

Section 1. Product and Company Identification

Product Name tert-Butyl Hydroperoxide 70% Solution
CAS Number 75-91-2

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Section 2. Hazards Identification

Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Flammable liquids (Category 3), H226
Organic peroxides (Type F), H242
Acute toxicity, Oral (Category 4), H302
Acute toxicity, Inhalation (Category 3), H331
Acute toxicity, Dermal (Category 3), H311
Skin corrosion (Category 1C), H314
Serious eye damage (Category 1), H318
Skin sensitization (Category 1), H317
Germ cell mutagenicity (Category 2), H341
Acute aquatic toxicity (Category 2), H401
Chronic aquatic toxicity (Category 2), H411

GHS Label Elements

Pictograms:



Signal word: DANGER

Hazard and precautionary statements

Hazard Statements

H226 Flammable liquid and vapor.
H242 Heating may cause a fire.
H302 Harmful if swallowed.
H311 + H331 Toxic in contact with skin or if inhaled.



H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H341 Suspected of causing genetic defects.
H411 Toxic to aquatic life with long lasting effects.

Precautionary Statements

P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P220 Keep/Store away from clothing/ combustible materials.
P233 Keep container tightly closed.
P234 Keep only in original container.
P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical/ventilating/lighting/equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P261 Avoid breathing dust/fume/gas/mist/vapors/spray.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P272 Contaminated work clothing should not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P235 Keep cool.
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position 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.
P310 Immediately call a POISON CENTER or doctor/ physician.
P322 Specific measures (see supplemental first aid instructions on this label).
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P361 Remove/ Take off immediately all contaminated clothing.
P363 Wash contaminated clothing before reuse.
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
P391 Collect spillage.
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up
P410 Protect from sunlight.
P420 Store away from other materials.
P501 Dispose of contents/ container to an approved waste disposal plant.



Emergency Overview

Form: Liquid
Color: Colorless
Odor: Pungent

DANGER
ORGANIC PEROXIDE
FLAMMABLE LIQUID AND VAPOR.
CORROSIVE
CAUSES EYE AND SKIN BURNS.
CAUSES RESPIRATORY TRACT IRRITATION.
HARMFUL IF INHALED OR ABSORBED THROUGH SKIN
MAY CAUSE ALLERGIC SKIN REACTION.
MAY BE HARMFUL IF SWALLOWED.
DANGER OF HAZARDOUS DECOMPOSITION IF EXPOSED TO HEAT OR CONTAMINATION.
May cause fire.

Dangerous for the environment
Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Potential Health Effects

Eye contact: Corrosive. May cause burns resulting in permanent damage.
May cause blindness.

Skin Contact: Corrosive. May cause burns resulting in permanent damage. Toxic. Harmful if absorbed through the skin. May cause skin sensitization, an allergic reaction, which becomes evident on re-exposure to this material.

Inhalation: Corrosive. May cause burns resulting in permanent damage. Toxic. Harmful if inhaled.

Ingestion: Harmful if swallowed.

Chronic Health Hazard: May cause harm to unborn child. This product contains one or more ingredients that have been shown to produce mutagenic effects in in vitro testing.

Section 3. Composition / Information on Ingredients

Common Name tert-Butyl Hydroperoxide 70% Solution
Synonym(s) TBHP
Formula C₄H₁₀O₂
CAS Number 75-91-2

COMPONENT	CAS NUMBER	CONCENTRATION
tert-Butyl Hydroperoxide 70% Solution	75-91-2	69 – 71%



Section 4. First Aid Measures

General advice: Take off contaminated clothing immediately. Never give anything by mouth to an unconscious person. Remove from exposure, lie down. If feeling unwell seek medical advice.

Inhalation: If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If unconscious, evaluate the need for artificial respiration. Get immediate medical attention.

Skin contact: Wash off with soap and water. If skin irritation occurs, call physician.

