

Safety Data Sheet

Product name: Cyclohexanone

CAS No.: 108-94-1

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: Cyclohexanone
- CBnumber: CB8347660
- CAS: 108-94-1
- EINECS Number: 203-631-1
- Synonyms: cyclohexanone, Hexanone

>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.
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SECTION 2: Hazards identification

>GHS Label elements, including precautionary statements

- Symbol(GHS) 
- Signal word Danger

Precautionary statements

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P210 Keep away from heat/sparks/open flames/hot surfaces. — No smoking.

P233 Keep container tightly closed.

P240 Ground/bond container and receiving equipment.

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

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.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P303+P361+P353 IF ON SKIN (or hair): Remove/Take off Immediately all contaminated clothing.

Rinse SKIN with water/shower.

P304+P340 IF INHALED: Remove victim to fresh air and Keep at rest in a position comfortable for breathing.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P307+P311 IF exposed: call a POISON CENTER or doctor/physician.

P370+P378 In case of fire: Use ... for extinction.

P403+P233 Store in a well-ventilated place. Keep container tightly closed.

P405 Store locked up.

Hazard statements

H226 Flammable liquid and vapour

H302 Harmful if swallowed

H315 Causes skin irritation

H318 Causes serious eye damage

H319 Causes serious eye irritation

H332 Harmful if inhaled

H335 May cause respiratory irritation

H336 May cause drowsiness or dizziness

H341 Suspected of causing genetic defects

H351 Suspected of causing cancer

H361 Suspected of damaging fertility or the unborn child

H370 Causes damage to organs

H371 May cause damage to organs

H372 Causes damage to organs through prolonged or repeated exposure

SECTION 3: Composition/information on ingredients

>Substance

- Product name: Cyclohexanone
- Synonyms: cyclohexanone, Hexanone
- CAS: 108-94-1
- EC number: 203-631-1
- MF: C₆H₁₀O
- MW: 98.14

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. If breathing stops: mouth-to-mouth breathing or artificial respiration. Oxygen if necessary. Immediately call in physician.

In case of skin contact

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

In case of eye contact

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses.

If swallowed

After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

>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

Carbon dioxide (CO₂) Foam 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.

Vapors are heavier than air and may spread along floors. Forms explosive mixtures with air at elevated temperatures.

Development of hazardous combustion gases or vapours possible in the event of fire.

>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 with liquid-absorbent material (e.g. Chemisorb). 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

Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols. Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

For precautions see section 2.2.

>Conditions for safe storage, including any incompatibilities

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

>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

Appropriate engineering controls

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

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). Tightly fitting safety goggles

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: butyl-rubber

Minimum layer thickness: 0,7 mm Break through time: 480 min Material tested:Butoject (KCL 898)

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: Viton

Minimum layer thickness: 0,7 mm Break through time: 120 min

Material tested:Vitoject (KCL 890 / Aldrich Z677698, Size M)

Body Protection

Flame retardant antistatic protective clothing.

Respiratory protection

required when vapours/aerosols are generated. Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Control of environmental exposure

Do not let product enter drains. Risk of explosion.

Exposure limits

TLV-TWA 100 mg/m³ (25 ppm) (ACGIH); IDLH 5000 ppm (NIOSH).

SECTION 9: Physical and chemical properties

>Information on basic physicochemical properties

- Appearancecolorless, to, light yellow liquid
- Odourstinging
- Odour Threshold0,12 ppm
- pHca.7 at 70 g/l at 20 °C
- Melting point/freezing pointMelting point/range: -47 °C - lit.
- Initial boiling point and boiling range155 °C - lit.

- Flash point 44 °C - closed cup
- Evaporation rate No data available
- Flammability (solid, gas) No data available
- Upper/lower flammability or explosive limits Upper explosion limit: 9,4 %(V) Lower explosion limit: 1,1 %(V)
- Vapour pressure ca. 24 hPa at 50 °C ca. 4,5 hPa at 20 °C
- Vapour density 3.4 (vs air)
- Relative density 0,947 g/cm³ at 25 °C
- Water solubility ca. 90 g/l at 20 °C
- Partition coefficient: n-octanol/water log Pow: 0,86 at 25 °C - Bioaccumulation is not expected.
- Autoignition temperature No data available
- Decomposition temperature No data available
- Viscosity No data available
- Explosive properties No data available
- Oxidizing properties No data available
- Henry's Law Constant $1.2 \times 10^{-5} \text{ atm} \cdot \text{m}^3/\text{mol}$ at 25 °C (Hawthorne et al., 1985) $6.92 \times 10^{-5} \text{ atm} \cdot \text{m}^3/\text{mol}$ at 60.00 °C, 10.7 at 70.00 °C, 16.4 at 80.00 °C (headspace-GC, Hovorka et al., 2002)

>Other safety information

No data available

SECTION 10: Stability and reactivity

>Reactivity

Vapor/air-mixtures are explosive at intense warming.

