

Safety Data Sheet

Product name: Cyclohexane

CAS No.: 110-82-7

Prepared in accordance with GB/T 16483, GB/T 17519

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

>Product identifier

- Product name: Cyclohexane
- CBnumber: CB4193601
- CAS: 110-82-7
- EINECS Number: 203-806-2
- Synonyms: cyclohexane,cyclohexan

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

- Relevant identified uses: For R&D use only. Not for medicinal, household or other use.
- Uses advised against: none

>Company Identification

- Company: Linyi Tuohui New Materials Co., Ltd.
- Address: Room A6159, 6F, Building 1, Linyi Software Park, No.6 Yihe Road, Zhimadun Subdistrict, Yishui New Area, Linyi City, Shandong Province, China
- Telephone: +86 176 6460 5089 (Manager Niu) / +86 130 4664 1786 (Manager Li)
- Email: nathan@tuohui-chem.com
- WhatsApp: +86 176 6460 5089
- Emergency telephone: +86 176 6460 5089

SECTION 2: Hazards identification

>GHS Label elements, including precautionary statements

- Symbol(GHS) 
- Signal word Danger

Precautionary statements

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P264 Wash hands thoroughly after handling.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P273 Avoid release to the environment.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P303+P361+P353 IF ON SKIN (or hair): Remove/Take off Immediately all contaminated clothing.
Rinse SKIN with water/shower.
P501 Dispose of contents/container to.....
P405 Store locked up.
P403+P235 Store in a well-ventilated place. Keep cool.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P391 Collect spillage. Hazardous to the aquatic environment
P370+P378 In case of fire: Use ... for extinction.
P331 Do NOT induce vomiting.
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P240 Ground/bond container and receiving equipment.
P233 Keep container tightly closed.
P210 Keep away from heat/sparks/open flames/hot surfaces. — No smoking.
P202 Do not handle until all safety precautions have been read and understood.
P201 Obtain special instructions before use.

Hazard statements

H412 Harmful to aquatic life with long lasting effects
H410 Very toxic to aquatic life with long lasting effects
H400 Very toxic to aquatic life
H371 May cause damage to organs
H361 Suspected of damaging fertility or the unborn child
H336 May cause drowsiness or dizziness
H335 May cause respiratory irritation
H319 Causes serious eye irritation
H315 Causes skin irritation
H313 May be harmful in contact with skin
H304 May be fatal if swallowed and enters airways
H225 Highly Flammable liquid and vapour

SECTION 3: Composition/information on ingredients

>Substance

- Product name: Cyclohexane
- Synonyms: cyclohexane, cyclohexan
- CAS: 110-82-7
- EC number: 203-806-2
- MF: C₆H₁₂
- MW: 84.16

SECTION 4: First aid measures

>Description of first aid measures

General advice

Show this material safety data sheet to the doctor in attendance.

If inhaled

After inhalation: fresh air. Call in physician.

In case of skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/shower.

In case of eye contact

After eye contact: rinse out with plenty of water. Remove contact lenses.

If swallowed

After swallowing: caution if victim vomits. Risk of aspiration! Keep airways free. Pulmonary failure possible after aspiration of vomit. Call a physician immediately.

>Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

>Indication of any immediate medical attention and special treatment needed

No data available

SECTION 5: Firefighting measures

>Extinguishing media

Suitable extinguishing media

Foam Carbon dioxide (CO₂) Dry powder

Unsuitable extinguishing media

For this substance/mixture no limitations of extinguishing agents are given.

>Special hazards arising from the substance or mixture

Carbon oxides Combustible.

Pay attention to flashback.

Vapors are heavier than air and may spread along floors.

Development of hazardous combustion gases or vapours possible in the event of fire. Forms explosive mixtures with air at ambient temperatures.

>Advice for firefighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

>Further information

Remove container from danger zone and cool with water. Prevent fire extinguishing water from contaminating surface water or the ground water system.

>NFPA 704

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SECTION 6: Accidental release measures

>Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition.

Evacuate the danger area, observe emergency procedures, consult an expert. For personal protection see section 8.

>Environmental precautions

Do not let product enter drains. Risk of explosion.

>Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material (e.g.

Chemizorb). Dispose of properly. Clean up affected area.

>Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

>Precautions for safe handling

> Advice on safe handling

Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.

> Advice on protection against fire and explosion

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

> Hygiene measures

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

For precautions see section 2.2.

>Conditions for safe storage, including any incompatibilities

> Storage conditions

Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition.