Eye contact: Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

Ingestion: If large quantities of this material are swallowed, call a physician immediately. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Never give anything by mouth to an unconscious person. Should vomiting occur, be sure to keep victim's head below hips to avoid aspiration of vomitus into the lungs.

Section 5. Firefighting Measures

Flash point: 42°C (108°F)

Lower explosion limit: 5.7% (V)

Upper explosion limit: 99.99% (V)

Auto-ignition temperature: ca. 238°C

Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Specific hazards during firefighting: Contact with incompatible materials or exposure to temperatures exceeding the SADT may result in a self-acceleration decomposition reaction with release of flammable vapors which may auto-ignite. Cool closed containers exposed to fire with water spray. Containers exposed to temperatures exceeding the SADT (see section 10) may explode. Vapors can travel to a source of ignition and flash back. Do not allow run-off from firefighting to enter drains or water courses.

Special protective equipment for firefighters: As in any fire, wear self-contained positive-pressure breathing apparatus, (MSHA/NIOSH approved or equivalent) and full protective gear.

Further information: Evacuate area and fight fire from a safe distance. Containers near the source of fire should be cooled with a water spray to prevent contents from reaching decomposition temperature. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Section 6. Accidental Release Measures

Personal precautions: Evacuate personnel to safe areas. Wear a self-contained breathing apparatus and appropriate personal protective equipment. (See Section 8 - Exposure Controls/Personal Protection.) Remove all sources of ignition. Ventilate the area.

Environmental precautions: Obey relevant local, state, provincial and federal laws and regulations. Do not contaminate any lakes, streams, rivers, groundwater or soil.

Methods for cleaning up: Organic Peroxide spills should be attended to immediately. Contain spill and absorb with an inert absorbent material and then wet down the mixture with water. Sweep up mixture of spilled organic peroxide and inert absorbent material using non-sparking tools and place in polyethylene bags for disposal. The sweepings in the polyethylene bag should be further



wetted with water and disposed of immediately by an approved disposal company. If stored for any period of time, store out of direct sunlight in a cool, well-ventilated place. After all the material has been picked up, wash down the spill area with surfactant and water to remove any traces of organic peroxide. Allow for sufficient ventilation to aid in the removal of fumes that may be present.

Additional advice: Never return spills in original containers for re-use. Dispose of contaminated material as waste in accordance with section 13.

Section 7. Handling and Storage

Handling

Safe handling advice: Keep away from heat. Keep away from sparks, flames and other sources of ignition. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Use with adequate ventilation. The need for grounding and bonding of containers in accordance with OSHA 29 CFR 1910.106 and NFPA 77 should be assessed for all product transfers. Follow all MSDS/label precautions even after the container is emptied because it may retain product residues. Wash thoroughly after handling. Do not swallow product. Use personal protective equipment. Protect from contamination. Dispense and transfer in an area separate from storage area. Never return unused material to storage receptacle. Wash contact areas after handling.

Remove contaminated clothing and wash before reuse. The addition of accelerators may result in vigorous decomposition.

Advice on protection against fire and explosion: Containers exposed to temperatures exceeding the SADT (see section 10) may decompose violently. Consult with specialists to ensure design protects against these hazards.

Storage

Requirements for storage areas and containers: Heat or contamination may cause hazardous decomposition. Keep containers dry and tightly closed to avoid moisture absorption and contamination. Keep container away from flammable and explosive substances. Protect from heat and exposure to direct sunlight. Store in original container.

Transport and store container in upright position only. Residual vapors might explode on ignition; do not apply heat, cut, drill, grind or weld on or near this container. Consult NFPA 400 for storage area guidance. Storage and handling designs should be arranged in consultation with a person experienced in these types of assessments.

Further information: Store below 104°F (40°C). Peroxide residues must not be returned into the original container, danger of decomposition!

Advice on common storage

Do not store together with: acids, alkalis, reducing agents, metallic salts.

Storage stability: < 40°C

Section 8. Exposure Controls / Personal Protection

Engineering measures: Use process enclosures, local exhaust ventilation or other engineering controls to control airborne exposure.



