

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifiers

Product name: **CYCLOHEXANE**

CAS-No.: **110-82-7**

Product Number: **A67428**

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

Identified uses: Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

Company : Philip Harris Ltd., 2 Gregory Street, Hyde, Cheshire, SK14 4HR,

UNITED KINGDOM

Telephone: +44 (0)845 1200 506 Fax: +44 (0)161 367 2140

Email: enquiries@philipharris.co.uk

1.4 Emergency telephone number

Emergency Phone #: **+44 (0)845 1200 506**

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

According to Regulation (EC) No1272/2008; Flammable liquids (Category 2); Aspiration hazard (Category 1); Skin irritation (Category 2); Specific target organ toxicity - single exposure (Category 3); Acute aquatic toxicity (Category 1); Chronic aquatic toxicity (Category 1).

According to European Directive 67/548/EEC as amended: Highly flammable. Harmful: may cause lung damage if swallowed. Irritating to skin. Vapours may cause drowsiness and dizziness. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

2.2 Label elements

Pictogram



Signal word

Danger

Hazard statement(s): H225 Highly flammable liquid and vapour. H315 Causes skin irritation. H304 May be fatal if swallowed and enters airways. H336 May cause drowsiness or dizziness.

H410 Very toxic to aquatic life with long lasting effects.

Precautionary statement(s): P210 Keep away from heat/sparks/open flames/hot surfaces. P261 Avoid breathing dust/fume/gas/mist/vapours/spray. P273 Avoid release to the environment. P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. P331 Do NOT induce vomiting. P501 Dispose of contents/container to an approved waste disposal plant.

Hazard symbol(s): F Highly flammable Xn Harmful N Dangerous for the environment
R-phrases(s): R11 Highly flammable. R38 Irritating to skin. R65 Harmful: may cause lung damage if swallowed. R67 Vapours may cause drowsiness and dizziness. R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
S-phrases(s): S9 Keep container in a well-ventilated place. S16 Keep away from sources of ignition - No smoking. S25 Avoid contact with eyes. S33 Take precautionary measures against static discharges. S60 This material and its container must be disposed of as hazardous waste. S61 Avoid release to the environment. Refer to special instructions/ Safety data sheets. S62 If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.
2.3 Other hazards – no data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Cyclohexane

Formula: C_6H_{12}
Molecular Weight: 84.16g/mol
CAS-No.: 110-82-7
EC-No.: 203-806-2
Index-No.: 601-017-00-1

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice: Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled: If breathed in, move person into fresh air. If not breathing, give artificial respiration.

In case of skin contact: Wash off with soap and plenty of water.

In case of eye contact: Rinse thoroughly with plenty of water for at least 15 minutes.

If swallowed: Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water.

4.2 Most important symptoms and effects, both acute and delayed: no data available

4.3 Indication of immediate medical attention and special treatment needed: no data available

5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media: For small (incipient) fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.

5.2 Special hazards arising from the substance or mixture: no data available

5.3 Precautions for fire-fighters: Wear self contained breathing apparatus for fire fighting if necessary.

5.4 Further information: Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures: Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

6.2 Environmental precautions: Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up: Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

6.4 Reference to other sections: For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling: Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Keep away from sources of ignition. Take measures to prevent the build up of electrostatic charge.

7.2 Conditions for safe storage, including any incompatibilities: Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Store under inert gas.

7.3 Specific end uses: no data available

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters:

Components with workplace control parameters

Component	CAS No.	Value	Control Parameters	Update
Cyclohexane	110-82-7	STEL	300ppm 1,050mg/m ³	2005-04-06
Cyclohexane	110-82-7	TWA	100ppm 350mg/m ³	2005-04-06
Cyclohexane	110-82-7	TWA	200ppm 750mg/m ³	2006-02-09

UK. EH40 Occupational Exposure Limits. Europe Commission Directive 91/322/EEC on establishing indicative limit values. Remarks Indicative.

8.2 Exposure controls

Appropriate engineering controls: Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment: Eye/face protection: Face shield and safety glasses.

Skin protection: The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it. Handle with gloves.

