



# MATERIAL SAFETY DATA SHEET

according to the Global Harmonized System

Date of issue: 02/04/2013

Version 1.0

## SECTION 1. Identification

### Product identifier

Product number 814006  
Product name tert-Butyl hydroperoxide (70% solution in water) for synthesis

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

Identified uses Chemical for synthesis

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

Company EMD Millipore Corporation | 290 Concord Road, Billerica, MA 01821, United States of America | SDS Phone Support: +1-978-715-1335 | General Inquiries: +1-978-751-4321 | Monday to Friday, 9:00 AM to 4:00 PM Eastern Time (GMT-5)  
e-mail: mm\_sds@merckgroup.com

Emergency telephone 613-996-6666 CANUTEC (Canada)  
+1-703-527-3887 CHEMTREC (International)  
24 Hours/day; 7 Days/week

## SECTION 2. Hazards identification

### GHS Classification

Self reactive substances, Type F, H242  
Flammable liquid, Category 3, H226  
Acute toxicity, Category 4, Oral, H302  
Acute toxicity, Category 4, Inhalation, H332  
Acute toxicity, Category 3, Dermal, H311  
Skin corrosion, Category 1A, H314  
Skin sensitization, Category 1, H317  
Chronic aquatic toxicity, Category 2, H411

For the full text of the H-Statements mentioned in this Section, see Section 16.

### GHS-Labeling

*Hazard pictograms*



*Signal Word*

MATERIAL SAFETY DATA SHEET  
according to the Global Harmonized System

Product number 814006  
Product name tert-Butyl hydroperoxide (70% solution in water) for synthesis

---

Version 1.0

Danger

*Hazard Statements*

H242 Heating may cause a fire.  
H226 Flammable liquid and vapor.  
H302 + H332 Harmful if swallowed or if inhaled.  
H311 Toxic in contact with skin.  
H314 Causes severe skin burns and eye damage.  
H317 May cause an allergic skin reaction.  
H411 Toxic to aquatic life with long lasting effects.

*Precautionary Statements*

P273 Avoid release to the environment.  
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.  
P301 + P330 + P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.  
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.  
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P309 + P310 IF exposed or if you feel unwell: Immediately call a POISON CENTER or doctor/physician.

**Other hazards**

None known.

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**SECTION 3. Composition/information on ingredients**

Chemical nature Aqueous solution

**Hazardous ingredients**

*Chemical Name (Concentration)*

CAS-No.

tert-Butyl hydroperoxide ( $\geq 70\%$  -  $< 90\%$ )

75-91-2

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**SECTION 4. First aid measures**

**Description of first-aid measures**

*General advice*

First aider needs to protect himself.

*Inhalation*

After inhalation: fresh air. If breathing stops: immediately apply artificial respiration, if necessary oxygen. Immediately call in physician.

*Skin contact*

After skin contact: wash off with plenty of water. Immediately remove contaminated clothing. If available swab with polyethylene glycol 400. Consult a physician.

*Eye contact*

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist.

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MATERIAL SAFETY DATA SHEET  
according to the Global Harmonized System

Product number 814006  
Product name tert-Butyl hydroperoxide (70% solution in water) for synthesis

---

Version 1.0

*Ingestion*

After swallowing: make victim drink water (two glasses at most), avoid vomiting (risk of perforation!). Call a physician immediately.

Never give anything by mouth to an unconscious person.

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

Irritation and corrosion

Organic peroxides show inter alia a more or less strongly pronounced irritant effect on skin and mucous membranes. In some cases it has displayed a sensitizing effect with allergic manifestations in predisposed persons. Mutagenic properties have occurred in some representatives. The product should be handled with the care usual when dealing with chemicals.

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

No information available.

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**SECTION 5. Fire-fighting measures**

**Extinguishing media**

*Suitable extinguishing media*

Water, Carbon dioxide (CO<sub>2</sub>), Foam, Dry powder

*Unsuitable extinguishing media*

For this substance/mixture no limitations of extinguishing agents are given.

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

Combustible material

Fire-promoting. Keep away from combustible materials.

Vapors are heavier than air and may spread along floors.

Forms explosive mixtures with air at elevated temperatures.

Development of hazardous combustion gases or vapors possible in the event of fire.

**Advice for firefighters**

*Special protective equipment for fire-fighters*

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

*Further information*

Prevent fire extinguishing water from contaminating surface water or the ground water system.

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**SECTION 6. Accidental release measures**

**Personal precautions, protective equipment and emergency procedures**

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact.

Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders: Protective equipment see section 8.

**Environmental precautions**

Do not empty into drains.

**Methods and materials for containment and cleaning up**

Cover drains. Collect, bind, and pump off spills.

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MATERIAL SAFETY DATA SHEET  
according to the Global Harmonized System

Product number 814006  
Product name tert-Butyl hydroperoxide (70% solution in water) for synthesis

---

Version 1.0

Observe possible material restrictions (see sections 7 and 10).  
Take up with liquid-absorbent material (e.g. Chemisorb®). Dispose of properly. Clean up affected area.

