# SAFETY DATA SHEETS

## According to the UN GHS revision 9

Version: 1.0
Creation Date: July 15, 2019
Revision Date: July 15, 2019

# SECTION 1: Identification

## 1.1 GHS Product identifier

**Product name** Di-tert-butyl peroxide

## 1.2 Other means of identification

**Product number** -
**Other names** 2-tert-butylperoxy-2-methylpropane; Di-tert-butyl Peroxide; 2-(tert-Butylperoxy)-2-methylpropane

## 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** Shanghai Baishun Biotechnology Co., Ltd
**Address** No. 26, Lane 918, Lianye Road, Zhelin Town, Fengxian District, Shanghai, 201400, China
**Telephone** +86-21-37581181

## 1.5 Emergency phone number

**Emergency phone number** +86-21-37581181
**Service hours** Monday to Friday, 9am-5pm (Standard time zone: UTC/GMT +8 hours).

# SECTION 2: Hazard identification

## 2.1 Classification of the substance or mixture

Flammable liquids, Category 2
Organic peroxides, Type E
Germ cell mutagenicity, Category 2

## 2.2 GHS label elements, including precautionary statements

**Pictogram(s)**

**Signal word** Danger
**Hazard statement(s)** H225 Highly flammable liquid and vapour
H242 Heating may cause a fire
H341 Suspected of causing genetic defects

**Precautionary statement(s)**

| | |
|---|---|
| **Prevention** | P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.<br>P233 Keep container tightly closed.<br>P240 Ground and bond container and receiving equipment.<br>P241 Use explosion-proof [electrical/ventilating/lighting/...] equipment.<br>P242 Use non-sparking tools.<br>P243 Take action to prevent static discharges.<br>P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...<br>P234 Keep only in original packaging.<br>P235 Keep cool.<br>P203 Obtain, read and follow all safety instructions before use. |
| **Response** | P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse affected areas with water [or shower].<br>P370+P378 In case of fire: Use ... to extinguish.<br>P318 IF exposed or concerned, get medical advice. |
| **Storage** | P403+P235 Store in a well-ventilated place. Keep cool.<br>P403 Store in a well-ventilated place.<br>P410 Protect from sunlight.<br>P411 Store at temperatures not exceeding …°C/…°F.<br>P420 Store separately.<br>P405 Store locked up. |
| **Disposal** | P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal. |

## 2.3 Other hazards which do not result in classification

no data available

# SECTION 3: Composition/information on ingredients

## 3.1 Substances

| Chemical name | Common names and synonyms | CAS number | EC number | Concentration |
|---|---|---|---|---|
| Di-tert-butyl peroxide | Di-tert-butyl peroxide | 110-05-4 | 203-733-6 | 100% |

# SECTION 4: First-aid measures

## 4.1 Description of necessary first-aid measures

**If inhaled**

Fresh air, rest. Half-upright position. Refer for medical attention.

**Following skin contact**

First rinse with plenty of water for at least 15 minutes, then remove contaminated clothes and rinse again.

**Following eye contact**

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

**Following ingestion**

Rinse mouth. Refer for medical attention .

## 4.2 Most important symptoms/effects, acute and delayed

Excerpt from ERG Guide 145 [Organic Peroxides (Heat and Contamination Sensitive)]: Fire may produce irritating, corrosive and/or toxic gases. Ingestion or contact (skin, eyes) with substance may cause severe injury or burns. Runoff from fire control or dilution water may cause pollution. (ERG, 2016)

### 4.3 Indication of immediate medical attention and special treatment needed, if necessary

For immediate first aid: Ensure that adequate decontamination has been carried out. If victim is not breathing, start artificial respiration, preferably with a demand-valve resuscitator, bag-valve-mask device, or pocket mask as trained. Perform CPR if necessary. Immediately flush contaminated eyes with gently flowing water. Do not induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Keep victim quiet and maintain normal body temperature. Obtain medical attention. Organic peroxides

## SECTION 5: Fire-fighting measures

### 5.1 Suitable extinguishing media

Foam may be necessary instead if the peroxide is diluted in a low density flammable solvent. Portable extingisher should not be used except for very small fires. Organic peroxides threatened by fire should be wetted from a safe distance for cooling. Peroxides, organic