Personal protective equipment

Respiratory protection: A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 or applicable federal/provincial requirements must be followed whenever workplace conditions warrant respirator use. NIOSH's "Respirator Decision Logic" may be useful in determining the suitability of various types of respirators.

Hand protection: Use impermeable gloves. Personal protective equipment that provides a barrier to prevent dermal exposure to this substance is required. Gloves must be inspected prior to use. The above mentioned hand protection is based on knowledge of the chemistry and anticipated uses of this product but it may not be appropriate for all workplaces. A hazard assessment should be conducted prior to use to ensure suitability of gloves for specific work environments and processes prior to use. Suitability for specific workplaces should be clarified with protective glove manufacturers.

Glove material: Butyl rubber

Material thickness: 0.5 mm

Break through time: > 8 hrs

Eye protection: Use chemical splash goggles or face shield.

Skin and body protection: A safety shower and eye wash fountain should be readily available. To identify additional Personal Protective Equipment (PPE) requirements, it is recommended that a hazard assessment in accordance with the OSHA PPE Standard (29CFR1910.132) be conducted before using this product.

Hygiene measures: Remove and wash contaminated clothing before re-use. Wash contact areas after handling. Keep away from food, drink and animal feeding stuffs. All protective equipment that has been contaminated should be cleaned before reuse.

Section 9. Physical and Chemical Properties

Appearance

Form: Liquid

Color: Colorless

Odor: Pungent

pH: ca. 4.3

Melting point/range: ca. -3°C

Boiling point/range: ca. 96°C (1013 hPa)

Flash point: 42°C

Auto-ignition temperature: ca. 238°C

Lower explosion limit: 5.7% (V)

Upper explosion limit: 99.99% (V)

Vapor pressure: ca. 31 hPa (21°C)

Vapor pressure: 132 hPa (60°C)

Density: 0.93 g/cm³ (20°C)

Water solubility: Partly soluble



Partition coefficient (n-octanol/water): log Pow: 0.7 (25°C)

Viscosity, dynamic: 4.1 mPa*s (20°C)

Section 10. Stability and Reactivity

Conditions to avoid: Keep away from heat and sources of ignition.

Materials to avoid: Heavy metal compounds, reducing agents, combustible material, strong acids and strong bases, oxidizing agents, impurities, metal ions, metallic salts, metals.

Hazardous decomposition products: Temperatures at or above the SADT can result in the release of hazardous decomposition products which are flammable and can autoignite. In case of fire and decomposition formation of inflammable and explosive, irritant, corrosive, harmful and toxic gases and vapors possible.

Thermal decomposition: > 80°C

Method: SADT (UN test H.4)

Rapid, exothermic reaction may occur above the Self Accelerated Decomposition Temperature (SADT). SADT-Self Accelerating Decomposition Temperature. Lowest temperature at which the tested package size will undergo a self-accelerating decomposition reaction. This reaction will generate flammable vapors which may auto-ignite.

Hazardous reactions: When coming in contact with the product, impurities, decomposition catalysts, metallic salts, alkalis, reducing agents may lead to self-accelerated, exothermic decomposition and the formation of oxygen compounds. Risk of decomposition when exposed to heat. Product will not undergo hazardous polymerization.

Safety notes: Contact with incompatible materials or exposure to temperatures exceeding the SADT may result in a self-acceleration decomposition reaction with release of flammable vapors which may auto-ignite.

Section 11. Toxicological Information

Product Acute oral toxicity: LD50 Rat: 810 mg/kg

Product Acute inhalation toxicity: LC50 Rat: 1.85 mg/l / 4 h

Product Acute dermal toxicity: LD50 Rabbit: 628 mg/kg

Product Skin irritation: Rabbit - Corrosive

Product Eye irritation: Rabbit - Severe eye irritation

Product Sensitization: May cause sensitization by skin contact.

Product Repeated dose toxicity: Subchronic exposure of mice to tert-Butyl hydroperoxide has produced increased embryo death.

