

## SAFETY DATA SHEET

Creation Date 12-Sep-2014

Revision Date 25-Mar-2024

Revision Number 6

### 1. Identification

**Product Name** tert-Butyl hydroperoxide, 70% aqueous solution

**Cat No. :** A13926

**Synonyms** TBHP; Trigonox®4 A

**Recommended Use** Laboratory chemicals.

**Uses advised against** Food, drug, pesticide or biocidal product use.

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

##### Company

Thermo Fisher Scientific Chemicals, Inc.  
30 Bond Street  
Ward Hill, MA 01835-8099  
Tel: 800-343-0660  
Fax: 800-322-4757

##### **Emergency Telephone Number**

For information **US** call: 001-800-227-6701 / **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

### 2. Hazard(s) identification

#### Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids	Category 3
Organic peroxides	Type F
Acute oral toxicity	Category 4
Acute dermal toxicity	Category 3
Acute Inhalation Toxicity - Vapors	Category 3
Skin Corrosion/Irritation	Category 1 C
Serious Eye Damage/Eye Irritation	Category 1
Skin Sensitization	Category 1
Germ Cell Mutagenicity	Category 2
Carcinogenicity	Category 2
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Respiratory system.	

#### Label Elements

**Signal Word**

Danger

**Hazard Statements**

Flammable liquid and vapor  
Heating may cause a fire  
Harmful if swallowed  
Causes severe skin burns and eye damage  
May cause respiratory irritation  
May cause an allergic skin reaction  
Suspected of causing genetic defects  
Suspected of causing cancer  
Toxic in contact with skin or if inhaled

**Precautionary Statements****Prevention**

Obtain special instructions before use  
Do not handle until all safety precautions have been read and understood  
Use personal protective equipment as required  
Wash face, hands and any exposed skin thoroughly after handling  
Do not eat, drink or smoke when using this product  
Use only outdoors or in a well-ventilated area  
Do not breathe dust/fume/gas/mist/vapors/spray  
Contaminated work clothing should not be allowed out of the workplace  
Wear protective gloves  
Keep away from heat/sparks/open flames/hot surfaces. - No smoking  
Keep container tightly closed  
Ground/bond container and receiving equipment  
Use explosion-proof electrical/ventilating/lighting equipment  
Use only non-sparking tools  
Take precautionary measures against static discharge  
Keep/Store away from clothing/ other combustible materials  
Keep only in original container  
Keep cool

**Response**

Immediately call a POISON CENTER or doctor/physician

**Inhalation**

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

**Skin**

Wash contaminated clothing before reuse  
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower  
If skin irritation or rash occurs: Get medical advice/attention

**Eyes**

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

**Ingestion**

Rinse mouth  
Do NOT induce vomiting

**Fire**

In case of fire: Use CO<sub>2</sub>, dry chemical, or foam for extinction

**Storage**

Store locked up  
Store in a well-ventilated place. Keep container tightly closed  
Store at temperatures not exceeding 35 °C/ 95 °F. Keep cool

Protect from sunlight  
Store away from other materials

**Disposal**

Dispose of contents/container to an approved waste disposal plant

**Hazards not otherwise classified (HNOC)**

Toxic to aquatic life with long lasting effects

### 3. Composition/Information on Ingredients

Component	CAS No	Weight %
tert-Butyl hydroperoxide	75-91-2	70
Water	7732-18-5	30

### 4. First-aid measures

<b>General Advice</b>	Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.
<b>Eye Contact</b>	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
<b>Skin Contact</b>	Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.
<b>Inhalation</b>	If not breathing, give artificial respiration. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Remove to fresh air. Immediate medical attention is required.
<b>Ingestion</b>	Do NOT induce vomiting. Call a physician or poison control center immediately.
<b>Most important symptoms and effects</b>	Causes burns by all exposure routes. Difficulty in breathing. May cause allergic skin reaction. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting: Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation: Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing
<b>Notes to Physician</b>	Treat symptomatically

### 5. Fire-fighting measures

<b>Suitable Extinguishing Media</b>	Water mist may be used to cool closed containers. CO <sub>2</sub> , dry chemical, dry sand, alcohol-resistant foam.
<b>Unsuitable Extinguishing Media</b>	No information available
<b>Flash Point</b>	43 °C / 109.4 °F
<b>Method -</b>	CC (closed cup)
<b>Autoignition Temperature</b>	204 °C / 399.2 °F
<b>Explosion Limits</b>	

Upper	No data available
Lower	No data available
<b>Oxidizing Properties</b>	Oxidizer
<b>Sensitivity to Mechanical Impact</b>	No information available
<b>Sensitivity to Static Discharge</b>	No information available

**Specific Hazards Arising from the Chemical**

Thermal decomposition can lead to release of irritating gases and vapors. The product causes burns of eyes, skin and mucous membranes. Oxidizer: Contact with combustible/organic material may cause fire. May ignite combustibles (wood paper, oil, clothing, etc.). Flammable. Containers may explode when heated. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back.

**Hazardous Combustion Products**

Carbon monoxide (CO). Carbon dioxide (CO<sub>2</sub>). tert-butanol.

