Report No.: MCHQD2602152-01L

Nomination No.: MND261263QD_UN(En)2/2

Safety Data Sheet（SDS）

Product Name：Cyclopentane

Warranty of Design：GLOBALLY HARMONIZED SYSTEM OF CLASSIFICATION AND LABELLING OF CHEMICALS (GHS) Eleventh revised edition

Application Company Name：Hainan Tongnenghua Energy Co., Ltd.

Application Company Address：Building 2, Plot B18, R&F Capital Project, No. 21 Guoxing Avenue, Meilan District, Haikou City, Hainan Province

Contact Information：19929642444

24 Hour Emergency Call：**19929642444**

Inspection Date：2026/07/23

In accordance with instructions received from applicant, we compiled and inspected the SDS commissioned by the applicant. The analysis results reported as refer to the next page(s)：

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SGS-CSTC Standards Technical Services(Qingdao) Co.,Ltd

Authorised Signatory

2026-07-23

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Safety Data Sheet

Cyclopentane

Version：V2.0.0.1
Report No.：MCHQD2602152-01L
Nomination No.：MND261263QD_UN(En)2/2
Creation Date：2026/07/23
Revision Date：-

***Prepared according to UN GHS (the 11th revised edition)**

Part 1: Identification

Product identifier

Product Name	Cyclopentane
Product Model	≥ 99.0%
CAS No.	287-92-3
EC No.	206-016-6
Molecular Formula	C_5H_{10}

Recommended use of the product and restrictions on use

Relevant identified uses	Blowing agent for polyurethane foam; chemical intermediate; industrial solvent.
Uses advised against	Not for food, pharmaceutical or household use.

Details of the supplier

Name of the company	Hainan Tongnenghua Energy Co., Ltd.
Address of the company	Building 2, Plot B18, R&F Capital Project, No. 21 Guoxing Avenue, Meilan District, Haikou City, Hainan Province
Post code	——
Telephone number	19929642444
Fax number	——
E-mail address	602997936@qq.com

Emergency phone number

Emergency phone number	19929642444

Part 2: Hazard(s) identification

Hazard classification according to GHS

Flammable Liquids	Category 2
Hazardous To The Aquatic Environment - Long-Term (Chronic) Hazard	Category 3

GHS Label elements

Hazard pictograms	
Signal word	**Danger**

Hazard statements

H225	Highly flammable liquid and vapour
H412	Harmful to aquatic life with long lasting effects

Precautionary statements

◆Prevention

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233	Keep container tightly closed.
P240	Ground and bond container and receiving equipment.
P241	Use explosion-proof [electrical/ventilating/lighting] equipment.
P242	Use non-sparking tools.
P243	Take action to prevent static discharges.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.

◆Response

P370+P378	Small fire: dry chemical, CO_2 or alcohol-resistant foam; Large fire: alcohol-resistant foam; Fire involving tanks, rail tank cars or highway tanks: Fight fire from maximum distance or use unmanned master stream devices or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse affected areas with water [or shower].

◆Storage

P403+P235	Store in a well-ventilated place. Keep cool.

◆Disposal

P501	Dispose of contents/container in accordance with local/regional/national/ international regulations.

Hazard description

◆Physical and chemical hazards

	Highly flammable liquids, its vapor and air mixture can form explosive mixture.

◆Health hazards

Inhaled	Dizziness. Headache. Nausea. Unconsciousness. Weakness.
Ingestion	Abdominal pain. Diarrhoea. Dizziness. Nausea. Sore throat.
Skin Contact	Redness.
Eye	Redness.

◆Environmental hazards

	This product is harmful to aquatic life with long lasting effects. Please refer to 12th chapter of SDS.

