SAFETY DATA SHEETS

According to the UN GHS revision 10

1: Identification

1.1 GHS Product identifier

Product name	1,1-Bis(tert-butylperoxy)cyclohexane

1.2 Other means of identification

Product number	3006-86-8
Other names	1,1-Bis(tert-butylperoxy)cyclohexane

1.3 Recommended use of the chemical and restrictions on use

Identified uses	Industrial and scientific research use.
Uses advised against	no data available

1.4 Supplier's details

Company	Zhongshan Greenrock Technology Co., Ltd.
Address	No. 138, Jinsan Avenue, Sanjiao Town, Zhongshan City, Guangdong Province, China
Telephone	+86-2087066781

1.5 Emergency phone number

Emergency phone number	+86-2087066781
Service hours	Monday to Friday, 9am-5pm (Standard time zone: UTC/GMT +8 hours).

2: Hazard identification

2.1 Emergency Overview

Extremely hazardous material. May explode violently, causing serious injury, death, and property damage. Contact or heat may cause an explosion, producing high-speed fragments and toxic gases. Move away immediately and seek professional assistance.

2.2 GHS Classification

Self-reactive substances and mixtures; Organic peroxides : Type C, D
Self-reactive substances and mixtures; Organic peroxides : Type E, F
Skin corrosion/irritation : Category 2
Serious eye damage/eye irritation : Category 2A
Specific target organ toxicity, single exposure; Respiratory tract irritation : Category 3
Hazardous to the aquatic environment, long-term hazard : Category 4

2.3 GHS label elements, including precautionary statements

Pictogram(s)

Signal word	Danger
Hazard statement(s)	H242 Heating may cause a fire H315 Causes skin irritation H319 Causes serious eye irritation H335 May cause respiratory irritation H413 May cause long lasting harmful effects to aquatic life
Precautionary statement(s)	
Prevention	P210 Keep away from heat, hot surface, sparks, open flames and other ignition sources. No smoking. P234 Keep only in original container. P235 Keep cool. P240 Ground/bond container and receiving equipment. P261 Avoid breathing dust/fume/gas/mist/vapors/spray. P264 Wash hands [and ...] thoroughly after handling. 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/hearing protection/... P264+P265 Wash hands [and ...] thoroughly after handling. Do not touch eyes.
Response	P319 Get medical help if you feel unwell. P321 Specific treatment (see ... on this label). P302+P352 IF ON SKIN,wash with plenty of water/... P304+P340 IF INHALED,Remove person to fresh air and keep 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. P332+P317 If skin irritation occurs,Get medical help. P337+P317 If eye irritation persists,Get medical help. P362+P364 Take off contaminated clothing and wash it before reuse. P370+P378 In case of fire,Use ... to extinguish.
Storage	P403 Store in a well-ventilated place. P405 Store locked up. P410 Protect from sunlight. P411 Store at temperatures not exceeding ... °C/...°F. P420 Store separately. P403+P233 Store in a well-ventilated place. Keep container tightly closed.
Disposal	P501 Dispose of contents/container to ...

2.4 Physical and chemical

They are explosive and can explode when exposed to heat, impact, friction, or contact with other substances. Some substances are self-reactive and can explode even in the absence of air. The risk of explosion of desensitized explosives increases significantly after the desensitizing agent is lost.

2.5 Health hazards

The blast wave from an explosion can cause severe trauma, fractures, and internal organ damage. Fragments from the explosion can cause puncture wounds and lacerations. Combustion products may contain toxic gases (eg, nitrogen oxides, carbon monoxide), causing inhalation injuries and poisoning.

2.6 Environmental hazards

Explosions can cause widespread environmental pollution, releasing toxic substances that could contaminate soil and water sources. Smoke from explosions can cause acute toxicity to nearby flora and fauna. Long-term environmental impacts depend on the specific composition of the substances.

2.7 Other hazards which do not result in classification

no data available

3: Composition/information on ingredients

3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
1,1-Bis(tert-butylperoxy)cyclohexane	1,1-Bis(tert-butylperoxy)cyclohexane	3006-86-8	221-111-2	99%

4: First-aid measures

4.1 General advice

Immediately evacuate the explosion danger zone to a safe area 500 meters away and call the emergency number; avoid touching leaking materials or damaged containers, and strictly prohibit the generation of sparks/static electricity; record the time, location, and name of the explosion for the doctor's reference.

4.2 If inhaled

Immediately transfer to fresh air and keep the airway open; if breathing difficulties or suffocation occur, immediately perform artificial respiration (wear a one-way valve respirator to prevent the rescuer from contacting toxic products); if breathing stops, immediately use an automated external defibrillator (AED) and seek medical attention.

