



# SAFETY DATA SHEET

Creation Date 14-Mar-2012

Revision Date 02-Aug-2013

Revision Number 5

## SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

### 1.1. Product identifier

|                           |   |
|---------------------------|---|
| Product Description:      | <b>Di-tert-butyl peroxide</b>                 |
| Cat No.                   | <b>349930000; 349930050; 349931000</b>        |
| Synonyms                  | DTBP; Trigonox® B; tert-Butyl peroxide        |
| CAS-No                    | 110-05-4                                      |
| EC-No.                    | 203-733-6                                     |
| Molecular Formula         | C <sub>8</sub> H <sub>18</sub> O <sub>2</sub> |
| Reach Registration Number | 01-2119513335-48                              |

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

|                                |   |
|--------------------------------|---|
| Recommended Use                | Laboratory chemicals  |
| Sector of use                  | SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites    |
| Product category               | PC21 - Laboratory chemicals   |
| Process categories             | PROC15 - Use as a laboratory reagent  |
| Environmental release category | ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates) |
| Uses advised against           | No Information available  |

### 1.3. Details of the supplier of the safety data sheet

|                |  |
|----------------|--|
| Company        | Acros Organics BVBA<br>Janssen Pharmaceuticaaan 3a<br>2440 Geel, Belgium |
| E-mail address | begel.sdsdesk@thermofisher.com   |

### 1.4. Emergency telephone number

For information **US** call: 001-800-ACROS-01 / **Europe** call: +32 14 57 52 11  
Emergency Number **US**:001-201-796-7100 / **Europe**: +32 14 57 52 99  
**CHEMTREC** Tel. No.**US**:001-800-424-9300 / **Europe**:001-703-527-3887

## SECTION 2: HAZARDS IDENTIFICATION

### 2.1. Classification of the substance or mixture

#### CLP Classification - Regulation (EC) No 1272/2008

##### Physical hazards

Flammable liquids  
Organic peroxides

Category 2  
Type E

##### Health hazards

Germ Cell Mutagenicity

Category 2

##### Environmental hazards

Chronic aquatic toxicity

Category 3

#### Classification according to EU Directives 67/548/EEC or 1999/45/EC

|           |                      |
|-----------|----------------------|
| Symbol(s) | O - Oxidizing        |
|           | F - Highly flammable |
|           | Xn - Harmful         |

**SECTION 2: HAZARDS IDENTIFICATION****R-phrases(s)**

R 7 - May cause fire  
R11 - Highly flammable  
R68 - Possible risk of irreversible effects  
R52/53 - Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment

For the full text of the R-phrases and H-Statements mentioned in this Section, see Section 16

**2.2. Label elements****Signal Word****Danger****Hazard Statements**

H225 - Highly flammable liquid and vapor  
H242 - Heating may cause a fire  
H341 - Suspected of causing genetic defects  
H412 - Harmful to aquatic life with long lasting effects

**Precautionary Statements**

P201 - Obtain special instructions before use  
P308 + P313 - IF exposed or concerned: Get medical advice/ attention  
P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking  
P280 - Wear protective gloves/ protective clothing/ eye protection/ face protection  
P220 - Keep/Store away from clothing/ combustible materials  
P281 - Use personal protective equipment as required

**2.3. Other hazards**

No information available.

**SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS****3.1. Substances**

| Component              | CAS-No   | EC-No.            | Weight % | CLP Classification - Regulation (EC) No 1272/2008   | DSD Classification - 67/548/EEC                |
|------------------------|----------|-------------------|----------|---|--|
| Di-tert-butyl peroxide | 110-05-4 | EEC No. 203-733-6 | >95      | Flam. Liq. 2 (H225)<br>Org. Perox. E (H242)<br>Muta. 2 (H341)<br>Aquatic Chronic 3 (H412) | F; R11<br>O; R7<br>Muta. Cat. 3; R68<br>R52/53 |

**Reach Registration Number**

01-2119513335-48

For the full text of the R-phrases and H-Statements mentioned in this Section, see Section 16

**SECTION 4: FIRST AID MEASURES****4.1. Description of first aid measures****General Advice**

If symptoms persist, call a physician.

