

Cyclohexane

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

1.1 Product identifier

Substance name: Cyclohexane
REACH Reg. No.: N/A
CAS No.: 110-82-7
EC No.: 203-806-2

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

Identified uses: Used in the production of cyclohexanol and cyclohexanone, which are used mainly as precursors for adipic acid and caprolactam. Other uses include several solvents applications.
Uses advised against: Not available.

1.3 Details of the supplier of the SDS

Company name (Manufacturer): Tianjin Yuanlong Chemical Industry Co., Ltd
Address: Room 605, Kangning Tower B, Xikang Ave., Heping District, Tianjin, China
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Telephone: +86-22-23528561
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Section 2: Composition/information on ingredients

2.1 Substance information

Substance name	Synonym	CAS No.	EC No.	Molecular formula	Concentration
Cyclohexane	Benzene Hexahydride	110-82-7	203-806-2	C ₆ H ₁₂	99.9%

Remark: The rest unspecified ingredients are impurities, and they are not hazard.

Section 3: Hazards identification

3.1 Emergency overview

Liquid. Highly flammable, its vapor and air mixture can form explosive mixture. May cause serious lung damage if swallowed. Irritating to skin. Vapours may cause drowsiness and dizziness. Very toxic to aquatic organisms, Use appropriate container to avoid environmental contamination.

3.2 Hazard classification according to GHS

According to series standards of GB 30000-2013: Rules for classification and labelling of chemicals. (Please refer to 16th chapter of SDS), hazard classification as following: Flammable Liquids, Category 2; Aspiration Hazard, Category 1; Skin Corrosion/Irritation, Category 2; Specific Target Organ Toxicity-Single Exposure: Criteria for narcotic effects, Category 3; Hazardous To The Aquatic Environment - Short-Term (Acute) Hazard, Category 1.

3.2 Label elements

Hazard pictogram(s):



Signal word: Danger.

Hazard statements: Highly flammable liquid and vapour, May be fatal if swallowed and enters airways, Causes skin irritation, May cause drowsiness or dizziness, Very toxic to aquatic life.

Precautionary statements:

Prevention: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources.

No smoking. Keep container tightly closed. Ground and bond container and receiving equipment. Use non-sparking tools. Take action to prevent static discharges. Avoid breathing dust/fume/gas/mist/vapours/spray. Wash ... thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection

Response: Get medical advice/attention. Do NOT induce vomiting. Collect spillage. IF SWALLOWED: Immediately call a POISON CENTER/doctor. IF INHALED: Remove person to fresh air and keep comfortable for breathing. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

Storage: Store locked up. Store in a well-ventilated place. Keep container tightly closed. Store in a well-ventilated place. Keep cool.

Disposal: Dispose of contents/container in accordance with local/regional/national/ international regulations.

3.3 Hazard description

Physical and chemical hazards: Highly flammable liquids, its vapor and air mixture can form explosive mixture.

Health hazards: Inhalation of vapours may cause drowsiness and dizziness. This may be accompanied by sleepiness, reduced alertness, loss of reflexes, lack of co-ordination, and vertigo. May be fatal if swallowed and enters airways during the course of normal handling. Inhalation of the product may produce adverse health effects or irritation of the respiratory tract following discomfort. Accidental ingestion of the product may be harmful to the health of the individual. The product can cause skin irritation following direct contact with the skin. Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. This product may cause temporary discomfort following direct contact with the eye.

Environmental hazards: This product is very toxic to aquatic life. Please refer to 12th chapter of SDS.

Section 4: First aid measures

4.1 Description of first aid measures

General notes: Immediate medical attention is required. Show this safety data sheet (SDS) to the doctor in attendance.

Following inhalation:

Move victim into fresh air. If breathing is difficult, give oxygen. Do not use mouth to mouth resuscitation if victim ingested or inhaled the substance. If not breathing, give artificial respiration and consult a physician immediately.

Following skin contact:

Take off contaminated clothing and shoes immediately. Wash off with plenty of water for at least 15 minutes and consult a physician if felt uncomfortable.

Following eye contact:

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician if felt uncomfortable.

Following ingestion:

Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a physician or Poison Control Center immediately.

Advice for protecting the rescuer:

Remove all sources of ignition and increase ventilation. Avoid contact with skin and eyes. Avoid inhalation of vapor or mist.

Use personal protective equipment including respirator.

Notes for the doctor:

Treat symptomatically. Symptoms may be delayed.

Section 5: Fire-fighting measures

5.1 Hazard characteristics

Will form explosive mixtures with air. Fire exposed containers may vent contents through pressure relief valves thereby increasing fire intensity and/ or vapour concentration. Vapours may travel to source of ignition and flash back. Liquid and vapour are flammable. Containers may explode when heated. Fire exposed containers may vent contents through pressure relief valves . May expansion or decompose explosively when heated or involved in fire.