Part 3: Composition/information on ingredients

Substance/mixture

	Substance

Component	CAS No.	EC No.	Weight %content(or range)
Cyclopentane	287-92-3	206-016-6	≥ 99
2,2-dimethylbutane	75-83-2	200-906-8	0.6
n-pentane	109-66-0	203-692-4	0.2
isopentane	78-78-4	201-142-8	0.2

Part 4: First-aid measures

Description of first aid measures

General advice	Immediate medical attention is required. Show this safety data sheet (SDS) to the doctor in attendance.
Eye contact	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
Skin contact	Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer for medical attention.
Ingestion	Rinse mouth. Give a slurry of activated charcoal in water to drink. Do NOT induce vomiting. Refer for medical attention.
Inhalation	Fresh air, rest. Refer for medical attention.
Protecting of first-aiders	Ensure that medical personnel are aware of the substance involved. Take precautions to protect themselves and prevent spread of contamination.

Most important symptoms/effects, acute and delayed

1	Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.

Indication of any immediate medical attention and special treatment needed

1	Treat symptomatically.
2	Symptoms may be delayed.

Part 5: Fire-fighting measures

Extinguishing media

Suitable extinguishing media	Small fire: dry chemical, CO_2 or alcohol-resistant foam; Large fire: alcohol-resistant foam; Fire involving tanks, rail tank cars or highway tanks: Fight fire from maximum distance or use unmanned master stream devices or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out.
Unsuitable extinguishing media	Use of water spray when fighting fire may be inefficient.

Specific hazards arising from the substance or mixture

1	Development of hazardous combustion gases or vapor possible in the event of fire.
2	May expansion or decompose explosively when heated or involved in fire.
3	Will form explosive mixtures with air.
4	Fire exposed containers may vent contents through pressure relief valves thereby increasing fire intensity and/ or vapour concentration.
5	Vapours may travel to source of ignition and flash back.
6	Liquid and vapour are flammable.

Special protective equipment and precautions for fire-fighters

1	As in any fire, wear self-contained breathing apparatus (MSHA/NIOSH approved or equivalent) and full protective gear.
2	Fight fire from a safe distance, with adequate cover.
3	Prevent firefighting wastewater from contaminating surface water or the ground water system.

Part 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

1	Ensure adequate ventilation. Remove all sources of ignition. Take precautionary measures against static discharges.
2	Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.
3	Use personal protective equipment,do not breathe gas/mist/vapour/spray.
4	Avoid breathing vapours and contacting with skin and eye.
5	Beware of vapours accumulating to form explosive concentrations.
6	Vapours can accumulate in low areas.
7	Emergency personnel wear positive pressure self-contained breathing apparatus. Wear protective and anti-static clothing. Wear chemical impermeable gloves.

Environmental precautions

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

Methods and materials for containment and cleaning up

1	It is recommended that emergency personnel wear positive pressure self-contained breathing apparatus and wear anti-static clothing.
2	In case of small amount of spillage, use clean non sparking tools to collect absorption materials.
3	In case of large amount of spillage, construct cofferdam or dig a hole to collect the spillage. Use foam cover to reduce evaporation. Water spray mist can reduce evaporation, but can not reduce the flammability of the leakage in the restricted space.
4	Collect absorbent material using a clean, non-sparking tool.
5	Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.
6	Water spray reduces evaporation but does not reduce the flammability of spills in confined spaces.
7	Cover with anti-solvent foam to reduce evaporation.
8	Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

Part 7: Handling and storage

Precautions for safe handling

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

Conditions for safe storage, including any incompatibilities

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

Part 8: Exposure controls/personal protection

Control parameters

◆Occupational exposure limit values (International)