|                                   |   |
|-----------------------------------|---|
| <b>Eye Contact</b>                | Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Obtain medical attention.                              |
| <b>Skin Contact</b>               | Obtain medical attention. Wash off immediately with plenty of water for at least 15 minutes.  |
| <b>Ingestion</b>                  | Clean mouth with water and drink afterwards plenty of water.  |
| <b>Inhalation</b>                 | Move to fresh air. If breathing is difficult, give oxygen. Obtain medical attention.  |
| <b>Protection of First-aiders</b> | Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination |

**4.2. Most important symptoms and effects, both acute and delayed**

No information available

**4.3. Indication of any immediate medical attention and special treatment needed**

|                           |                       |
|---------------------------|-----------------------|
| <b>Notes to Physician</b> | Treat symptomatically |
|---------------------------|-----------------------|

**SECTION 5: FIREFIGHTING MEASURES****5.1. Extinguishing media****Suitable Extinguishing Media**

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Cool closed containers exposed to fire with water spray.

**Extinguishing media which must not be used for safety reasons**

No information available.

**5.2. Special hazards arising from the substance or mixture**

Flammable. Oxidizer: Contact with combustible/organic material may cause fire. Vapors may travel to source of ignition and flash back. May ignite combustibles (wood, paper, oil, clothing, etc.). Containers may explode when heated. Vapors may form explosive mixtures with air.

**Hazardous Combustion Products**Carbon monoxide (CO), Carbon dioxide (CO<sub>2</sub>), Acetone.**5.3. Advice for firefighters**

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

**SECTION 6: ACCIDENTAL RELEASE MEASURES****6.1. Personal precautions, protective equipment and emergency procedures**

Ensure adequate ventilation. Use personal protective equipment. Remove all sources of ignition. Take precautionary measures against static discharges.

**6.2. Environmental precautions**

Should not be released into the environment. Do not flush into surface water or sanitary sewer system.

**6.3. Methods and material for containment and cleaning up**

Keep in suitable, closed containers for disposal. Soak up with inert absorbent material. Sweep up and shovel into suitable containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

**6.4. Reference to other sections**

Refer to protective measures listed in Sections 8 and 13.

**SECTION 7: HANDLING AND STORAGE****7.1. Precautions for safe handling**

Wear personal protective equipment. Ensure adequate ventilation. Do not get in eyes, on skin, or on clothing. Avoid ingestion and inhalation. Keep away from clothing and other combustible materials. Keep away from open flames, hot surfaces and sources of ignition. Use only non-sparking tools. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Take precautionary measures against static discharges.

**7.2. Conditions for safe storage, including any incompatibilities**

Keep containers tightly closed in a dry, cool and well-ventilated place. Do not store near combustible materials. Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition. Keep refrigerated. Keep at temperatures above - 30°C.

**7.3. Specific end use(s)**

Use in laboratories

**SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION****8.1. Control parameters****Exposure limits**

List source(s):

| Component              | Latvia | Lithuania                  | Luxembourg | Malta | Romania |
|------------------------|--------|----------------------------|------------|-------|---------|
| Di-tert-butyl peroxide |        | TWA: 100 mg/m <sup>3</sup> |            |       |         |

| Component              | Russia                     | Slovak Republic | Slovenia | Sweden | Turkey |
|------------------------|----------------------------|-----------------|----------|--------|--------|
| Di-tert-butyl peroxide | MAC: 100 mg/m <sup>3</sup> |                 |          |        |        |

**Biological limit values**

This product, as supplied, does not contain any hazardous materials with biological limits established by the region specific regulatory bodies.

**Monitoring methods**

BS EN 14042:2003 Title Identifier: Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents.

MDHS70 General methods for sampling airborne gases and vapours

MDHS 88 Volatile organic compounds in air. Laboratory method using diffusive samplers, solvent desorption and gas chromatography

MDHS 96 Volatile organic compounds in air - Laboratory method using pumped solid sorbent tubes, solvent desorption and gas chromatography

**Derived No Effect Level (DNEL)** No information available.

| Route of exposure | Acute effects (local) | Acute effects (systemic) | Chronic effects (local) | Chronic effects (systemic) |
|-------------------|-----------------------|--------------------------|-------------------------|----------------------------|
| Oral              |                       |                          |                         |                            |
| Dermal            |                       |                          |                         |                            |
| Inhalation        |                       |                          |                         |                            |

**Predicted No Effect Concentration (PNEC)** No information available.

**8.2. Exposure controls**

**Engineering Measures**

Use explosion-proof electrical/ventilating/lighting/equipment. Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation, especially in confined areas.

Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source.

**Personal protective equipment****Eye Protection**

Goggles (European standard - EN 166)

**Hand Protection**

Protective gloves

| Glove material | Breakthrough time | Glove thickness | EU standard | Glove comments        |
|----------------|-------------------|-----------------|-------------|-----------------------|
| Natural rubber | See manufacturers | -               | EN 374      | (minimum requirement) |
| Nitrile rubber | recommendations   |                 |             |                       |
| Neoprene       |                   |                 |             |                       |
| PVC            |                   |                 |             |                       |

Inspect gloves before use.

Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information)

Ensure gloves are suitable for the task: Chemical compatibility, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion. Remove gloves with care avoiding skin contamination.

**Skin and body protection**

Long sleeved clothing

**Respiratory Protection**

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators

To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly.

**Large scale/emergency use**

Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced..

**Recommended Filter type:** Organic gases and vapours filter, Type A, Brown, conforming to EN14387.

**Small scale/Laboratory use**

Use a NIOSH/MSHA or European Standard EN 149:2001 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

**Recommended half mask:-** Valve filtering: EN405 or Half mask: EN140 plus filter, EN 141 When RPE is used a face piece Fit Test should be conducted.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**Environmental exposure controls**

Prevent product from entering drains.

**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES****9.1. Information on basic physical and chemical properties****Appearance****Physical State**

Liquid.

**Odor**

slight

**Odor Threshold**

No data available

**pH**

No information available.

**Melting Point/Range**

-30°C / -22°F

**Softening Point**

No data available

**Boiling Point/Range**

109 - 110°C / 228.2 - 230°F

**Flash Point**

6°C / 42.8°F

**Method** - No information available.

# SAFETY DATA SHEET

Revision Date 02-Aug-2013

Di-tert-butyl peroxide

|   |                                     |   |
|---|-------------------------------------|---|
| Evaporation Rate                        | No data available                   |   |
| Flammability (solid,gas)                | Not applicable                      | Liquid                                      |
| Explosion Limits                        | Lower 18 vol%                       |   |
| Vapor Pressure                          | 2.1 kPa @ 20°C                      |   |
| Vapor Density                           | No data available                   | (Air = 1.0)                                 |
| Specific Gravity / Density              | 0.800                               |   |
| Bulk Density                            | Not applicable                      | Liquid                                      |
| Water Solubility                        | Immiscible                          |   |
| Solubility in other solvents            | No information available.           |   |
| Partition Coefficient (n-octanol/water) | Component<br>Di-tert-butyl peroxide | log Pow<br>3                                |
| Autoignition Temperature                | 165 - °C / 329 - °F                 |   |
| Decomposition temperature               | No data available                   |   |
| Viscosity                               | 0.9 mPa.s @ 20°C                    |   |
| Explosive Properties                    | No information available.           | Vapors may form explosive mixtures with air |
| Oxidizing Properties                    | Oxidizer                            |   |

## 9.2. Other information

|  |         |
|--|---------|
| Molecular Formula                                  | C8H18O2 |
| Molecular Weight                                   | 146.23  |
| Self-Accelerating Decomposition Temperature (SADT) | 80°C    |

## SECTION 10: STABILITY AND REACTIVITY

### 10.1. Reactivity

None known, based on information available.

### 10.2. Chemical stability

Stable under normal conditions. Oxidizer: Contact with combustible/organic material may cause fire.

### 10.3. Possibility of hazardous reactions

|                          |  |
|--------------------------|--|
| Hazardous Polymerization | Hazardous polymerization does not occur. |
| Hazardous Reactions      | None under normal processing.            |

### 10.4. Conditions to avoid

Incompatible products, Excess heat, Combustible material, Keep away from open flames, hot surfaces and sources of ignition.