5.2 Extinguishing method and media

Suitable extinguishing media: dry chemical, carbon dioxide or alcohol-resistant foam. Unsuitable extinguishing media: Do not use a solid water stream as it may scatter or spread fire.

5.3 Advice for fire-fighters

Do not stay in dangerous zone without self-contained breathing apparatus.
In order to avoid contact with skin, keep a safety distance and wear suitable protective clothing.

Section 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Avoid breathing vapors and contacting with skin and eye. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas. Emergency personnel wear positive pressure self-contained breathing apparatus. Wear protective and anti-static clothing. Wear chemical impermeable gloves. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Use personal protective equipment. Avoid breathing vapours, mist, gas or dust.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Discharge into the environment must be avoided.

6.3 Methods and material for containment and cleaning up

Absorb spilled material in dry sand or inert absorbent. In case of large amount of spillage, contain a spill by bunding. Adhered or collected material should be promptly disposed of, in accordance with appropriate laws and regulations. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

Section 7: Handling and storage

7.1 Precautions for safe handling

Avoid inhalation of vapors. Use only non-sparking tools. To prevent fire caused by electrostatic discharge steam, equipment on all metal parts should be grounded. Use explosion proof equipment. Handling is performed in a well ventilated place. Wear suitable protective equipment. Avoid contact with skin and eyes. Keep away from heat/sparks/open flames/ hot surfaces. Take precautionary measures against static discharges.

7.2 Conditions for safe storage, including any incompatibilities

Keep containers tightly closed . Keep containers in a dry, cool and well-ventilated place. Keep away from heat/sparks/open flames/ hot surfaces. Store away from incompatible materials and foodstuff containers.

7.3 Specific end use(s)

Not available.

Section 8 : Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limit values:

COMPONENT	STANDARD	TYPE	STANDARD VALUE	REMARK
Cyclohexane	GBZ 2.1-2007	PC-TWA	250 mg/m3	-
		PC-STEL	-	

Biological limit values:

No information available.

Monitoring methods:

EN 14042 Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents. GBZ/T 160.1~GBZ/T 160.81-2004 Determination of toxic substances in workplace air (Series standard) .

8.2 Engineering Controls

Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location. Use explosion-proof electrical/ventilating/lighting/equipment. Set up emergency exit and necessary risk-elimination area.

Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Personal protective equipment:

Eye and face protection: Tightly fitting safety goggles (approved by EN 166(EU) or NIOSH (US)).

Skin protection: Wear fire/flame resistant/retardant clothing and antistatic boots.

Respiratory protection: If exposure limits are exceeded or if irritation or other symptoms are experienced, use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges.

Hand protection: Wear protective gloves (such as butyl rubber), passing the tests according to EN 374(EU), US F739 or AS/NZS 2161.1 standard.

Other protection:

Smoking, eating and drinking water is forbidden in the workplace. After work, shower and change clothes.

To maintain good health habits.

Section 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance:	colorless transparent liquid
pH (Specified the concentration) : No information available	Odor: No information available
Initial boiling point and boiling range(°C): 81	Melting point/freezing point(°C): 7
Vapor density(Air=1): 2.9	Density: No information available
Saturated vapor pressure (kPa): 10.3	Relative density(Water=1): 0.8
Evaporation rate: No information available	Viscosity(mm ² /s): No information available
Flash point(°C): -18	N-octanol/water partition coefficient: 3.4
Decomposition temperature(°C): No information available	Auto-ignition temperature(°C): 260
Upper/lower explosive limits[% (v/v)]: Upper limit: 8.4; Lower limit: 1.3	
Solubility: Insoluble in water	Flammability: Not applicable

9.2 Other information

No data available.

Section 10: Stability and reactivity

10.1 Stability

Stable under proper operation and storage conditions.

10.2 Incompatible materials

Oxidantss and halogen.

10.3 Conditions to avoid

Incompatible materials, heat, flame and spark.

10.4 Hazard reactions

In contact with an open flame may cause a fire or explosion.

10.5 Decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11: Toxicological information

11.1 Acute toxicity

COMPONENT	CAS NO.	LD50(ORAL)	LD50(DERMAL)	LC50(INHALATION)-4 H
Cyclohexane	110-82-7	12705mg/kg(Rat)	No information available	No information available

11.2 Carcinogenicity

ID	CAS NO.	COMPONENT	IARC	NTP
1	110-82-7	Cyclohexane	Not Listed	Not Listed

11.3 Skin irritation/corrosion

Causes skin irritation(Category 2)

11.4 Eye irritation/corrosion

No information available

11.5 Skin sensitization

No information available

11.6 Respiratory sensitization

No information available

11.7 Germ cell mutagenicity

No information available

11.9 Reproductive toxicity

No information available

11.10 STOT-single exposure

May cause drowsiness or dizziness(Category 3)

11.12 STOT-repeated exposure

No information available

11.13 Aspiration hazard

May be fatal if swallowed and enters airways(Category 1)

Section 12: Ecological information

12.1 Acute Aquatic Toxicity

COMPONENT	CAS NO.	FISH	CRUSTACEANS
Cyclohexane	110-82-7	LC50: 42.3mg/L (96h)(Fish)	No information available

12.2 Chronic aquatic toxicity

No data available.