Component	Country/Region	Limit value - Eight hours		Limit value - Short term	
		ppm	mg/m³	ppm	mg/m³
Cyclopentane	Australia	600	1720	-	-
	Canada - Ontario	600	-	-	-
	Canada - Québec	600	1720	-	-
	France	600	1720	-	-
	New Zealand	600	1720	-	-
	South Korea	600	-	-	-
2,2-dimethylbutane	Australia	500	1760	1000	3500
	Canada - Ontario	500	-	1000	-
	Canada - Québec	500	1760	1000	3500
	France	500	1800	-	-
	Germany (AGS)	500	1800	1000	3600
	Germany (DFG)	500	1800	1000	3600
n-pentane	Australia	600	1770	750	2210
	Canada - Ontario	600	1770	-	-
	Canada - Québec	1000	-	-	-
	European Union	1000	3000	-	-
	France	1000	3000	-	-
	Germany (AGS)	1000	3000	2000	6000
isopentane	Canada - Ontario	600	1770	-	-
	Canada - Québec	1000	-	-	-
	European Union	1000	3000	-	-
	France	1000	3000	-	-
	Germany (AGS)	1000	3000	2000	6000
	Germany (DFG)	1000	3000	2000	6000

◆Occupational Exposure limit values (China)

Component	Standard	OELs	Standard value mg/m³	Critical adverse health effects	Remark

n-pentane	GBZ 2.1-2019	PC-TWA	500	peripheral neuropathy	-
		PC-STEL	1000		
		MAC	-		
isopentane	GBZ 2.1-2019	PC-TWA	500	peripheral neuropathy	-
		PC-STEL	1000		
		MAC	-		

◆Biological limit values

Biological limit values	No relevant regulations

◆Monitoring methods

1	EN 14042 Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents.
2	GBZ/T 300 and GBZ/T 160 series standard Determination of toxic substances in workplace air.

Engineering controls

1	Ensure adequate ventilation, especially in confined areas.
2	Ensure that eyewash stations and safety showers are close to the workstation location.
3	Set up emergency exit and necessary risk-elimination area.
4	Handle in accordance with good industrial hygiene and safety practice.
5	Use explosion-proof electrical/ventilating/lighting/equipment.

Personal protection equipment

General requirement	
Eye protection	Must wear appropriate safety goggles.
Hand protection	Must wear anti static chemical protective gloves.
Respiratory protection	Must wear appropriate personal respiratory protective equipment.
Skin and body protection	Must wear anti static chemical protective clothing and anti static shoes.

Part 9: Physical and chemical properties

Physical and chemical properties

Physical state	Liquid
Colour	Colorless transparent
Odour	Characteristic hydrocarbon odor
Odour threshold	No information available
pH	No information available
Melting point/freezing point(℃)	-94
Boiling point/freezing point(℃)	49~50
Flash point(Closed cup,℃)	-37
Evaporation rate	Approximately 4.5 (n-Butyl acetate = 1)
Flammability	Highly flammable
Lower and upper explosion	Upper limit: 8.7; Lower limit: 1.1

limit/flammability limit [%(v/v)]	
Vapour pressure(kPa)	45kPa(20℃)
Relative vapour density(Air = 1)	2.4
Relative density(Water=1)	0.74-0.75(20℃)
Solubility(mg/L)	Insoluble in water; soluble in organic solvents.
Partition coefficient n-octanol/water (log value)	3.0
Auto-ignition temperature(℃)	361
Decomposition temperature(℃)	No information available
Kinematic viscosity(mPa·s)	0.42
Particle characteristics	Not applicable

Part 10: Stability and reactivity

Stability and reactivity

Reactivity	Contact with incompatible substances can cause decomposition or other chemical reactions.
Chemical stability	Stable under proper operation and storage conditions.
Possibility of hazardous reactions	In contact with an open flame may cause a fire or explosion.
Conditions to avoid	Incompatible materials, heat, flame and spark.
Incompatible materials	Oxidantss and halogen.
Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Part 11: Toxicological information

Acute toxicity

Component	LD_{50}(oral)	LD_{50}(dermal)	LC_{50}(inhalation,4h)
n-pentane	400mg/kg(Rat)	No information available	364mg/L(Rat)
Cyclopentane	11400mg/kg(Rat)	No information available	No information available

Carcinogenicity

Component	List of carcinogens by the IARC Monographs	Report on Carcinogens by NTP
Cyclopentane	Not Listed	Not Listed
2,2-dimethylbutane	Not Listed	Not Listed
n-pentane	Not Listed	Not Listed
isopentane	Not Listed	Not Listed