4.3 In case of skin contact

If you come into contact with explosion residue, immediately remove contaminated clothing with spark-free tools (avoid friction) and rinse your skin with plenty of running water for 15-20 minutes. If you experience burns or foreign matter embedded in your skin, do not remove it yourself. Cover it with sterile gauze and seek medical attention.

4.4 In case of eye contact

Immediately open the eyelids and rinse continuously with plenty of saline or running water for 15 minutes (avoid direct water flow into the eyeballs); wear a sterile eye mask immediately after rinsing, avoid rubbing the eyes, and go to an ophthalmologist as soon as possible.

4.5 If swallowed

Self-induced vomiting is strictly prohibited (to avoid vomitus blocking the respiratory tract or causing secondary injury); if the patient is conscious and not convulsing, he or she may drink a small amount of warm water (no more than 100ml) under the guidance of a doctor; bring the material SDS document and seek medical attention immediately

4.6 Most important symptoms and effects, both acute and delayed

Acute symptoms include blast injuries (fractures, internal organ damage), burns, difficulty breathing, loss of consciousness, and foreign bodies embedded in the eyes. Long-term effects include inhalation of toxic combustion products (such as nitrogen oxides), which may cause pulmonary edema (high incidence within 48 hours).

4.7 Protection of first-aiders

Rescuers must wear explosion-proof clothing, positive pressure air respirators (and impact helmets); solo rescue is strictly prohibited; a team of two or more people is required, and an on-site commander must be appointed; equipment must be cleaned and disinfected immediately after contact with contaminants.

4.8 Notes to physician

Inform the doctor of the substance name, explosion impact time, and patient exposure history; prioritize checking for internal organ damage (such as CT scans to screen for pneumothorax and intraperitoneal hemorrhage); prevent infection in burn patients, and monitor blood oxygen saturation in patients with inhalation injuries.

5: Fire-fighting measures

5.1 Unsuitable extinguishing media

It is strictly forbidden to use water, foam, carbon dioxide, and halogenated fire extinguishing agents; these fire extinguishing agents may not be able to suppress the explosion and may even aggravate the explosion due to impact/uneven cooling.

5.2 Specific hazards during fire fighting

When burning, it is easy to cause a mass explosion, generating shock waves and high-speed fragments; self-reactive substances may accelerate decomposition when heated, and the combustion of organic peroxides may easily cause detonation; if the desensitizer of desensitized explosives is lost, the explosion risk increases sharply

5.3 Hazardous combustion products

Carbon monoxide, nitrogen oxides, toxic metal oxides (when containing metal components), explosion fragments; some explosives release highly toxic gases such as phosgene and cyanide when burned

5.4 Specific extinguishing methods

Small-area fire: Use dry powder fire extinguishing agent (such as sodium bicarbonate, ammonium phosphate) to cover and extinguish the fire. Spraying and impact are strictly prohibited. Large-area fire/explosion risk: Immediately evacuate to a safe area 500 meters away and allow the fire to burn (to avoid explosion caused by fire extinguishing). Continue to monitor the temperature after extinguishing the fire (to prevent re-ignition/re-explosion).

5.5 Special protective equipment for fire-fighters

Explosion-proof clothing, impact-proof helmets, and positive-pressure air respirators (GB/T 16556-2024) must be worn; carry an explosion-proof temperature detector; working alone is strictly prohibited, and a team of more than two people is required, with on-site command.

6: Accidental release measures

6.1 Protective measures for workers

Wear explosion-proof protective clothing, impact-proof helmet, gas mask (with filter cartridge), and chemical-resistant gloves (acid and alkali resistant/anti-static type); it is strictly forbidden to carry fire sources, mobile phones, and electrostatic equipment. Eliminate static electricity on the body before work (touch the grounding device).

6.2 Environmental protection measure

Immediately isolate the leaked contaminated area (at least a 50-meter warning zone) and set up red warning signs; leaked materials are strictly prohibited from being discharged into water bodies, soil or sewers; conduct TNT equivalent monitoring of the contaminated area and initiate soil/water remediation procedures when necessary.

6.3 Containment methods for leaked chemicals

Use spark-free tools (copper, wood) to collect solids, avoid vibration/impact when leaking, and gently place them into explosion-proof sealed containers (marked with "explosive" warning); for liquid leaks, use corrosion-resistant, anti-static containers to contain them, and the container cover needs a pressure relief valve.