12.3 Persistence and degradability

No data available.

12.4 Bioaccumulative potential

No data available.

12.5 Mobility in soil

No data available.

12.6 Other adverse effects

No data available.

Section 13: Disposal considerations

13.1 Disposal methods

Product: If medical advice is needed, have product container or label at hand.

Contaminated packaging: Containers may still present chemical hazard when empty. Keep away from hot and ignition source of fire. Return to supplier for recycling if possible.

13.1 Disposal considerations

Refer to section 13.1 and 13.2.

Section 14: Transport information

14.1 Land transport (ADR/RID/GGVSE)

UN-No.:	1145
Official transport designation:	CYCLOHEXANE
Class:	3
Packing group:	II
Hazard label:	



YES

Marine pollutant(YES/NO):



14.2 Sea transport (IMDG-Code/GGVSee)

UN-No.: 1145
Official transport designation: CYCLOHEXANE
Class: 3
Packing group: II
Hazard label:



YES

Marine pollutant(YES/NO):



14.3 Methods of packing

Metal drum, removable head. Ampoule outside the ordinary wooden box. Threaded glass, metal cover pressure bottles, plastic bottles or metal (cans) outside the ordinary wooden box etc. Packaging as recommended by manufacturer.

14.4 Precautions for transport

Shipment of the goods vehicle exhaust pipe must be equipped with fire retardant devices, prohibit using mechanical equipment and toolsof which easy to produce sparks . Transit should be anti-exposure, anti-rain, anti-high temperature. Transportation used tank (tank) cars should be grounded chain, tank can be installed to reduce the partition hole static electricity shocks. Strictly prohibited shipping or transportation withoxidants, acids, food and food additives etc. When bulk transport,Prohibit the use of cement or wooden boats.

Transport vehicles should be equipped with the appropriate variety and quantity of fire equipment and emergency equipment leakage during transport. Before transport, should be preceded by checking whether container integrity, sealing. The transport unit must be placarded and marked in accordance with relevant transporting requirements.

Section 15: Regulatory information

15.1 Regulatory information

COMPONENT	A	B	C	D	E	F	G	H
Cyclohexane	Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed

【A】 Catalog of Hazardous Chemicals(2015 Edition), Notice 5th 2015, China State Administration of Work Safety.

【B】 Catalog of Priority Hazardous Chemicals for Environment Management, Notice 33th 2014, Ministry of Environmental Protection of PRC.

【C】 List of Toxic Chemicals Restricted to be Imported/Exported in China, Notice 85th 2013, Ministry of Environmental Protection of PRC.

【D】 Catalog of Stupeficient and Psychotropic Substances(2013Edition), Notice 230th 2013, China Food and Drug Administration.

【E】 Catalog of Hazardous Chemicals for Priority Management (First and Second batches) , Notice 95th, 2011, Notice 12th 2013, China State Administration of Work Safety.

【F】 List of Ozone Depletion Chemicals Controlled to be Imported/Exported in China (First to Sixth batches) , Notice from 2000 to 2012 Ministry of Environmental Protection of PRC.

【G】 Dangerous Chemicals Directory Used to Manufacture Exploder(2011 Edition), Notice 25th Nov. 2011, Ministry of Public Security of PRC1.

【H】 Catalog of Highly Toxic Chemicals, Notice 142th 2003, China Ministry of Health.

Section 16: Other information

16.1 Revision Information:

Date of the previous revision: Not applicable.

Date of this revision: 1/1/2023

Revision summary: The first new SDS

16.2 Abbreviations and acronyms

CAS –Chemical Abstracts Service

PC-STEL- Short term exposure limit

DNEL - Derived No Effect Level

RPE - Respiratory Protective Equipment

LC50 - Lethal Concentration 50%

NOEC -No Observed Effect Concentration

PBT - Persistent, Bioaccumulative, Toxic

BCF - Bioconcentration factor (BCF)

CMR -Carcinogens, mutagens or substances toxic to reproduction

PC-TWA - Time Weighted Average

IARC - International Agency for Research on Cancer

PNEC –Predicted No Effect Concentration

LD50 - Lethal Dose 50%

EC50 - Effective Concentration 50%

POW - Partition coefficient Octanol:Water

vPvB - very Persistent, very Bioaccumulative

IMDG-International Maritime Dangerous Goods

ICAO/IATA-International Civil Aviation Organization/International Air
Transportation Association

UN-The United Nations

ACGIH-American Conference of Governmental Industrial Hygienists

NFPA-National Fire Protection Association

OECD-Organization for Economic Co-operation and Development