forbidden through tunnels of category D or E

Transport category: 2.

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 2015-06-09.

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

- 453/2010 COMMISSION REGULATION (EU) No 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)
- 1272/2008 REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006
- 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
- 98/24 COUNCIL DIRECTIVE 98/24/EC of 7 April 1998 on the protection of the health and safety of workers from the risks related to chemical agents at work (fourteenth individual Directive within the meaning of Article 16(1) of Directive 89/391/EEC)
- 1907/2006 REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC Annex I

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

Full texts for hazard statements mentioned in section 3

- H225 Highly flammable liquid and vapour
- H304 May be fatal if swallowed and enters airways
- H315 Causes skin irritation
- H336 May cause drowsiness or dizziness
- H400 Very toxic to aquatic life
- H410 Very toxic to aquatic life with long-lasting effects

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

Warning for misuse

This product can cause severe injuries if used improperly. Read and follow carefully the instructions in this safety sheet and other appropriate risk information. At professional use the employer is responsible for the staff being well aware of the risks.

Other relevant information

Editorial information

This safety data sheet has been generated by the program KemRisk®, KemRisk Sweden AB, Teknikringen 10, SE-583 30 Linköping, Sweden.