Others

Cyclopentane(Component)	
Skin corrosion/irritation	Based on available data, the classification criteria are not met
Serious eye damage/irritation	Based on available data, the classification criteria are not met
Skin sensitization	Based on available data, the classification criteria are not met

Respiratory sensitization	Based on available data, the classification criteria are not met
Reproductive toxicity	Based on available data, the classification criteria are not met
STOT-single exposure	Based on available data, the classification criteria are not met
STOT-repeated exposure	Based on available data, the classification criteria are not met
Aspiration hazard	Based on available data, the classification criteria are not met
Germ cell mutagenicity	Based on available data, the classification criteria are not met

Part 12: Ecological information

Acute aquatic toxicity

Component	Fish	Crustaceans	Algae or other aquatic plants
isopentane	LC_{50}: 4.26mg/L (96h)(Fish)	No information available	No information available

Chronic aquatic toxicity

Chronic aquatic toxicity	No information available

Persistence and degradability

Component	Persistence (water/soil)	Persistence (air)
2,2-dimethylbutane	Low	Low
isopentane	High	High

Bioaccumulative potential

Component	Bioaccumulative potential	Comments
2,2-dimethylbutane	Medium	Log Kow=3.82
isopentane	Low	Log Kow=2.7234

Mobility in soil

Component	log Koc	Remark
Cyclopentane	≥2.10109 - ≤2.7005	20 ℃, pH=7.0
2,2-dimethylbutane	3.31492	
n-pentane	≥1.71 - ≤2.368	20 ℃, pH=7.0
isopentane	≥0.18752 - ≤2.3684	

Results of PBT and vPvB assessment

Component	Results of PBT and vPvB assessment [according to (EC) No 1907/2006 with amendment 2020/878]
Cyclopentane	Not PBT/vPvB
2,2-dimethylbutane	Not PBT/vPvB
n-pentane	No information available
isopentane	Not PBT/vPvB

Part 13: Disposal considerations

Disposal considerations

Waste chemicals	Before disposal should refer to the relevant national and local laws and regulation. Recommend the use of incineration disposal.
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.
Disposal recommendations	Refer to section waste chemicals and contaminated packaging.

Part 14: Transport information

Label

Transporting Label	

IMDG-CODE

UN number	1146
UN proper shipping name	CYCLOPENTANE
Transport hazard class	3
Transport subsidiary hazard class	None
Packing group	Ⅱ
Marine pollutant (Yes or no)	No
EmS No.	F-E，S-D

IATA-DGR

UN number	1146
UN proper shipping name	CYCLOPENTANE
Transport hazard class	3
Transport subsidiary hazard class	None
Packing group	Ⅱ

UN-ADR

UN number	1146
UN proper shipping name	CYCLOPENTANE
Transport hazard class	3
Transport subsidiary hazard class	None
Packing group	Ⅱ

Special precautions for user

	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. 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. When bulk transport, Prohibit the use of cement or wooden boats. Shipment of the goods vehicle exhaust pipe must be equipped with fire retardant devices, prohibit using mechanical equipment and tools of which easy to produce sparks. Strictly prohibited shipping or transportation with oxidants, acids, food and food additives etc.

Transport in bulk according to IMO instruments

◆Transport in bulk according to Annex II of MARPOL and the IBC code

	No information available

◆Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code

	No information available

◆Transport in bulk in accordance with the IGC Code

	No information available

Part 15: Regulatory information

International chemical inventory

Component	A	B	C	D	E	F	G	H	I	J	K	L	M
Cyclopentane	√	√	√	√	√	√	√	√	√	√	√	√	√
2,2-dimethylbutane	√	√	√	√	√	√	√	√	√	√	√	√	√
n-pentane	√	√	√	√	√	√	√	√	√	√	√	√	√
isopentane	√	√	√	√	√	√	√	√	√	√	√	√	√