### 5.2 Specific hazards arising from the chemical

Excerpt from ERG Guide 145 [Organic Peroxides (Heat and Contamination Sensitive)]: May explode from heat or contamination. May ignite combustibles (wood, paper, oil, clothing, etc.). May be ignited by heat, sparks or flames. May burn rapidly with flare-burning effect. Containers may explode when heated. Runoff may create fire or explosion hazard. (ERG, 2016)

### 5.3 Special protective actions for fire-fighters

Use water spray, powder, foam, carbon dioxide. In case of fire: keep drums, etc., cool by spraying with water. Combat fire from a sheltered position.

## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

Personal protection: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Ventilation. Remove all ignition sources. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations. Do NOT wash away into sewer. Do NOT absorb in saw-dust or other combustible absorbents.

### 6.2 Environmental precautions

Personal protection: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Ventilation. Remove all ignition sources. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations. Do NOT wash away into sewer. Do NOT absorb in saw-dust or other combustible absorbents.

### 6.3 Methods and materials for containment and cleaning up

Collect and arrange disposal. Keep the chemical in suitable and closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. Adhered or collected material should be promptly disposed of, in accordance with appropriate laws and regulations.

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

NO open flames, NO sparks and NO smoking. NO contact with flammables. NO contact with contaminants. NO contact with hot surfaces. Closed system, ventilation, explosion-proof electrical equipment and lighting. Do NOT use compressed air for filling, discharging, or handling. Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

## 7.2 Conditions for safe storage, including any incompatibilities

Fireproof. Separated from combustible substances and reducing agents. Cool. Well closed.... peroxides should be stored in their original containers in a ventilated place separated from other materials and protected from flame, static electricity, sparks, sources of heat (eg steam-pipes, radiators or direct sunlight), shock or friction. Storage areas should be fire-proof with explosion-proof electrical equipment. The max recommended storage temp is 38 deg C or less. ... Storage ... areas should be protected from fire by a deluge system or sprinklers. Peroxides, organic

# SECTION 8: Exposure controls/personal protection

## 8.1 Control parameters

**Occupational Exposure limit values**

no data available

**Biological limit values**

no data available

## 8.2 Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

## 8.3 Individual protection measures, such as personal protective equipment (PPE)

**Eye/face protection**

Wear safety spectacles.

**Skin protection**

Protective gloves.

**Respiratory protection**

Use ventilation.

**Thermal hazards**

no data available

# SECTION 9: Physical and chemical properties and safety characteristics

| | |
|---|---|
| **Physical state** | PHYSICAL DESCRIPTION: Clear colorless liquid. (NTP, 1992) |
| **Colour** | CLEAR, WATER-WHITE LIQ |
| **Odour** | no data available |
| **Melting point/freezing point** | -40°C(lit.) |
| **Boiling point or initial boiling point and boiling range** | 111°C(lit.) |
| **Flammability** | Highly flammable. Many reactions may cause fire or explosion. |
| **Lower and upper explosion limit/flammability limit** | no data available |
| **Flash point** | 12°C(lit.) |
| **Auto-ignition temperature** | no data available |
| **Decomposition temperature** | 111°C |
| **pH** | no data available |

| | |
|---|---|
| **Kinematic viscosity** | no data available |
| **Solubility** | less than 1 mg/mL at 70° F (NTP, 1992) |
| **Partition coefficient n-octanol/water** | 1-4 |
| **Vapour pressure** | 40 mm Hg ( 20 °C) |
| **Density and/or relative density** | 0.796 |
| **Relative vapour density** | 5.03 (NTP, 1992) (Relative to Air) |
| **Particle characteristics** | no data available |

# SECTION 10: Stability and reactivity

## 10.1 Reactivity

Decomposes at 111°C. This increases fire hazard. The substance is a strong oxidant. It reacts violently with combustible and reducing materials.

## 10.2 Chemical stability

One of the most thermally stable commercial organic peroxides.

## 10.3 Possibility of hazardous reactions

FLAMMABLE, DANGEROUS FIRE HAZARD.The vapour is heavier than air and may travel along the ground; distant ignition possible.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

Strong oxidizing agent; may ignite organic materials or explode when shocked or in contact with reducing materials.