Body Protection: Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Respiratory protection: Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

- | | | |
|--|--|-------------------------------|
| a) Appearance: | Form: Liquid | Colour: Colourless |
| b) Odour: | no data available | |
| c) Odour Threshold: | no data available | |
| d) pH: | no data available | |
| e) Melting/freezing point: | no data available | Melting point/range: 4 - 7 °C |
| f) Initial boiling point and boiling range: | 80.7 °C | |
| g) Flash point: | -18.0 °C - closed cup | |
| h) Evaporation rate: | no data available | |
| i) Flammability (solid, gas): | no data available | |
| j) Upper/lower flammability or explosive limits: | 1-9%(V) | |
| k) Vapour pressure: | 225.0 hPa at 37.7 °C; 102.7 hPa at 20.0 °C | |
| l) Vapour density: | no data available | |
| m) Relative density: | 0.779 g/cm ³ at 25 °C | |
| n) Water solubility: | no data available | |
| o) Partition coefficient: n-octanol/water: | 3.44 | |
| p) Autoignition temperature: | 260 °C | |
| q) Decomposition temperature: | no data available | |
| r) Viscosity: | no data available | |
| s) Explosive properties: | no data available | |
| t) Oxidizing properties: | no data available | |

9.2 Other safety information: no data available

10. STABILITY AND REACTIVITY

10.1 Reactivity: no data available

10.2 Chemical stability: Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions: no data available

10.4 Conditions to avoid: Heat, flames and sparks.

10.5 Incompatible materials: Strong oxidizing agents

10.6 Hazardous decomposition products: Hazardous decomposition products formed under fire conditions. - Carbon oxides

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity: LD50 Oral - rat - 12,705 mg/kg;

LC50 Inhalation - rat - 4 h - 13,900 mg/m³;

LD50 Dermal - rabbit - > 2,000 mg/kg

Skin corrosion/irritation: Skin - rabbit - No skin irritation

Serious eye damage/eye irritation: Eyes - rabbit - Mild eye irritation

Respiratory or skin sensitization: no data available

Germ cell mutagenicity: no data available

Carcinogenicity: IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Reproductive toxicity: no data available

Specific target organ toxicity - single exposure: May cause damage to organs.

Specific target organ toxicity - repeated exposure: no data available

Aspiration hazard: May be fatal if swallowed and enters airways.

Potential health effects

Inhalation May be harmful if inhaled. May cause respiratory tract irritation. Vapours may cause drowsiness and dizziness.

Ingestion May be harmful if swallowed. Aspiration hazard if swallowed - can enter lungs and cause damage.

Skin May be harmful if absorbed through skin. Causes skin irritation.

Eyes May cause eye irritation.

Signs and Symptoms of Exposure: Central nervous system depression, Drowsiness, Irritability, Dizziness, Gastrointestinal disturbance, Lung irritation, chest pain, pulmonary edema

Additional Information: RTECS: GU6300000

12. ECOLOGICAL INFORMATION

12.1 Toxicity: Toxicity to fish LC50 - *Lepomis macrochirus* (Bluegill) - 34.7 mg/L - 96.0 h

LC50 - *Pimephales promelas* (fathead minnow) - 32 - 93 mg/L - 96.0 h

Toxicity to daphnia and other aquatic invertebrates.

EC50 - *Daphnia magna* (Water flea) - 3.78 mg/L - 48 h

12.2 Persistence and degradability: Not readily biodegradable.

12.3 Bioaccumulative potential: no data available

12.4 Mobility in soil: no data available

12.5 Results of PBT and vPvB assessment: no data available

12.6 Other adverse effects: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product: Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging: Dispose of as unused product.

14. TRANSPORT INFORMATION

14.1 UN-Number

ADR/RID: 1145 IMDG: 1145 IATA: 1145

14.2 UN proper shipping name

ADR/RID: CYCLOHEXANE

IMDG: CYCLOHEXANE

IATA: CYCLOHEXANE

14.3 Transport hazard class(es)

ADR/RID: 3 IMDG: 3 IATA: 3

14.4 Packaging group

ADR/RID: II IMDG: II IATA: II

14.5 Environmental hazards

ADR/RID: no IMDG Marine pollutant: no IATA: no

14.6 Special precautions for users: EMS-No: F-E, S-D

15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

16. OTHER INFORMATION

Aquatic Acute Acute aquatic toxicity; Aquatic Chronic Chronic aquatic toxicity; Asp. Tox. Aspiration hazard; Flam. Liq. Flammable liquids; 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. H410 Very toxic to aquatic life with long lasting effects. Skin Irrit. Skin irritation; STOT SE Specific target organ toxicity - single exposure; F Highly flammable; N Dangerous for the environment; Xn Harmful; R11 Highly flammable. R38 Irritating to skin. R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. R65 Harmful: may cause lung damage if swallowed. R67 Vapours may cause drowsiness and dizziness.