**Protective Equipment and Precautions for Firefighters**

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

**NFPA**

**Health**  
4

**Flammability**  
2

**Instability**  
2

**Physical hazards**  
OX

**6. Accidental release measures**

<b>Personal Precautions</b>	Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Remove all sources of ignition. Take precautionary measures against static discharges.
<b>Environmental Precautions</b>	Do not flush into surface water or sanitary sewer system.
<b>Methods for Containment and Clean Up</b>	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.

**7. Handling and storage**

<b>Handling</b>	Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Use only under a chemical fume hood. Do not breathe mist/vapors/spray. Do not ingest. If swallowed then seek immediate medical assistance. Keep away from clothing and other combustible materials. Keep away from open flames, hot surfaces and sources of ignition. Use only non-sparking tools. Take precautionary measures against static discharges.
<b>Storage.</b>	Keep in a dry place. Do not store near combustible materials. Keep away from heat, sparks and flame. Keep refrigerated. To maintain product quality. Do not freeze. Organic peroxides. Corrosives area. Keep at temperature not exceeding 35°C. Keep containers tightly closed in a dry, cool and well-ventilated place. Incompatible Materials. Organic materials. Acids. Bases. Metals. Reducing Agent. Finely powdered metals. Strong reducing agents. Combustible material.

**8. Exposure controls / personal protection****Exposure Guidelines**

Component	ACGIH TLV	OSHA PEL	NIOSH	Mexico OEL (TWA)
tert-Butyl hydroperoxide	TWA: 0.1 ppm Skin			

Legend

ACGIH - American Conference of Governmental Industrial Hygienists

OSHA - Occupational Safety and Health Administration

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

#### Personal Protective Equipment

**Eye/face Protection** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**Skin and body protection** Wear appropriate protective gloves and clothing to prevent skin exposure.

**Respiratory Protection** Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

**Recommended Filter type:** low boiling organic solvent. Type AX. Brown. conforming to EN371.

**Hygiene Measures** Handle in accordance with good industrial hygiene and safety practice.

### 9. Physical and chemical properties

Physical State	Liquid
Appearance	Colorless
Odor	Slight
Odor Threshold	No information available
pH	4.3 @ 20°C sat.aq.sol
Melting Point/Range	-2.8 °C / 27 °F
Boiling Point/Range	37 °C / 98.6 °F @ 15 mmHg
Flash Point	43 °C / 109.4 °F
Method -	CC (closed cup)
Evaporation Rate	No information available
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	62 mmHg @ 45 °C
Vapor Density	3.1 (Air = 1.0)
Specific Gravity	0.940
Solubility	Miscible with water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	204 °C / 399.2 °F
Decomposition Temperature	75 °C
Viscosity	4.1 mPa.s at 20 °C
Molecular Formula	C4 H10 O2
Molecular Weight	90.12
Self-Accelerating Decomposition Temperature (SADT)	80°C

### 10. Stability and reactivity

<b>Reactive Hazard</b>	Yes
<b>Stability</b>	Oxidizer: Contact with combustible/organic material may cause fire.
<b>Conditions to Avoid</b>	Do not freeze. Temperatures above 35°C. Keep away from open flames, hot surfaces and sources of ignition. Exposure to light. Incompatible products. Combustible material. Excess heat.
<b>Incompatible Materials</b>	Organic materials, Acids, Bases, Metals, Reducing Agent, Finely powdered metals, Strong

reducing agents, Combustible material

**Hazardous Decomposition Products** Carbon monoxide (CO), Carbon dioxide (CO<sub>2</sub>), tert-butanol

**Hazardous Polymerization** Hazardous polymerization does not occur.

**Hazardous Reactions** None under normal processing.

## 11. Toxicological information

### Acute Toxicity

#### Product Information

**Oral LD50**

Category 4. ATE = 300 - 2000 mg/kg.

**Dermal LD50**

Category 3. ATE = 200 - 1000 mg/kg.

**Vapor LC50**

Based on ATE data, the classification criteria are not met. ATE > 20 mg/l. Category 2. ATE = 0.5 - 2 mg/l. Category 3. ATE = 2 - 10 mg/l.

#### Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
tert-Butyl hydroperoxide	LD50 = 560 mg/kg ( Rat )	LD50 = 628 mg/kg ( Rabbit )	LC50 = 1845 mg/m <sup>3</sup> ( Rat ) 4 h
Water	-	-	-

**Toxicologically Synergistic Products** No information available

### Delayed and immediate effects as well as chronic effects from short and long-term exposure

**Irritation** Causes burns by all exposure routes

**Sensitization** May cause sensitization by skin contact

**Carcinogenicity** .

Component	CAS No	IARC	NTP	ACGIH	OSHA	Mexico
tert-Butyl hydroperoxide	75-91-2	Not listed	Not listed	Not listed	Not listed	Not listed
Water	7732-18-5	Not listed	Not listed	Not listed	Not listed	Not listed

**Mutagenic Effects** Possible risk of irreversible effects

**Reproductive Effects** No information available.

**Developmental Effects** No information available.

**Teratogenicity** No information available.

**STOT - single exposure** Respiratory system

**STOT - repeated exposure** None known

**Aspiration hazard** No information available

**Symptoms / effects, both acute and delayed** Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting: Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation: Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