### 10.5. Incompatible materials

Acids. Bases. Metals. Reducing agents. Powdered metals. Strong reducing agents. Combustible material.

### 10.6. Hazardous decomposition products

Carbon monoxide (CO), Carbon dioxide (CO<sub>2</sub>), Acetone.

## SECTION 11: TOXICOLOGICAL INFORMATION

### 11.1. Information on toxicological effects

#### Product Information

**(a) acute toxicity;****Oral**

Based on available data, the classification criteria are not met

**Dermal**

Based on available data, the classification criteria are not met

**Inhalation**

Based on available data, the classification criteria are not met

| Component              | LD50 Oral       | LD50 Dermal | LC50 Inhalation      |
|------------------------|-----------------|-------------|----------------------|
| Di-tert-butyl peroxide | 25 g/kg ( Rat ) | >2000 mg/kg | 4100 ppm ( Rat ) 4 h |

**(b) skin corrosion/irritation;**

Based on available data, the classification criteria are not met

**(c) serious eye damage/irritation;**

Based on available data, the classification criteria are not met

**(d) respiratory or skin sensitization;****Respiratory**

Based on available data, the classification criteria are not met

**Skin**

Based on available data, the classification criteria are not met

**(e) germ cell mutagenicity;**

Category 2

Mutagenic

**(f) carcinogenicity;**

Based on available data, the classification criteria are not met

There are no known carcinogenic chemicals in this product

**(g) reproductive toxicity;**

Based on available data, the classification criteria are not met

**(h) STOT-single exposure;**

Based on available data, the classification criteria are not met

**(i) STOT-repeated exposure;**

Based on available data, the classification criteria are not met

**Target Organs**

No information available.

**(j) aspiration hazard;**

Based on available data, the classification criteria are not met

**Other Adverse Effects**

See actual entry in RTECS for complete information

**Symptoms / effects,  
both acute and delayed**

No information available.

**SECTION 12: ECOLOGICAL INFORMATION****12.1. Toxicity****Ecotoxicity effects**

Do not empty into drains. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

| Component              | Freshwater Fish      | Water Flea | Freshwater Algae   | Microtox |
|------------------------|----------------------|------------|--------------------|----------|
| Di-tert-butyl peroxide | LC50 > 170 mg/L 96 h |            | EC50 = 36 mg/L 72h |          |

**12.2. Persistence and degradability****Persistence**

Not readily biodegradable

Immiscible with water , Persistence is unlikely, based on information available.

**12.3. Bioaccumulative potential**

May have some potential to bioaccumulate Bioaccumulation is unlikely

| Component              | log Pow | Bioconcentration factor (BCF) |
|------------------------|---------|-------------------------------|
| Di-tert-butyl peroxide | 3       | No data available             |

**12.4. Mobility in soil**

The product is insoluble and floats on water. The product contains volatile organic compounds (VOC) which will evaporate easily from all surfaces. . Is not likely mobile in the environment due its low water solubility. Will likely be mobile in the environment due to its volatility.

**12.5. Results of PBT and vPvB assessment**

No data available for assessment

**12.6. Other adverse effects  
Endocrine Disruptor Information  
Persistent Organic Pollutant  
Ozone Depletion Potential**

This product does not contain any known or suspected endocrine disruptors

This product does not contain any known or suspected substance

This product does not contain any known or suspected substance

**SECTION 13: DISPOSAL CONSIDERATIONS****13.1. Waste treatment methods****Waste from Residues / Unused Products**

Waste is classified as hazardous. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in accordance with local regulations.

**Contaminated Packaging**

Dispose of this container to hazardous or special waste collection point.. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep product and empty container away from heat and sources of ignition.

**European Waste Catalogue (EWC)**

According to the European Waste Catalogue, Waste Codes are not product specific, but application specific.

**Other Information**

Do not dispose of waste into sewer. Waste codes should be assigned by the user based on the application for which the product was used. Can be incinerated, when in compliance with local regulations.

