

GPS Safety Summary

Substance Name:

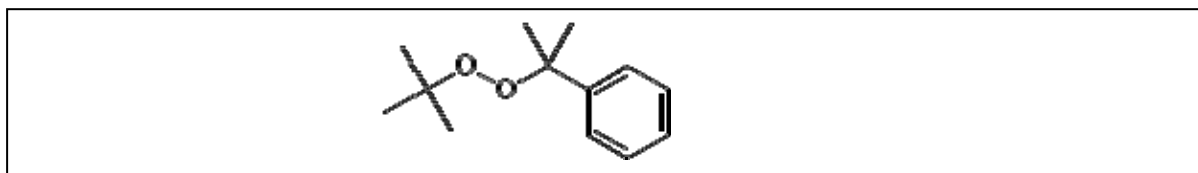
Tert-butyl cumyl peroxide

1. General Statement

Tert-butyl cumyl peroxide is primarily used as cross-linking agent. The substance is used as an industrial product and is not sold to general population.

2. Chemical Identity

Name: Tert-butyl cumyl peroxide
Brand names: Luperox 801; Liqua-Cup D-16; Luperox D16
Chemical name (IUPAC): tert-butyl 1-methyl-1-phenylethyl peroxide
CAS number(s): 3457-61-2
EC number: 222-389-8
Molecular formula: C₁₃H₂₀O₂
Structure:



3. Use and applications

The substance is primarily used as cross-linking agent for the production of cables made with rubber or polyethylene.

4. Physical / Chemical properties

Organic peroxides are thermally unstable substances or mixtures, which can undergo exothermic self-accelerating decomposition. Tert-butyl cumyl peroxide is a colourless liquid to yellowish liquid with the following physico-chemical properties:

Property	Value
Physical state	Liquid at 20°C and 101.3 hPa
Colour	Colourless to yellowish
Odour	Pungent, slightly aromatic
Molecular weight	208 g/mol
Density	0.9361 g/cm ³ at 20 °C
Vapour pressure	0.14 hPa at 40°C
Melting range	11.3°C to 19.5°C at 101.3 hPa

Boiling point	The substance decomposes before boiling
Flash point	82°C
Self-Accelerating Decomposition Temperature (SADT)	80°C
Explosive properties	Non explosive
Oxidizing properties	Organic peroxide
Water solubility	10.66 mg/L at 20°C
Octanol-water partition coefficient (Log K _{ow})	4.4 at 25°C

5. Health Effects

Tert-butyl cumyl peroxide is of low toxicity.

Effect Assessment	Result
Acute Toxicity Oral / inhalation / dermal	No acute toxic effects up to 2000 mg/kg following oral and dermal exposure.
Irritation / corrosion Skin / eye	Irritant to skin. Not irritant to eyes.
Sensitisation	Does not cause skin allergic reaction.
Toxicity after repeated exposure Oral / inhalation / dermal	Based on the available data, does not cause significant target organ toxicity after oral repeated exposure.
Genotoxicity / Mutagenicity	The substance did not cause genetic damage when tested <i>in vitro</i> .
Carcinogenicity	No data available.
Reproductive / Developmental Toxicity	Does not cause adverse effects on reproduction in absence of maternal toxicity.

6. Environmental Effects

Acute toxicity test performed on algae has shown no toxicity up to the limit of water solubility; however Tert-butyl cumyl peroxide is toxic to daphnids. Although the substance is considered as not readily biodegradable in water, it is not PBT or vPvB substance as the substance does not fulfil the B criteria.

Effect Assessment	Result
Aquatic Toxicity	No acute toxicity to algae up to the limit of water solubility. Toxic to daphnids

Fate and behaviour	Result
(Bio)degradation potential	Not readily biodegradable
Bioaccumulation potential	Not classified as bioaccumulable
PBT / vPvB conclusion	Not considered as PBT nor vPvB

7. Exposure

7.1 Human health

The manufacture of tert-butyl cumyl peroxide is a closed process that occurs behind anti-deflagration walls, which minimizes worker exposure during the production process.

However, workers can be exposed during loading/unloading operations, mixing, sampling or maintenance operations.

The primary routes of industrial/professional exposure of tert-butyl cumyl peroxide are skin contact and inhalation.

In addition, general population is not expected to be exposed to tert-butyl cumyl peroxide by inhalation, dermal or oral exposure, the product does not remain in the plastic products.

Based on the risk assessment, risk is controlled when activities are carried out under conditions recommended in the extended safety data sheet (chapter 8 and exposure scenarios)

7.2 Environment

Releases of tert-butyl cumyl peroxide into the environment are to be expected during production, processing (formulation) and industrial uses mainly via wastewater and lesser amounts via emissions of vapour (due to its physical state and its vapour pressure).