## 10.6 Hazardous decomposition products

Decomposition products ... may be hot enough to auto-ignite on contact with air if decomposition is rapid. Peroxides, organic

# SECTION 11: Toxicological information

**Acute toxicity**

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

**Skin corrosion/irritation**

no data available

**Serious eye damage/irritation**

no data available

**Respiratory or skin sensitization**

no data available

**Germ cell mutagenicity**

no data available

**Carcinogenicity**

no data available

**Reproductive toxicity**

no data available

**STOT-single exposure**

The substance is irritating to the eyes and respiratory tract.

**STOT-repeated exposure**

no data available

**Aspiration hazard**

No indication can be given about the rate at which a harmful concentration of this substance in the air is reached on evaporation at 20°C.

# SECTION 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

Biodegradation data for bis(1,1-dimethylethyl)peroxide are not available. (SRC)

## 12.3 Bioaccumulative potential

An estimated BCF of 250 was calculated for bis(1,1-dimethylethyl)peroxide(SRC), using an estimated log Kow of 3.45(1,SRC) and a recommended regression-derived equation(2). According to a classification scheme(3), this BCF suggests that bioconcentration of bis(1,1-dimethylethyl)peroxide in aquatic organisms is high(SRC).

## 12.4 Mobility in soil

Using a structure estimation method based on molecular connectivity indices(1), the Koc for bis(1,1-dimethylethyl)peroxide can be estimated to be about 720(SRC). According to a recommended classification scheme(2), this estimated Koc value suggests that bis(1,1-dimethylethyl)peroxide is expected to have moderate mobility in soil(SRC).

## 12.5 Other adverse effects

no data available

# SECTION 13: Disposal considerations

## 13.1 Disposal methods

**Product**

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

**Contaminated packaging**

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

# SECTION 14: Transport information

## 14.1 UN Number

ADR/RID: UN3107 (For IMDG: UN3107 (For IATA: UN3107 (For

| | | |
|---|---|---|
| reference only, please check.) | reference only, please check.) | reference only, please check.) |

### 14.2 UN Proper Shipping Name

| | | |
|---|---|---|
| ADR/RID: ORGANIC PEROXIDE TYPE E, LIQUID (For reference only, please check.) | IMDG: ORGANIC PEROXIDE TYPE E, LIQUID (For reference only, please check.) | IATA: ORGANIC PEROXIDE TYPE E, LIQUID (For reference only, please check.) |

### 14.3 Transport hazard class(es)

| | | |
|---|---|---|
| ADR/RID: 5.2 (For reference only, please check.) | IMDG: 5.2 (For reference only, please check.) | IATA: 5.2 (For reference only, please check.) |

### 14.4 Packing group, if applicable

| | | |
|---|---|---|
| ADR/RID: (For reference only, please check.) | IMDG: (For reference only, please check.) | IATA: (For reference only, please check.) |

### 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

## SECTION 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 |
|---|---|---|---|
| Di-tert-butyl peroxide | Di-tert-butyl peroxide | 110-05-4 | 203-733-6 |
| **European Inventory of Existing Commercial Chemical Substances (EINECS)** | | | Listed. |
| **EC Inventory** | | | Listed. |
| **United States Toxic Substances Control Act (TSCA) Inventory** | | | Listed. |
| **China Catalog of Hazardous chemicals 2015** | | | Listed. |
| **New Zealand Inventory of Chemicals (NZIoC)** | | | Listed. |
| **Philippines Inventory of Chemicals and Chemical Substances (PICCS)** | | | Listed. |
| **Vietnam National Chemical Inventory** | | | Listed. |
| **Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)** | | | Listed. |
| **Korea Existing Chemicals List (KECL)** | | | Listed. |

## SECTION 16: Other information

**Information on revision**

| | |
|---|---|
| **Creation Date** | July 15, 2019 |
| **Revision Date** | July 15, 2019 |

**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**


- 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/


**Other Information**

Explosive limits are unknown in literature, although the substance is combustible and has a flash point < 55°C.Health effects of exposure to the substance have not been investigated adequately.Rinse contaminated clothing with plenty of water because of fire hazard.

**Any questions regarding this SDS, Please send your inquiry to sds@xixisys.com**

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