

GPS Safety Summary

Substance Name:

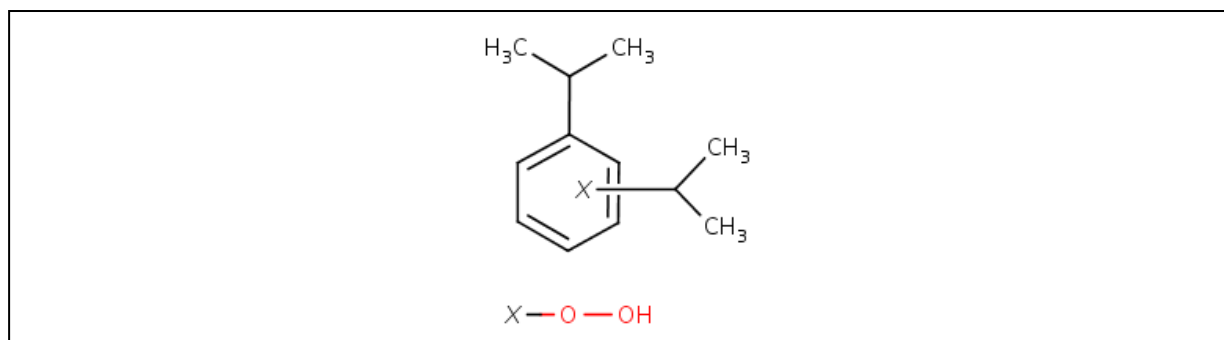
Diisopropylbenzene monohydroperoxide

1. General Statement

Organic peroxide used as an initiator for polymerisation.

2. Chemical Identity

Name:	Diisopropylbenzene monohydroperoxide
Brand names:	Luperox® DH
Chemical name (IUPAC):	hydrogen peroxide - 1,2-diisopropylbenzene (1:1)
CAS number(s):	26762-93-6
EC number:	247-988-1
Molecular formula:	C ₁₂ H ₁₈ O ₂
Structure:	



3. Use and applications

Organic peroxide used for the polymerisation of E-SBR (emulsion styrene-butadiene rubber), NBR (nitrile butadiene rubber) and MBS (polymethacrylate butadiene styrene).

4. Physical / Chemical properties

Diisopropylbenzene monohydroperoxide is marketed exclusively in solution with Diisopropylbenzene that is acting as a stabilizing agent and cannot be totally separated due to the explosive properties of the substance. Indeed, organic peroxides are thermally unstable substances or mixtures, which can undergo exothermic self-accelerating decomposition.

Property	Value
Physical state	Liquid at 20°C and 101.3 hPa
Colour	Pungent
Odour	Colourless to yellowish

Molecular weight	196 g/mol
Density	0.9780 at 20°C
Vapour pressure	5 hPa at 20°C
Freezing / boiling points	-18°C to -11°C / 146°C at 1013 hPa
Flash point – flammability	91.5°C – FP is above SADT
Self-Accelerating Decomposition Temperature (SADT)	55 to 80°C depending on packaging
Self-ignition temperature	The substance decomposes under test conditions
Explosive / oxidizing properties	Not applicable. The substance is an organic peroxide of type F.
Water solubility	624 mg/L at 20°C
Octanol-water partition coefficient (Log K _{ow})	3.2 at 55°C

5. Health Effects

Based on the available data, exposure has to be avoided due to the corrosive and skin sensitisation properties.

Effect Assessment	Result
Acute Toxicity Oral / inhalation / dermal	No toxic effects following acute oral and dermal exposures. Harmful if inhaled based on its structure.
Irritation / corrosion Skin / eye/ respiratory tract	Corrosive to skin and the eyes. Could be irritating for the respiratory tract.
Sensitisation	May cause allergic reaction by skin contact.
Toxicity after repeated exposure Oral / inhalation / dermal	Does not cause significant toxicity after oral repeated exposure.
Genotoxicity / Mutagenicity	Not genotoxic.
Carcinogenicity	No data available.
Reproductive / Developmental Toxicology	No data available.