Store under inert gas.

>Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

>control parameter

Hazard composition and occupational exposure limits

Does not contain substances with occupational exposure limits.

>Exposure controls

Personal protective equipment

Eye/face protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

Skin protection

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Full contact

Material: Nitrile rubber

Minimum layer thickness: 0,4 mm Break through time: 480 min

Material tested: Camatril (KCL 730 / Aldrich Z677442, Size M)

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Splash contact Material: Nitrile rubber

Minimum layer thickness: 0,11 mm Break through time: 30 min

Material tested: KCL 741 Dermatril L

Body Protection

Flame retardant antistatic protective clothing.

Respiratory protection

Recommended Filter type: Filter A (acc. to DIN 3181) for vapours of organic compounds

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer.

These measures have to be properly documented.

Control of environmental exposure

Do not let product enter drains. Risk of explosion.

Exposure limits

TLV-TWA 300 ppm (~ 1050 mg/m³) (ACGIH, OSHA, and NIOSH); IDLH 10,000 ppm (NIOSH).

SECTION 9: Physical and chemical properties

>Information on basic physicochemical properties

- Appearancecolorless liquid
- Odoursweet
- Odour Threshold0,5 ppm
- pHNo data available
- Melting point/freezing pointMelting point/range: 4 - 7 °C - lit.
- Initial boiling point and boiling range 80,7 °C - lit.
- Flash point-20 °C - closed cup
- Evaporation rateNo data available
- Flammability (solid, gas)No data available
- Upper/lower flammability or explosive limits Upper explosion limit: 8,3 %(V) Lower explosion limit: 1,2 %(V)
- Vapour pressure 124 hPa at 24 °C
- Vapour density 2.9 (vs air)
- Relative density0,779 g/cm³ at 25 °C - lit. No data available
- Water solubility52 g/l at 23,5 °C - partly soluble
- Partition coefficient: n-octanol/waterlog Pow: 3,44 at 25 °C - Bioaccumulation is not expected.
- Autoignition temperature260,0 °C
- Decomposition temperature No data available
- ViscosityViscosity, kinematic: No data available Viscosity, dynamic: 0,89 mPa.s at 25 °C
- Explosive propertiesNo data available
- Oxidizing propertiesNo data available
- Henry's Law Constant1.03, 1.26, 1.40, 1.77, and 2.23 at 10, 15, 20, 25, and 30 °C, respectively (EPICS, Ashworth et al., 1988) 0.54, 0.69, 0.82, 1.43, and 1.79 at 2.0, 6.0, 10.0, 18.0, and 25.0 °C, respectively (Dewulf et al.,1999)
- λ_{max} : 210 nm A_{max} : ≤ 1.00
 - λ : 220 nm A_{max} : ≤ 0.50
 - λ : 230 nm A_{max} : ≤ 0.20
 - λ : 235 nm A_{max} : ≤ 0.10
 - λ : 240 nm A_{max} : ≤ 0.08
 - λ : 250 nm A_{max} : ≤ 0.03
 - λ : 255 nm A_{max} : ≤ 0.01

>Other safety information

No data available

SECTION 10: Stability and reactivity

>Reactivity

Vapors may form explosive mixture with air.

>Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

>Possibility of hazardous reactions

Risk of explosion with:

nitrogen dioxide

Risk of ignition or formation of inflammable gases or vapours with: Strong oxidizing agents

>Conditions to avoid

Warming.

>Incompatible materials

rubber, various plastics

>Hazardous decomposition products

In the event of fire: see section 5

SECTION 11: Toxicological information

>Information on toxicological effects

Acute toxicity

LD50 Oral - Rat - male and female - > 5.000 mg/kg (OECD Test Guideline 401)

Symptoms: gastric pain, Stomach/intestinal disorders LC50 Inhalation - Rat - male and female - 4 h - 19,07 mg/l (OECD Test Guideline 403)

Symptoms: Possible damages:, Irritation symptoms in the respiratory tract., Inhalation may lead to the formation of oedemas in the respiratory tract.

LD50 Dermal - Rabbit - male and female - > 2.000 mg/kg (OECD Test Guideline 402)

Skin corrosion/irritation

Causes skin irritation. Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Serious eye damage/eye irritation

No data available

Respiratory or skin sensitization

Buehler Test - Guinea pig Result: negative
(Regulation (EC) No. 440/2008, Annex, B.6)

Germ cell mutagenicity

Test Type: Ames test

Test system: Salmonella typhimurium

Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 471

Result: negative

Test Type: In vitro mammalian cell gene mutation test Test system: Mouse lymphoma test

Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 476

Result: negative

Test Type: Chromosome aberration test Species: Rat

Cell type: Bone marrow

Application Route: inhalation (vapor) Method: OECD Test Guideline 475 Result: negative

Carcinogenicity**Reproductive toxicity****Specific target organ toxicity - single exposure**

May cause drowsiness or dizziness.