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## SECTION 7. Handling and storage

### Precautions for safe handling

Work under hood. Do not inhale substance/mixture. Avoid generation of vapors/aerosols.

Observe label precautions.

#### *Advice on protection against fire and explosion*

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

### Conditions for safe storage, including any incompatibilities

Tightly closed. Separately or together with other organic peroxides only and away from sources of ignition and heat. Keep locked up or in an area accessible only to qualified or authorized persons.

Store at +15°C to +25°C (+59°F to +77°F).

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## SECTION 8. Exposure controls/personal protection

### Exposure limit(s)

Contains no substances with occupational exposure limit values.

### Engineering measures

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

### Individual protection measures

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

#### *Hygiene measures*

Immediately change contaminated clothing. Apply skin-protective barrier cream. Wash hands and face after working with substance.

#### *Eye/face protection*

Tightly fitting safety goggles

#### *Hand protection*

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

#### *Other protective equipment:*

Flame retardant antistatic protective clothing

#### *Respiratory protection*

required when vapors/aerosols are generated.

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

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MATERIAL SAFETY DATA SHEET  
according to the Global Harmonized System

Product number 814006  
Product name tert-Butyl hydroperoxide (70% solution in water) for synthesis

Version 1.0

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**SECTION 9. Physical and chemical properties**

|  |  |
|--|--|
| Physical state                         | liquid   |
| Color                                  | colorless  |
| Odor                                   | stinging   |
| Odor Threshold                         | No information available.  |
| pH                                     | No information available.  |
| Melting point                          | -3 °C  |
| Boiling point/boiling range            | 99 °F (37 °C)<br>at 20 hPa   |
| Flash point                            | 100 °F (38 °C)   |
| Evaporation rate                       | No information available.  |
| Flammability (solid, gas)              | No information available.  |
| Lower explosion limit                  | No information available.  |
| Upper explosion limit                  | No information available.  |
| Vapor pressure                         | 232 hPa<br>at 140 °F (60 °C)   |
| Relative vapor density                 | No information available.  |
| Relative density                       | 0.94 g/cm <sup>3</sup><br>at 68 °F (20 °C)                             |
| Water solubility                       | 130 - 150 g/l<br>at 68 °F (20 °C)                                      |
| Partition coefficient: n-octanol/water | log Pow: 0.70 (25 °C)<br>Bioaccumulation is not expected (log Pow <1). |
| Autoignition temperature               | No information available.  |
| Decomposition temperature              | > 205 °F (> 96 °C)   |
| Viscosity, dynamic                     | 4.1 mPa.s<br>at 68 °F (20 °C)  |
| Explosive properties                   | Risk of explosion if heated under confinement.                         |

MATERIAL SAFETY DATA SHEET  
according to the Global Harmonized System

Product number 814006 Version 1.0  
Product name tert-Butyl hydroperoxide (70% solution in water) for synthesis

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Refractive index 1.3870  
at 68 °F (20 °C)

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**SECTION 10. Stability and reactivity**

**Reactivity**

Vapor/air-mixtures are explosive at intense warming.

**Chemical stability**

The product is chemically stable under standard ambient conditions (room temperature) .

**Possibility of hazardous reactions**

Violent reactions possible with:

Strong acids, alkalines, Reducing agents, metallic salts

**Conditions to avoid**

Heating.

A range from approx. 15 Kelvin below the flash point is to be rated as critical.

**Incompatible materials**

no information available

**Hazardous decomposition products**

no information available

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**SECTION 11. Toxicological information**

**Information on toxicological effects**

*Likely route of exposure*

Eye contact, Skin contact

*Acute oral toxicity*

LD50 rat: 810 mg/kg (External MSDS)

absorption

Symptoms: Ingestion causes burns of the upper digestive and respiratory tracts.

*Acute inhalation toxicity*

absorption

Symptoms: mucosal irritations, Cough, Shortness of breath, Possible damages:, damage of respiratory tract

*Acute dermal toxicity*

LD50 rabbit: 628 mg/kg  
(External MSDS)

absorption

*Skin irritation*

Mixture causes severe burns.

*Eye irritation*

Mixture causes serious eye damage.

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MATERIAL SAFETY DATA SHEET  
according to the Global Harmonized System

Product number 814006  
Product name tert-Butyl hydroperoxide (70% solution in water) for synthesis

---

Version 1.0

*Sensitization*

May cause an allergic skin reaction.

*Genotoxicity in vitro*

Ames test

Salmonella typhimurium

Result: positive

(Lit.)

Mutagenicity (mammal cell test): chromosome aberration.

Result: positive

(Lit.)

Mutagenicity (mammal cell test):

Result: positive

(Lit.)

*Specific target organ systemic toxicity - single exposure*

The substance or mixture is not classified as specific target organ toxicant, single exposure.