Potential release during production is treated by on-site and off-site risk management measures.

The substance is used in low quantity in polymer production, and is almost totally consumed during the process. Therefore the release to environment is very low and, in spite of the environmental hazard profile of the substance, the use is considered as safe for the environment (this was confirmed by a quantitative risk assessment performed in the framework of REACH regulation)

8. Risk Management recommendations

Human health measures	
Eye/Face protection	Safety glasses/goggles and face-mask (during discharge)
Skin protection	Protective suit
Hand protection	Gloves (PVC, neoprene, nitrile rubber, tested to EN374)
Respiratory protection	Suitable respiratory equipment in case of insufficient ventilation Self contained breathing apparatus in of hazardous fumes.
Organizational measures	Ensure workers are duly trained to minimize exposure
Engineering control	Provide sufficient air exchange and/or exhaust ventilation in work rooms
Environmental measures	
Can be discharged in waste water, when in compliance with local regulations. Do not spread sludge on natural soils. Eliminate the product by incineration after dilution in a suitable flammable solvent (in accordance with local and national regulations) – amount of active oxygen must be below 1%.	

Storage and handling

Strictly limit the quantities of product in the work area to those which are absolutely necessary for the work in hand. Great cleanliness in work areas is a necessary and important factor for safety. Never weigh out in the storage room. Handle and open container with care (risk of overpressurization in containers). Eliminate all sources of ignition, and do not generate flames or sparks. Take precautionary measures against static discharges. Apply earthing when transferring from one container to another. Confinement must be avoided. Use explosion protected equipment.

Use non-sparking tools in areas where explosive vapor/air mixtures may occur. Keep product and emptied container away from heat and sources of ignition. Do not cut or weld on or near this container even when empty. Keep away from incompatible materials such as: strong oxidizing agents, powerful reducers, acids, bases, amines, transition metal salts, sulphur compounds, rust, ash, dusts (risk of self-accelerating exothermic decomposition).

Never return any product to the container from which it was originally removed (risk of decomposition).

9. Regulatory Information / Classification and Labelling

9.1 Regulatory Information

This substance has been registered under EU Regulation EC 1907/2006 (REACH)

As organic peroxides are sensitive substances (as they are liable to exothermic decomposition), the carriage of tert-butyl cumyl peroxide is strongly regulated, under the rules and conditions of class 5.2 of UN Recommendations on the Transport of Dangerous Goods regulation.

%	UN Number	Classification	OP Category
>42%-100%	UN 3107	OP Type E, Liquid, no temperature control	Type E: neither detonates nor deflagrates at all and shows low or no effect when heated under confinement.
≤52%	UN 3108	OP Type E, Solid, no temperature control	Type E: neither detonates nor deflagrates at all and shows low or no effect when heated under confinement.

9.2 Classification and labelling

Under GHS substances are classified according to their physical, health, and environmental hazards. The hazards are communicated via specific labels and the eSDS. GHS attempts to standardize hazard communication so that the intended audience (workers, consumers, transport workers, and emergency responders) can better understand the hazards of the chemicals in use. Substances registered for REACH are classified according CLP (EC) 1272/2008, implementation of the GHS in the European Union.




Classification

According to REGULATION (EC) no 1272/2008:

- Organic Peroxide ; Type E
- Skin Irritant ; Category 2
- Aquatic Chronic Toxicity ; Category 2

Signal word

Warning

Pictogram	
– GHS02: flame	
– GHS07: exclamation mark	
– GHS09: environment	
Hazard statement	
<ul style="list-style-type: none"> – H242: Heating may cause a fire. – H315: Causes skin irritation. – H411: Toxic to aquatic life with long lasting effects. 	
Additional classification according to Globally Harmonized System (GHS)	
<ul style="list-style-type: none"> – Acute toxicity by oral route; Category 5; May be harmful if swallowed – Aquatic acute toxicity; Category 2; Toxic to aquatic life 	

10. Contact Information within Company

For further information on this substance or product safety summary in general, please contact:

- arkema.peroxides-reach-uses@arkema.com
- ICCA portal where the GPS Safety Summary is posted:
<http://www.icca-chem.org/en/Home/ICCA-initiatives/global-product-strategy/>

11. Date of Issues / Revision

- Date of issue: 2014/06/10
- Date of revision:

12. Disclaimer

The information contained in this paper is intended as advice only and whilst the information is provided in utmost good faith and has been based on the best information currently available, is to be relied upon at the user's own risk.

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