Specific target organ toxicity - repeated exposure**Aspiration hazard**

May be fatal if swallowed and enters airways.

Aspiration hazard, Aspiration may cause pulmonary edema and pneumonitis.

Toxicity

LC in mice: ~60-70 mg/l air (Lazarew)

SECTION 12: Ecological information

>Toxicity

Toxicity to fish

flow-through test LC50 - Pimephales promelas (fathead minnow) - 4,53 mg/l - 96 h

(OECD Test Guideline 203)

Toxicity to daphnia and other aquatic invertebrates

static test EC50 - Daphnia magna (Water flea) - 0,9 mg/l - 48 h (OECD Test Guideline 202)

Toxicity to algae

ErC50 - Pseudokirchneriella subcapitata (green algae) - > 4,425 mg/l

- 72 h

(OECD Test Guideline 201)

Toxicity to bacteria

IC50 - Bacteria - 29 mg/l - 15 h

Remarks: (ECHA)

>Persistence and degradability

Biodegradability aerobic - Exposure time 28 d

Result: 77 % - Readily biodegradable. (OECD Test Guideline 301F)

>Bioaccumulative potential

No data available

>Mobility in soil

>Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

>Toxics Screening Level

The current ITSL for Cyclohexane is 6000 µg/m³, with 24 hr averaging time (AT).

>Other adverse effects

Biological effects:

Endangers drinking-water supplies if allowed to enter soil and/or waters in large quantities.

Change in the flavour characteristics of fish protein. Discharge into the environment must be avoided.

SECTION 13: Disposal considerations

>Waste treatment methods

> Product

See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

Incompatibilities

May form explosive mixture with air. Contact with oxidizers, nitrogen dioxide, and oxygen can cause fire and explosion hazard. Can explode in heat when mixed with dinitrogen tetroxide liquid.

Waste Disposal

Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. All federal, state, and local environmental regulations must be observed.

SECTION 14: Transport information

>UN number

ADR/RID: 1145 IMDG: 1145

SECTION 15: Regulatory information

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

Regulations on the Safety Management of Hazardous Chemicals

China Catalog of Hazardous chemicals 2015:Listed. website: <https://www.mem.gov.cn/>

Measures for Environmental Management of New Chemical Substances

New Zealand Inventory of Chemicals (NZIoC):Listed. website: <https://www.epa.govt.nz/>

Korea Existing Chemicals List (KECL):Listed. website: <http://ncis.nier.go.kr>

Vietnam National Chemical Inventory:Listed. website: <https://chemicaldata.gov.vn/>

European Inventory of Existing Commercial Chemical Substances (EINECS):Listed. website: <https://echa.europa.eu/>

United States Toxic Substances Control Act (TSCA) Inventory:Listed. website: <https://www.epa.gov/>

Philippines Inventory of Chemicals and Chemical Substances (PICCS):Listed. website: <https://emb.gov.ph/>

EC Inventory:Listed.

Chinese Chemical Inventory of Existing Chemical Substances (China IECSC):Listed. website: <https://www.mee.gov.cn/>

SECTION 16: Other information

>Abbreviations and acronyms

- CAS: Chemical Abstracts Service
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
- RID: Regulation concerning the International Carriage of Dangerous Goods by Rail
- IMDG: International Maritime Dangerous Goods

- IATA: International Air Transportation Association
- TWA: Time Weighted Average
- STEL: Short term exposure limit
- LC50: Lethal Concentration 50%
- LD50: Lethal Dose 50%
- EC50: Effective Concentration 50%

>References

- 【1】 CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>
- 【2】 ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>
- 【3】 ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>
- 【4】 eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
- 【5】 ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: <http://www.phmsa.dot.gov/hazmat/library/erg>
- 【6】 Germany GESTIS-database on hazard substance, website: <http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>
- 【7】 HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>
- 【8】 IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>
- 【9】 IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>
- 【10】 Sigma-Aldrich, website: <https://www.sigmaaldrich.com/>

>Other Information

The odour warning when the exposure limit value is exceeded is insufficient.