*Specific target organ systemic toxicity - repeated exposure*

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

*Aspiration hazard*

Regarding the available data the classification criteria are not fulfilled.

**Carcinogenicity**

|       |  |
|-------|--|
| IARC  | No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC. |
| OSHA  | No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.             |
| NTP   | No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.                 |
| ACGIH | No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.            |

**Further information**

After absorption:

We have no description of any toxic symptoms.

Other information

Organic peroxides show inter alia a more or less strongly pronounced irritant effect on skin and mucous membranes. In some cases it has displayed a sensitizing effect with allergic manifestations in predisposed persons. Mutagenic properties have occurred in some representatives. The product should be handled with the care usual when dealing with chemicals.

Further data:

Other dangerous properties can not be excluded.

MATERIAL SAFETY DATA SHEET  
according to the Global Harmonized System

Product number 814006  
Product name tert-Butyl hydroperoxide (70% solution in water) for synthesis

---

Version 1.0

Handle in accordance with good industrial hygiene and safety practice.

**Ingredients**

*tert-Butyl hydroperoxide*  
No information available.

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**SECTION 12. Ecological information**

**Ecotoxicity**

*Toxicity to fish*

LC50 Pimephales promelas (fathead minnow): 42.3 mg/l; 96 h  
OECD Test Guideline 203

*Toxicity to daphnia and other aquatic invertebrates*

EC50 Daphnia magna (Water flea): 20 mg/l; 48 h  
OECD Test Guideline 202

*Toxicity to algae*

algae: 1.2 mg/l; 72 h (External MSDS)

**Persistence and degradability**

*Biodegradability*

0 %; 28 d

Not readily biodegradable.

**Bioaccumulative potential**

*Partition coefficient: n-octanol/water*

log Pow: 0.70 (25 °C)

Bioaccumulation is not expected (log Pow <1).

**Mobility in soil**

No information available.

**Other adverse effects**

*Additional ecological information*

Discharge into the environment must be avoided.

**Ingredients**

*tert-Butyl hydroperoxide*  
No information available.

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**SECTION 13. Disposal considerations**

The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.



MATERIAL SAFETY DATA SHEET  
according to the Global Harmonized System

Product number 814006  
Product name tert-Butyl hydroperoxide (70% solution in water) for synthesis

Version 1.0

---

**SECTION 14. Transport information**

**Land transport (DOT)**

UN number UN 3109  
Proper shipping name ORGANIC PEROXIDE TYPE F, LIQUID (TERT-BUTYL HYDROPEROXIDE)  
Class 5.2 (8)  
Packing group  
Environmentally hazardous --

**Air transport (IATA)**

UN number UN 3109  
Proper shipping name ORGANIC PEROXIDE TYPE F, LIQUID (TERT-BUTYL HYDROPEROXIDE)  
Class 5.2 (8)  
Packing group  
Environmentally hazardous --  
Special precautions for user no

**Sea transport (IMDG)**

UN number UN 3109  
Proper shipping name ORGANIC PEROXIDE TYPE F, LIQUID (TERT-BUTYL HYDROPEROXIDE)  
Class 5.2 (8)  
Packing group  
Environmentally hazardous --  
Special precautions for user yes  
EmS F-J S-R

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**SECTION 15. Regulatory information**

**United States of America**

**Canada**

**WHMIS Classification**

B3 Combustible Liquid  
C Oxidizing Material  
D1B Toxic Material Causing Immediate and Serious Toxic Effects  
D2B Toxic Material Causing Other Toxic Effects  
E Corrosive Material  
Combustible Liquid, Oxidizer, Toxic by skin absorption, Skin sensitizer, Corrosive to skin,  
Corrosive to eyes, Corrosive by inhalation.

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

MATERIAL SAFETY DATA SHEET  
according to the Global Harmonized System

Product number 814006 Version 1.0  
Product name tert-Butyl hydroperoxide (70% solution in water) for synthesis

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**Notification status**

TSCA: On TSCA Inventory

DSL: All components of this product are on the Canadian DSL.

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**SECTION 16. Other information**

**Training advice**

Provide adequate information, instruction and training for operators.

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

|      |  |
|------|--|
| H226 | Flammable liquid and vapor.                      |
| H242 | Heating may cause a fire.                        |
| H302 | Harmful if swallowed.                            |
| H311 | Toxic in contact with skin.                      |
| H314 | Causes severe skin burns and eye damage.         |
| H317 | May cause an allergic skin reaction.             |
| H332 | Harmful if inhaled.                              |
| H411 | Toxic to aquatic life with long lasting effects. |

**Key or legend to abbreviations and acronyms used in the safety data sheet**

Used abbreviations and acronyms can be looked up at [www.wikipedia.org](http://www.wikipedia.org).

Date of issue: 02/04/2013

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The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to appropriate safety precautions. It does not represent a warranty of any product properties and we assume no liability for any loss or injury which may result from the use of this information. Users should conduct their own investigations to determine the suitability of the information.

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