6. Environmental Effects

The potential of Diisopropylbenzene monohydroperoxide for bioaccumulation is low. It is toxic to aquatic organisms with long lasting effects. Do not release in the environment.

Effect Assessment	Result
Aquatic Toxicity	Toxic to aquatic organisms

Fate and behaviour	Result
(Bio)degradation potential	Not readily biodegradable
Bioaccumulation potential	Not expected to bioaccumulate
PBT / vPvB conclusion	Not considered as PBT* or vPvB**

*: Persistent, Bioaccumulative and Toxic (PBT)

** : very Persistent and very Bioaccumulative (vPvB)

7. Exposure

7.1 Human health

The manufacture of Diisopropylbenzene monohydroperoxide 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 Diisopropylbenzene monohydroperoxide are skin contact and inhalation.

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).

In addition, general population is not expected to be exposed to Diisopropylbenzene monohydroperoxide by inhalation, dermal or oral exposure, the product does not remain in the plastic products.

7.2 Environment

Releases of Diisopropylbenzene monohydroperoxide 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 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 during the industrial use of the substance.

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)
Respiratory protection	Suitable respiratory equipment in case of insufficient ventilation. In the case of hazardous fumes, wear self contained breathing apparatus.
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
<p>Do not release into the environment. Do not let product enter drains. Do not spread sludge on natural soils.</p> <p>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%.</p>
Storage and handling
<p>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.</p> <p>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).</p> <p>Never return any product to the container from which it was originally removed (risk of decomposition).</p>

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 this substance is strongly regulated, under the rules and conditions of class 5.2 of UN Recommendations on the Transport of Dangerous Goods regulation.

%	Form	UN Number	Classification	OP Category
≤72%	as liquid	UN 3109	OP Type F, liquid, no temperature control	Type F: <ul style="list-style-type: none"> i. does not detonate in the cavitated state ii. does not deflagrate at all iii. shows only a low or no effect when heated under confinement iv. show low or no explosive power

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 to CLP (EC) 1272/2008, implementation of the GHS in the European Union.

Classification and labelling according to Regulation (EC) n° 1272/2008:

Classification	
<ul style="list-style-type: none">– Organic peroxide; Type F– Acute toxicity (inhalation)– Skin corrosivity; Category 1B– Eye damage; Category 1– Skin sensitisation; Category 1– Aspiration toxicity; Category 1– Aquatic chronic toxicity; Category 2	
Signal word	
<ul style="list-style-type: none">– Danger	
Pictogram	
<ul style="list-style-type: none">– GHS02 : flame	
<ul style="list-style-type: none">– GHS05: corrosion	
<ul style="list-style-type: none">– GHS07: exclamation mark	
<ul style="list-style-type: none">– GHS08: health hazard	
<ul style="list-style-type: none">– GHS09: environment	
Hazard statement	
<ul style="list-style-type: none">– H242: Heating may cause a fire.– H304: May be fatal if swallowed and enters airways.– 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.	

Classification and labelling according to GHS:

Classification
<ul style="list-style-type: none">– Organic peroxide; Type F– Acute toxicity (inhalation); Category 4– Acute toxicity (dermal); Category 5– Skin corrosivity; Category 1B– Eye damage; Category 1

<ul style="list-style-type: none"> – Skin sensitisation; Category 1 – Aspiration toxicity; Category 1 – Aquatic chronic toxicity; Category 2 – Aquatic acute toxicity; Category 2 	
Signal word	
– Danger	
Pictogram	
– GHS02 : flame	
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<ul style="list-style-type: none"> – H242: Heating may cause a fire. – H304: May be fatal if swallowed and enters airways. – H313: May be harmful 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. 	

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: 2014/09/30
- 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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