GPS Safety Summary

Substance Name:

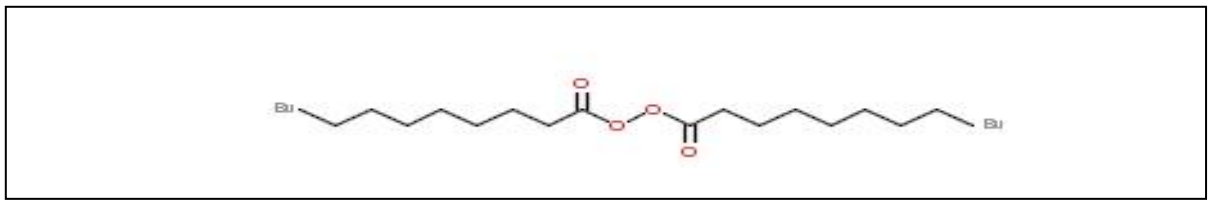
Dilauroyl peroxide

1. General Statement

Dilauroyl peroxide is primarily used is in the manufacture of polymers, as a polymerisation initiator. The substance is used at industrial stage and is not sold to consumers.

2. Chemical Identity

Name:	Dilauroyl peroxide
Brand names:	Luperox® LP, Luperox® LPS40
Chemical name (IUPAC):	diundecylperoxyanhydride
CAS number:	105-74-8
EC number:	203-326-3
Molecular formula:	$C_{24}H_{46}O_4$
Structure:	



3. Use and applications

Dilauroyl peroxide is primarily used as radical initiator to induce polymerisation (free radical polymerisation process), for the manufacture of e.g. PVC, acrylics polymers, and as a curing agent for the production of unsatured polyester resins.

4. Physical / Chemical properties

Organic peroxides are thermally unstable substances or mixtures, which can undergo exothermic self-accelerating decomposition.
Dilauroyl peroxide is classified as Organic Peroxide, Type D, H242 (see section 8 and 9 below).

Property	Value
Physical state	Solid at 20°C and 1013 hPa
Form	Flakes
Particle size	98.6% of particles have size >100µm
Colour	White

Odour	None
Molecular weight	398.6 g/mol
Density	1.04 g/cm^3 at 20°C
Vapour pressure	1.6.10^{-4} Pa at 20°C
Melting / boiling points	Decomposes before melting
Self-Accelerating Decomposition Temperature (SADT)	50°C
Explosive properties	Non explosive
Water solubility	<0.1 mg/L at 20 °C
Octanol-water partition coefficient (Log K_{ow})	>6,5 at 20°C

5. Health Effects

Based on the available data, dilauroyl peroxide is not of toxicological concern.

Effect Assessment	Result
Acute Toxicity Oral / inhalation / dermal	Based on the available data, no acute toxic effects
Irritation / corrosion Skin / eye/ respiratory tract	Based on the available test data, not irritant for skin or eye
Sensitisation	Based on the available test data, did not cause skin allergic reaction
Toxicity after repeated exposure Oral / inhalation / dermal	Based on the available test data, did not cause significant target organ toxicity after oral repeated exposure
Genotoxicity / Mutagenicity	Based on the available test data, did not cause adverse genetic effects in vitro
Carcinogenicity	Based on the limited available test data, not expected to cause cancer
Reproductive/Developmental Effects	No data available

6. Environmental Effects

Acute toxicity tests performed on aquatic organisms have shown no toxicity, partly due to a low solubility in water. As a consequence dilauroyl peroxide is not classified on short-term for this compartment.

As Dilauroyl peroxide is readily biodegradable, this substance is neither PBT nor vPvB.

Effect Assessment	Result
Aquatic Toxicity	No effect up to the limit of solubility

Fate and behaviour	Result
Biodegradation	Readily biodegradable
Bioaccumulation potential	Potentially bioaccumulable
PBT / vPvB conclusion	Not considered as PBT nor vPvB

7. Exposure

7.1 Human health

The manufacture of dilauroyl 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 dilauroyl peroxide are skin contact and inhalation.

In addition, general population is not expected to be exposed to dilauroyl 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 dilauroyl peroxide into the environment are to be expected during production, processing (formulation) and industrial/professional uses mainly via wastewater and lesser amounts via emissions of vapour or powder (due to its physical state and its vapour pressure).

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

Dilauroyl peroxide is used for production of polymers and resins, which can be either dry or wet processes. In case of wet processes, releases to water have to be directed to wastewater treatment plant.

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. On top of that, the substance has no effect up to its solubility limit and is readily decomposed in aquatic compartment.

Therefore, the use is considered as safe for the environment (which has been 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 Half-mask during the discharge
Skin protection	Protective suit
Hand protection	Gloves (suitable gloves tested to EN374)
Respiratory protection	Suitable respiratory equipment in case of insufficient ventilation

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 disposed of as 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 over pressurization 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). Avoid temperatures above 30 °C (to maintain the technical properties of the product). Storage buildings must be built and equipped so as not to exceed the maximum proscribed temperature limit.

9. Regulatory Information / Classification and Labelling

9.1 Regulatory Information

A dossier was generated by the Organic Peroxide Producers Association during the High Production Volume Program.

On top of that, the 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 TBPEH 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
≤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 confinment

≤42%	Liquid (stable dispersion in water)	UN 3109	OP Type F, Liquid, no temperature control	Type F: neither detonates in the cavitated state nor deflagrates at all and shows only a low or no effect when heated under confinement as well as 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 e-SDS. 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 D; Heating may cause a fire. — Chronic aquatic toxicity; Category 4; May cause long lasting harmful effects to aquatic life.	
Pictogram	
— GHS02: Flame	
Hazard statement	
— H242: Heating may cause a fire. — H413: May cause long lasting harmful effects to aquatic life.	
Alternative classification according to Globally Harmonized System (GHS)	
None.	

10. Contact Information within Company

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

— **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: 2013/11/30

— 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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