6.4 Cleanup methods for chemical spills

Small leakage: Cover with dry inert materials (sand, vermiculite) and transfer to explosion-proof containers; Large leakage: The explosion-proof operation team uses an explosion-proof pump to transfer to a dedicated storage facility. Friction/static electricity is prohibited during the cleaning process.

6.5 Measures to prevent the spread of leaks

Designate a 50-meter warning zone and prohibit vehicles/personnel from entering; cut off power to the leakage area (if safe); use explosion-proof isolation tape to block the leak to prevent wind/water spread; monitor the ambient temperature (to prevent self-reaction heat release).

6.6 Container leakage treatment

Minor leakage: sealed by professionals using explosion-proof putty; serious leakage: immediately evacuate the scene, notify the emergency department, and have the explosive disposal team handle it. It is strictly forbidden to dismantle/weld the container by yourself.

6.7 Special considerations

Open flames, smoking, and mobile phones are prohibited throughout the process; if a fire occurs, use dry powder to extinguish the fire (water is strictly prohibited); protective equipment must undergo explosion-proof testing and disinfection after use before it can be used again; leak handling must be recorded and filed.

7: Handling and storage

7.1 Safe storage conditions

Store in a dedicated explosion-proof warehouse (in compliance with GB 50016 Design Code for Explosion Hazardous Areas). The warehouse walls are reinforced concrete structures, and the doors and windows are explosion-proof. Anti-static shelves are used, and the containers are thick-walled metal explosion-proof containers (such as carbon steel, with a wall thickness of ?5mm). The warehouse is ventilated with explosion-proof fans, with an air exchange rate of ?12 times/hour. The use of ventilation equipment that is prone to sparks is strictly prohibited.

7.2 Storage precautions

Keep the distance from fire and heat sources (such as radiators and distribution boxes) ? 10 meters, and store them separately from oxidants, reducing agents, and flammable substances (isolation distance ? 5 meters). Stacking height exceeding 1.5 meters is strictly prohibited to prevent containers from being damaged by pressure. Check the warehouse temperature and humidity daily (humidity should be controlled at 40%-60%), and check the sealing of containers monthly. Welding, cutting and other hot work operations are prohibited in the warehouse.

7.3 VCI Storage Grade

Level 1 (highest): Volatile corrosion inhibitors (such as vapor phase anti-rust paper) must be placed in the container and replaced once every quarter; a VCI concentration monitor must be installed in the warehouse to ensure that the VCI concentration is maintained at 0.1-0.5mg/m³ to prevent leakage caused by corrosion of metal containers.

7.4 Recommended storage temperature

15-25°C (room temperature, away from light), strictly prohibited from exceeding 30°C; self-reactive substances require additional monitoring of the self-accelerating decomposition temperature (SADT). If SADT ? 55°C, a constant temperature control system must be installed, and the temperature fluctuation range must be ? ± 2°C (if the label has a recommended storage temperature, the label shall prevail).

7.5 Handling

For precautions see Safety Data Sheet section 2
Advice on safe handling : Work under hood. Do not inhale substance/mixture.

8: Exposure controls/personal protection

8.1 Respiratory protection

Wear a positive pressure air respirator at all times, and filter respirators are strictly prohibited; an explosion-proof ventilation system must be installed in the working area to ensure that the concentration of toxic combustion products is lower than the MAC value (maximum allowable concentration).

8.2 Recommended Filter type

Not applicable (positive pressure respirator required, no filter required); if used as an auxiliary, an integrated gas filter box (protection against organic vapor, acid gas, and dust) can be selected.

8.3 Eye/face protection

Wear a full-face explosion-proof mask + impact-proof goggles. The mask must have anti-fog function to prevent explosion fragments from damaging the eyes.

8.4 Skin and body protection

Wear a full set of explosion-proof clothing and anti-static underwear inside; the outer jacket must be flame retardant and puncture-resistant, and the trouser legs must be tightly connected to the chemical-resistant boots to prevent debris/dust from entering.

8.5 Hand protection

Wear double-layer chemical protective gloves, with the inner layer being nitrile gloves (anti-permeation) and the outer layer being explosion-proof and puncture-proof gloves (such as Kevlar material). The gloves need to be checked regularly for sealing.

8.6 Hygiene measures

After the work, take a shower immediately in the dedicated disinfection area (water temperature around 37°C) and change all clothes (clothes need to be washed and disinfected separately); eating, drinking and smoking are strictly prohibited in the work area, and wash hands immediately with chlorine-containing disinfectant after contact.