Product Mutagenicity Assessment: tert-Butyl Hydroperoxide has produced positive mutagenic results in sub-chronic studies in rats and in a number of "in vitro" mutagenic assays. tert-Butyl Hydroperoxide was negative in the dominant lethal mutagenic assay

Section 12. Ecological Information

Elimination information (persistence and degradability)

Biodegradability: Not readily biodegradable.

Method: Closed Bottle test

Ecotoxicity effects

Toxicity to fish: LC50: 56.9 mg/l (96 h)

Toxicity to daphnia: EC50 Daphnia: 20.1 mg/l (48 h)

Toxicity to algae: EC50 Green algae: 1.5 mg/L (72 h) chronic

Section 13. Disposal Considerations

Waste Treatment Methods: Dispose of product and contaminated packaging in accordance with all local, state, and federal environmental control regulations.

Section 14. Transport Information

DOT Road/Rail

Class: 5.2

UN-No: 3109

Packing group: II

Subsidiary risk: 8

Proper shipping name: Organic Peroxide Type F, Liquid

Technical Name: (tert-Butyl hydroperoxide, 70%)

Sea transport IMDG-Code

Class: 5.2

UN-No: 3109

Packaging group:

Subsidiary risk: 8

EmS: F-J, S-R

Proper shipping name: Organic Peroxide Type F, Liquid (tert-Butyl hydroperoxide, 70%)

Marine pollutant: Marine pollutant

Air transport ICAO-TI/IATA-DGR

Class: 5.2

UN-No: 3109

Packaging group:

Subsidiary risk: 8

Proper shipping name: Organic peroxide type F, liquid (tert-Butyl hydroperoxide, 70%)

Loading instructions/Remarks

IATA_C: ERG-Code 5L



IATA_C: Must be protected from direct sunlight and stored away from all sources of heat in a well-ventilated area.

IATA_P: ERG-Code 5L

IATA_P: Must be protected from direct sunlight and stored away from all sources of heat in a well-ventilated area.

IMDG: On deck only.

IMDG H: See chapter 3.2, column 17 IMDG Code

Transport/further Information: Keep separate from alkalis, powdered metals and flammable substances.

Section 15. Regulatory Information

Information on ingredients / Non-hazardous components

This product contains the following non-hazardous components

Water

CAS Number: 7732-18-5

Percent: 29 - 31% wt.

US Federal Regulations

OSHA

If listed below, chemical specific standards apply to the product or components: None listed

Clean Air Act Section (112)

If listed below, components present at or above the de minimus level are hazardous air pollutants:

None listed

CERCLA Reportable Quantities

If listed below, a reportable quantity (RQ) applies to the product based on the percent of the named component: None listed

SARA Title III Section 311/312 Hazard Categories

The product meets the criteria only for the listed hazard classes:

- Acute Health Hazard
- Chronic Health Hazard
- Fire Hazard
- Reactivity Hazard

SARA Title III Section 313 Reportable Substances

If listed below, components are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372: None listed

Toxic Substances Control Act (TSCA)

If listed below, non-proprietary substances are subject to export notification under Section 12 (b) of TSCA: None listed



State Regulations

California Proposition 65

A warning under the California Drinking Water Act is required only if listed below: None listed

International Chemical Inventory Status

Unless otherwise noted, this product is in compliance with the inventory listing of the countries shown below. For information on listing for countries not shown, contact the Product Regulatory Services Department.

Europe (EINECS/ELINCS): Listed/registered

USA (TSCA): Listed/registered

Canada (DSL): Listed/registered

Australia (AICS): Listed/registered

Japan (MITI): Listed/registered

Korea (TCCL): Listed/registered

Philippines (PICCS): Listed/registered

China: Listed/registered

New Zealand: Listed/registered

HMIS Ratings

Health: 3*

Flammability: 2

Reactivity: 2

NFPA Ratings

Health: 3

Flammability: 2

Reactivity: 2

Section 16. Other Information

Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product.

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