

GPS Safety Summary

Substance Name:

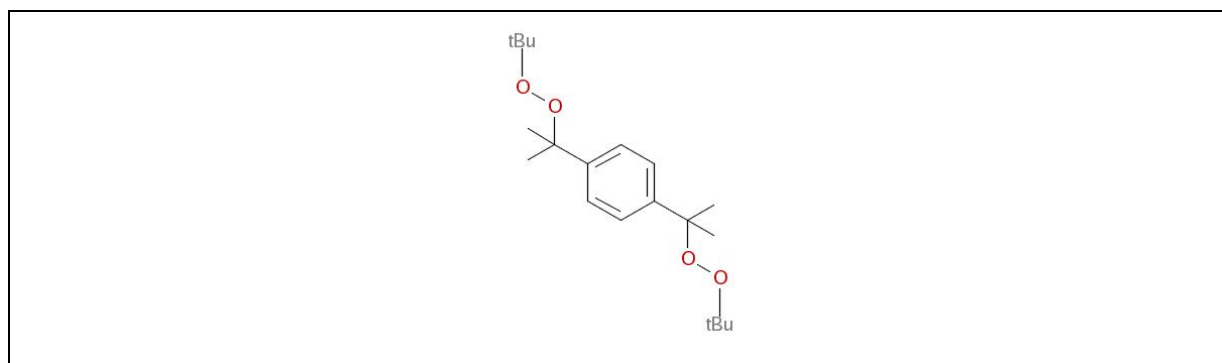
Luperox® 802 - 1,4-bis[1-(tert-butylperoxy)-1-methylethyl]benzene

1. General Statement

The organic peroxide is used as an intermediate for formulations.

2. Chemical Identity

Name:	1,4-bis[1-(tert-butylperoxy)-1-methylethyl]benzene
Brand names:	Luperox® 802
Chemical name (IUPAC):	1,4-bis[1-(tert-butylperoxy)-1-methylethyl]benzene
CAS number(s):	2781-00-2
EC number:	220-479-1
Molecular formula:	C ₂₀ H ₃₄ O ₄
Structure:	



3. Use and applications

The organic peroxide is incorporated in formulations that are then used for polymerisation.

4. Physical / Chemical properties

Organic peroxides are thermally unstable substances which can undergo exothermic self-accelerating decomposition.

1,4-bis[1-(tert-butylperoxy)-1-methylethyl]benzene is solid with the following physico-chemical properties:

Property	Value
Physical state	Solid at 20°C and 101.3 hPa
Form	Powder

Particle size	Median size: 71 µm
Colour	White to slightly brown
Odour	Strong
Molecular weight	338 g/mol
Density	1.013 at 20°C
Vapour pressure	9 x 10 ⁻⁷ hPa at 20°C
Melting / boiling points	The substance decomposes before melting.
Flash point – flammability	Not applicable. The substance is a solid organic peroxide.
Self-ignition temperature	The substance decomposes under test conditions
Self-Accelerating Decomposition Temperature (SADT)	80°C
Explosive / oxidizing properties	Not applicable. The substance is an organic peroxide of type D.
Water solubility	0.04 mg/L at 20°C
Octanol-water partition coefficient (Log K _{ow})	7.3 at 20°C

5. Health Effects

Based on the available data on the corresponding meta/para isomers mixture, the substance is not of toxicological concern.

Effect Assessment	Result
Acute Toxicity Oral / inhalation / dermal	Based on data available on an analogue substance, can be considered of low acute oral or dermal toxicity.
Irritation / corrosion Skin / eye/ respiratory tract	Based on data available on an analogue substance, can be considered as not irritating for the skin and slightly irritating for the eyes.
Sensitisation	Based on data available on an analogue substance, can not be considered as a skin sensitizer.
Toxicity after repeated exposure Oral / inhalation / dermal	Based on data available on an analogue substance, did not cause significant target organ toxicity after oral repeated exposure.
Genotoxicity / Mutagenicity	Based on data available on an analogue substance, can be considered as not genotoxic.
Carcinogenicity	No data available.
Reproductive / Developmental Toxicology	Based on data available on an analogue substance, not expected to cause adverse effects on reproduction in normal conditions of use.

6. Environmental Effects

Based on data available on an analogue substance, no effect on aquatic organisms was observed up to its water solubility limit. However, it is not readily biodegradable and thus a safety net classification, category Chronic 4 is assigned.

Effect Assessment	Result
Aquatic Toxicity	Based on data available on an analogue substance, no effect up to its water solubility limit

Fate and behaviour	Result
(Bio)degradation potential	Based on data available on an analogue substance, not readily biodegradable
Bioaccumulation potential	Based on data available on an analogue substance, bioaccumulation is not expected
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 the substance 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 to the substance 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 the substance by inhalation, dermal or oral exposure, the product does not remain in the plastic products.

7.2 Environment

Releases of the substance into the environment are to be expected during production, processing (formulation) and industrial uses mainly via wastewater and lesser amounts via emissions of vapour or powder (depending on the operational conditions).

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 of the substance to the environment during its final use is very low and has been proven as safe by a quantitative risk assessment performed in the framework of the REACH regulation.

8. Risk Management recommendations

Human health measures	
Eye/Face protection	Safety glasses/goggles.
Skin protection	Protective suit.
Hand protection	Neoprene gloves
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	
Do not release into the environment. Do not let product enter drains. Do not spread sludge on natural soils. Destroy the solid product by incineration of small quantities at an approved waste disposal site only (in accordance with local and national regulations). Amount of active oxygen must be below 1%. Consult ARKEMA.	
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 dust/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 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
>42% -100%	as solid	UN 3106	OP Type D, Solid, no temperature control	Type D: (i) detonates partially, does not deflagrate rapidly, no violent effects when heated under confinement; or (ii) does not detonate at all, deflagrates slowly, no violent effects when heated under confinement; or (iii) does not detonate or deflagrate, medium effect when heated under confinement
≤42%	as solid	Exempt	Not subject to requirements of class 5.2	

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 and GHS:

Classification	
– Organic Peroxide; Type D – Aquatic chronic toxicity; Category 4	
Signal word	
– Danger	
Pictogram	
– GHS02 : flame	
Hazard statement	
– H242: Heating may cause a fire – H413: May cause long lasting harmful effects 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: 2014-09-30
- 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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