9: Physical and chemical properties and safety characteristics

Physical state	Combustible liquid. Values are for an 80% solution in mineral spirits.
Colour	no data available
Odour	no data available
Melting point/freezing point	65oC
Boiling point or initial boiling point and boiling range	52-54oC (0.1 mmHg)
Flammability	no data available
Lower and upper explosion limit/flammability limit	no data available
Flash point	68°C

Auto-ignition temperature	no data available
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	no data available
Solubility	In water:miscible
Partition coefficient n-octanol/water	no data available
Vapour pressure	no data available
Density and/or relative density	0.891g/mLat 25°C
Relative vapour density	no data available
Particle characteristics	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

The explosive instability of the lower dialkyl peroxides (e.g., dimethyl peroxide) and 1,1-bis-peroxides decreases rapidly with increasing chain length and degree of branching, the di-tert-alkyl derivatives being amongst the most stable class of peroxides. Though many 1,1-bis-peroxides have been reported, few have been purified because of the higher explosion hazards compared with the monofunctional peroxides. It is unlikely that this derivative would be particularly unstable compared to other peroxides in its class. [Bretherick 2nd ed., p 44 1979.]

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

no data available

10.6 Hazardous decomposition products

no data available

11: Toxicological information

11.1 Acute toxicity

Oral: no data available
Inhalation: no data available
Dermal: no data available

11.2 Skin corrosion/irritation

no data available

11.3 Serious eye damage/irritation

no data available

11.4 Respiratory or skin sensitization

no data available

11.5 Germ cell mutagenicity

no data available

11.6 Carcinogenicity

no data available

11.7 Reproductive toxicity

no data available

11.8 STOT-single exposure

no data available

11.9 STOT-repeated exposure

no data available

11.10 Aspiration hazard

no data available

12: Ecological information

12.1 Toxicity

Toxicity to fish: no data available
Toxicity to daphnia and other aquatic invertebrates: no data available
Toxicity to algae: no data available
Toxicity to microorganisms: no data available

12.2 Persistence and degradability

no data available

12.3 Bioaccumulative potential

no data available

12.4 Mobility in soil

no data available

12.5 Other adverse effects

no data available

13: Disposal considerations

13.1 Disposal methods for waste chemicals

Desensitized explosives must be completely destroyed by a professional explosives disposal team using controlled detonation or high-temperature incineration (temperature ? 1000°C). Desensitized explosives must first remove the desensitizer and then be handled according to the pure explosives disposal process. Self-reactive substances must be thermally decomposed under inert gas protection to ensure complete reaction.

13.2 Precautions

Self-disposal or mixing with ordinary waste is strictly prohibited; the disposal site must be away from residential areas (?1km) and water sources; operators must wear explosion-proof clothing and equipment; a safety assessment must be conducted before disposal and an emergency plan must be developed; the disposal process must be fully supervised by the environmental protection department, and the site must be tested for contamination after disposal.

14: Transport information

14.1 UN Number

ADR/RID: UN3103	IMDG: UN3103	IATA: UN3103

14.2 UN Proper Shipping Name

ADR/RID: ORGANIC PEROXIDE TYPE C, LIQUID	IMDG: ORGANIC PEROXIDE TYPE C, LIQUID	IATA: ORGANIC PEROXIDE TYPE C, LIQUID

14.3 Transport hazard class(es)

ADR/RID: 5.2	IMDG: 5.2	IATA: 5.2

14.4 Packing group, if applicable

ADR/RID: II IMDG: II IATA: II

14.5 Environmental hazards

ADR/RID: no IMDG: no IATA: no

14.6 Special precautions for user

no data available

14.7 Transport in bulk according to IMO instruments

no data available

15: Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

Chemical name	Common names and synonyms	CAS number	EC number
1,1-Bis(tert-butylperoxy)cyclohexane	1,1-Bis(tert-butylperoxy)cyclohexane	3006-86-8	221-111-2
New Zealand Inventory of Chemicals (NZIoC)			Listed.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)			Listed.
Vietnam National Chemical Inventory			Listed.
Australian Inventory of Industrial Chemicals (AIIC)			Not Listed.
Catalogue of Strictly Restricted Toxic Chemicals in China			Not Listed.
China Catalog of Hazardous chemicals 2015			Listed.
European INventory of Existing Commercial chemical Substances			Not Listed.
IARC Monographs on the Evaluation of Carcinogenic Risks to Humans			Not Listed.
TSCA Inventory of Chemical Substances			Listed.

16: Other information

Information on revision

SDS Creation Date	July 1, 2025
SDS Revision Date	July 1, 2025

Abbreviations and acronyms in SDS

- 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%

SDS References

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

Any questions regarding this Safety Data Sheet, Please send your inquiry to sales@MolBest.com

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