**Endocrine Disruptor Information** No information available

**Other Adverse Effects** The toxicological properties have not been fully investigated.

## 12. Ecological information

**Ecotoxicity**

The product contains following substances which are hazardous for the environment. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
tert-Butyl hydroperoxide	EC50: = 2.1 mg/L, 72h (Pseudokirchneriella subcapitata)	LC50: = 42.3 mg/L, 96h semi-static (Pimephales promelas) LC50: = 57 mg/L, 96h static (Brachydanio rerio)	Not listed	EC50: = 20 mg/L, 48h (Daphnia magna)

**Persistence and Degradability** Persistence is unlikely based on information available.

**Bioaccumulation/ Accumulation** No information available.

**Mobility** Will likely be mobile in the environment due to its volatility.

Component	log Pow
tert-Butyl hydroperoxide	0.846

### 13. Disposal considerations

**Waste Disposal Methods** Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

### 14. Transport information

**DOT**

UN-No UN3109  
 Proper Shipping Name ORGANIC PEROXIDE TYPE F, LIQUID SOLUTION  
 Technical Name tert-Butyl hydroperoxide  
 Hazard Class 5.2

**TDG**

UN-No UN3109  
 Proper Shipping Name ORGANIC PEROXIDE TYPE F, LIQUID SOLUTION  
 Hazard Class 5.2  
 Packing Group II

**IATA**

UN-No UN3109  
 Proper Shipping Name ORGANIC PEROXIDE TYPE F, LIQUID SOLUTION  
 Hazard Class 5.2  
 Subsidiary Hazard Class 8

**IMDG/IMO**

UN-No UN3109  
 Proper Shipping Name ORGANIC PEROXIDE TYPE F, LIQUID SOLUTION  
 Hazard Class 5.2  
 Subsidiary Hazard Class 8

### 15. Regulatory information

**United States of America Inventory**

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	TSCA - EPA Regulatory Flags
tert-Butyl hydroperoxide	75-91-2	X	ACTIVE	-
Water	7732-18-5	X	ACTIVE	-

**Legend:**

**TSCA** US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)

X - Listed

'-' - Not Listed

**TSCA - Per 40 CFR 751, Regulation of Certain Chemical Substances & Mixtures, Under TSCA Section 6(h) (PBT)**

Not applicable

**TSCA 12(b) - Notices of Export**

Not applicable

**International Inventories**

X = listed.

Component	CAS No	DSL	NDSL	EINECS	PICCS	ENCS	ISHL	AICS	IECSC	KECL
tert-Butyl hydroperoxide	75-91-2	X	-	200-915-7	X	X	X	X	X	KE-11387
Water	7732-18-5	X	-	231-791-2	X	X		X	X	KE-35400

KECL - NIER number or KE number (<http://ncis.nier.go.kr/en/main.do>)**U.S. Federal Regulations****SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

**SARA 311/312 Hazard Categories**

Should this product meet EPCRA 311/312 Tier reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate classifications.

**CWA (Clean Water Act)**

Not applicable

**Clean Air Act**

Not applicable

**OSHA** - Occupational Safety and Health Administration

**OSHA** - United States Occupational Safety and Health Administration

Component	Specifically Regulated Chemicals	Highly Hazardous Chemicals
tert-Butyl hydroperoxide	-	TQ: 5000 lb

**CERCLA**

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

**California Proposition 65**

This product does not contain any Proposition 65 chemicals.

**U.S. State Right-to-Know Regulations**

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
tert-Butyl hydroperoxide	X	X	X	-	X
Water	-	-	X	-	-

**U.S. Department of Transportation**

Reportable Quantity (RQ): Y  
DOT Marine Pollutant N  
DOT Severe Marine Pollutant N

**U.S. Department of Homeland Security**

This product does not contain any DHS chemicals.



**Other International Regulations**

**Mexico - Grade** No information available

**Authorisation/Restrictions according to EU REACH**

Component	CAS No	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
tert-Butyl hydroperoxide	75-91-2	-	Use restricted. See item 75. (see link for restriction details)	-
Water	7732-18-5	-	-	-

**REACH links**

<https://echa.europa.eu/substances-restricted-under-reach>

**Safety, health and environmental regulations/legislation specific for the substance or mixture**

Component	CAS No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
tert-Butyl hydroperoxide	75-91-2	Listed	Not applicable	Not applicable	Not applicable
Water	7732-18-5	Listed	Not applicable	Not applicable	Not applicable

**Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)?**

Not applicable

**Other International Regulations**

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)
tert-Butyl hydroperoxide	75-91-2	Not applicable	Not applicable	Not applicable	Not applicable
Water	7732-18-5	Not applicable	Not applicable	Not applicable	Not applicable

## 16. Other information

**Prepared By**

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www.thermofisher.com

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25-Mar-2024

**Revision Summary**

New emergency telephone response service provider.

**Disclaimer**

The information provided in 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 guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered 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

materials or in any process, unless specified in the text

**End of SDS**