**SECTION 14: TRANSPORT INFORMATION****IMDG/IMO****14.1. UN number**

UN3107

**14.2. UN proper shipping name**

ORGANIC PEROXIDE TYPE E, LIQUID

**14.3. Transport hazard class(es)**

5.2

**14.4. Packing group****ADR****14.1. UN number**

UN3107

**14.2. UN proper shipping name**

ORGANIC PEROXIDE TYPE E, LIQUID

**14.3. Transport hazard class(es)**

5.2

**14.4. Packing group****IATA****14.1. UN number**

UN3107

**14.2. UN proper shipping name**

ORGANIC PEROXIDE TYPE E, LIQUID

**14.3. Transport hazard class(es)**

5.2

**14.4. Packing group****14.5. Environmental hazards**

No hazards identified

**14.6. Special precautions for user**

No special precautions required

**14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**

Not applicable, packaged goods

**SECTION 15: REGULATORY INFORMATION****15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture****International Inventories**

X = listed



# SAFETY DATA SHEET

Revision Date 02-Aug-2013

Di-tert-butyl peroxide

| Component              | EINECS    | ELINCS | NLP | TSCA | DSL | NDSL | PICCS | ENCS | CHINA | AICS | KECL |
|------------------------|-----------|--------|-----|------|-----|------|-------|------|-------|------|------|
| Di-tert-butyl peroxide | 203-733-6 | -      |     | X    | X   | -    | X     | X    | X     | X    | X    |

## National Regulations

| Component              | Germany - Water Classification (VwVwS) | Germany - TA-Luft Class |
|------------------------|--|-------------------------|
| Di-tert-butyl peroxide | WGK 1                                  |                         |

Take note of Control of Substances Hazardous to Health Regulations (COSHH) 2002 and 2005 Amendment

Take note of Dir 94/33/EC on the protection of young people at work

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work

## 15.2. Chemical safety assessment

A Chemical Safety Assessment/Report (CSA/CSR) has not been conducted

## SECTION 16: OTHER INFORMATION

### Full text of R-phrases referred to under sections 2 and 3

R11 - Highly flammable

R68 - Possible risk of irreversible effects

R 7 - May cause fire

R52/53 - Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment

### Full text of H-Statements referred to under sections 2 and 3

H225 - Highly flammable liquid and vapor

H242 - Heating may cause a fire

H341 - Suspected of causing genetic defects

H412 - Harmful to aquatic life with long lasting effects

### Legend

**CAS** - Chemical Abstracts Service

**EINECS/ELINCS** - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances

**PICCS** - Philippines Inventory of Chemicals and Chemical Substances

**IECSC** - China Inventory of Existing Chemical Substances

**KECL** - Existing and Evaluated Chemical Substances

**WEL** - Workplace Exposure Limit

**ACGIH** - American Conference of Industrial Hygiene

**DNEL** - Derived No Effect Level

**RPE** - Respiratory Protective Equipment

**LC50** - Lethal Concentration 50%

**NOEC** - No Observed Effect Concentration

**PBT** - Persistent, Bioaccumulative, Toxic

**ADR** - European Agreement Concerning the International Carriage of Dangerous Goods by Road

**IMO/IMDG** - International Maritime Organization/International Maritime Dangerous Goods Code

**OECD** - Organisation for Economic Co-operation and Development

**BCF** - Bioconcentration factor

**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory

**DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List

**ENCS** - Japan Existing and New Chemical Substances

**AICS** - Australian Inventory of Chemical Substances

**NZIoC** - New Zealand Inventory of Chemicals

**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

**ICAO/IATA** - International Civil Aviation Organization/International Air Transport Association

**MARPOL** - International Convention for the Prevention of Pollution from Ships

**ATE** - Acute Toxicity Estimate

**VOC** - Volatile Organic Compounds

### Key literature references and sources for data

Suppliers safety data sheet,

Chemadvisor - LOLI,

Merck index,

RTECS

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**Training Advice**

Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.

Use of personal protective equipment, covering appropriate selection, compatibility, breakthrough thresholds, care, maintenance, fit and standards.

First aid for chemical exposure, including the use of eye wash and safety showers.

**Creation Date** 14-Mar-2012

**Revision Date** 02-Aug-2013

**Revision Summary**

**Reason for revision** (M)SDS sections updated, 2, 3, 7, 12.

**This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006**

**Disclaimer**

The information provided on this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

**End of Safety Data Sheet**