>Chemical stability

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

>Possibility of hazardous reactions

No data available

>Conditions to avoid

Heating.

>Incompatible materials

>Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides Other decomposition products - No data available

In the event of fire: see section 5

SECTION 11: Toxicological information

>Information on toxicological effects

Acute toxicity

LD50 Oral - Rat - male - 1.620 mg/kg Remarks: (ECHA)

LC50 Inhalation - Rat - male and female - 4 h - > 6,2 mg/l Remarks: (ECHA)

LD50 Dermal - Rabbit - 1.100 mg/kg Remarks: (External MSDS)

Skin corrosion/irritation

Skin - Rabbit

Result: irritating - 4 h (OECD Test Guideline 404)

Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.

Serious eye damage/eye irritation

Eyes - Rabbit

Result: Irreversible effects on the eye Remarks: (ECHA)

Risk of corneal clouding.

Respiratory or skin sensitization Germ cell mutagenicity

Mutagenicity (mammal cell test):

Result: negative Ames test

Escherichia coli/Salmonella typhimurium Result: negative

Carcinogenicity

IARC: No ingredient 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

Specific target organ toxicity - single exposure

Acute oral toxicity - Stomach/intestinal disorders, Risk of aspiration upon vomiting., Aspiration may cause pulmonary edema and pneumonitis.

Acute inhalation toxicity - In high doses:, Irritation symptoms in the respiratory tract.

Specific target organ toxicity - repeated exposure Aspiration hazard

Additional Information

Repeated dose toxicity - Rat - male and female - Oral - 2.160 h - NOAEL (No observed adverse effect level) - 143 mg/kg

RTECS: GW1050000

Prolonged or repeated exposure to skin causes defatting and dermatitis., Cough, Shortness of breath, Headache, Nausea, Vomiting, Incoordination., Inhalation of high concentrations may cause:, Central nervous system depression, To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Systemic effects:

After absorption of large quantities:

Headache, Salivation, Nausea, Vomiting, Dizziness, narcosis, Coma

The following applies to ketones in general: when vapours/aerosols occur, mucosal irritations, coughing, and dyspnoea after inhalation. The absorption of large quantities leads to: CNS depression (narcosis). Repeated skin contact leads to a degreasing effect, with secondary inflammation possible. Toxic effects on the liver and kidneys cannot be excluded after high doses. The inhalation of droplets may result in the formation of oedemas in the respiratory tract.

Other dangerous properties can not be excluded.

Handle in accordance with good industrial hygiene and safety practice.

Toxicity

LD50 orally in rats: 1.62 ml/kg (Smyth)

SECTION 12: Ecological information

>Toxicity

Toxicity to fish

flow-through test LC50 - Pimephales promelas (fathead minnow) - 527 - 732 mg/l - 96 h
(OECD Test Guideline 203)

Toxicity to daphnia and other aquatic invertebrates

static test EC50 - Daphnia magna (Water flea) - 800 mg/l - 24 h (DIN 38412)

EC5 - Protozoa - 573 mg/l - 48 h

Remarks: (maximum permissible toxic concentration)(IUCLID)

Toxicity to algae

IC5 - Scenedesmus quadricauda (Green algae) - 370 mg/l - 8 d Remarks: (IUCLID)

static test EC50 - Chlamydomonas reinhardtii (green algae) - 32,9 mg/l - 72 h

Remarks: (ECHA)

Toxicity to bacteria

EC5 - *Pseudomonas putida* - 180 mg/l - 16 h

Remarks: (maximum permissible toxic concentration)(Lit.)

static test EC50 - activated sludge - > 1.000 mg/l - 30 min (OECD Test Guideline 209)

>Persistence and degradability

Biodegradability aerobic - Exposure time 14 d

Result: 87 % - Readily biodegradable. (MITI test)

aerobic - Exposure time 28 d

Result: 90 - 100 % - Readily biodegradable. (OECD Test Guideline 301F)

Theoretical oxygen demand

2.608 mg/g ((calculated)) Remarks: (Lit.)

>Bioaccumulative potential

>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 initial threshold screening level (ITSL) for cyclohexanone has been changed from 1000 µg/m³ (8-hour averaging time) to 800 µg/m³ (8-hour averaging time).

>Other adverse effects

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 oxidizing agents or nitric acid may cause a violent reaction. Do not use brass, copper, bronze, or lead fittings. Attacks many coatings and plastic materials.

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: 1915 IMDG: 1915

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

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

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

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

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

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

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

EC Inventory:Listed.

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

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/>