【A】 China Inventory of Existing Chemical Substances(IECSC)
【B】 European Inventory of Existing Commercial Chemical Substances(EC inventory)
【C】 United States Toxic Substances Control Act Inventory(TSCA)
【D】 Canadian Domestic Substances List(DSL)
【E】 New Zealand Inventory of Chemicals(NZIoC)
【F】 Philippines Inventory of Chemicals and Chemical Substances(PICCS)
【G】 Korea Existing Chemicals Inventory(KECL)
【H】 Australian Inventory of Industrial Chemicals(AIIC)
【I】 Japan Inventory of Existing & New Chemical Substances(ENCS)
【J】 Thailand Existing Chemicals Inventory(TECI)
【K】 Mexico National Inventory of Chemical Substances(INSQ)
【L】 Russia Inventory of Existing Substances(DRAFT)
【M】 Inventory of Existing Chemical Substances in Taiwan, China(TCSI)

List of Chemical Substances under International Conventions

Component	A	B	C
Cyclopentane	×	×	×
2,2-dimethylbutane	×	×	×
n-pentane	×	×	×
isopentane	×	×	×

【A】 The Montreal Protocol on Substances that Deplete the Ozone Layer
【B】 Stockholm Convention on Persistent Organic Pollutants (POPs)
【C】 Rotterdam Convention on the prior informed consent procedure for certain hazardous chemicals and pesticides in

international trade

Note:

"√" Indicates that the substance included in the regulations.
"×" No data or not included in the regulations.

Part 16: Other information

Information on revision

Creation Date	2026/07/23
Revision Date	-
Reason for revision	-

Reference

[1] IPCS: The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home.
[2] IARC, website: http://www.iarc.fr/.
[3] OECD: The Global Portal to Information on Chemical Substances, website: https://www.echemportal.org/echemportal/.
[4] CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple.
[5] NLM: ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp.
[6] EPA: Integrated Risk Information System, website: http://cfpub.epa.gov/iris/.
[7] U.S. Department of Transportation: ERG, website: http://www.phmsa.dot.gov/hazmat/library/erg.
[8] Germany GESTIS-database on hazard substance, website: http://gestis-en.itrust.de/.

Abbreviations and acronyms

CAS	Chemical Abstracts Service	UN	The United Nations
PC-STEL	Short term exposure limit	OECD	Organisation for Economic Co-operation and Development
PC-TWA	Time Weighted Average	IMDG-CODE	International Maritime Dangerous Goods CODE
MAC	Maximum Allowable Concentration	IARC	International Agency for Research on Cancer
DNEL	Derived No Effect Level	ICAO	International Civil Aviation Organization
PNEC	Predicted No Effect Concentration	IATA	International Air Transport Association
NOEC	No Observed Effect Concentration	ACGIH	American Conference of Governmental Industrial Hygienists
LC_{50}	Lethal Concentration 50%	NFPA	National Fire Protection Association
LD_{50}	Lethal Dose 50%	NTP	National Toxicology Program
EC_{50}	Effective Concentration 50%	PBT	Persistent, Bioaccumulative, Toxic
EC_X	Effective Concentration X%	vPvB	very Persistent, very Bioaccumulative
P_{OW}	Partition coefficient Octanol: Water	CMR	Carcinogens, mutagens or substances toxic to reproduction
BCF	Bioconcentration factor	RPE	Respiratory Protective Equipment
ED	Endocrine disruptor	G1	Carcinogenic to humans
G2A	Probably carcinogenic to humans	G2B	Possibly carcinogenic to humans
G3	Not yet classified as carcinogenic to humans	G4	Probably not carcinogenic to humans

Disclaimer

This Safety Data Sheet (SDS) was prepared according to UN GHS (the 11th revised edition). The data included was derived from international authoritative database and provided by the enterprise. Other information was based on the present state of our knowledge. We try to ensure the correctness of all information. However, due to the diversity of information sources and the limitations of our knowledge, this document is only for user's reference. Users should make their independent judgment of suitability of this information for their particular purposes. We do not assume responsibility for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.