

SAFETY DATA SHEET

Product:

LUPEROX K1

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SDS No. : 01749-UK

Version: 3

Date : 22/12/1998

Cancel and replace. 13/06/1996

01 - IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

PRODUCT NAME LUPEROX K1 (*)
SDS No. 01749-UK
SUPPLIER ATOFINA UK Ltd (*)
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National Chemical Emergency Centre 01865 407 333

02 - COMPOSITION / INFORMATION ON INGREDIENTS

CHEMICAL NATURE OF THE PREPARATION MIXTURE BASED ON :
METHYL ETHYL KETONE PEROXIDES : 35 % (approximately)
CAS : 1338-23-4 EINECS : 215-661-2 C R22-34 (*)
DIISOBUTYL PHTHALATE : 50 %
CAS : 84-69-5 EINECS : 201-553-2
4-HYDROXY-4-METHYLPENTAN-2-ONE (*)
CAS : 123-42-2 EINECS : 204-626-7 Xi R36 (*)

03 - HAZARDS IDENTIFICATION

MOST IMPORTANT HAZARDS SAFETY INFORMATION : PLEASE READ THIS SHEET CAREFULLY
HEALTH EFFECTS Causes burns. (*)
ENVIRONMENTAL EFFECTS Risk of serious damage to eyes. Possible risk of irreversible effects.
According to its composition : Toxic to aquatic organisms. (*)
PHYSICAL AND CHEMICAL HAZARDS May cause long-term adverse effects in the environment. (*)
Contact with combustible material may cause fire.
Flammable.
Thermal decomposition giving flammable and harmful products.
SPECIFIC HAZARDS / EC OXIDIZING
CORROSIVE
May cause fire.
Harmful if swallowed.
Causes burns.

04 - FIRST AID MEASURES

GENERAL ADVICE Take off immediately all contaminated clothing.

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INHALATION (*)	Move to fresh air. Oxygen or artificial respiration if needed. Keep under medical surveillance. (*) In case of problems : (*) Hospitalize. (*)
SKIN CONTACT (*)	Wash immediately and abundantly with water. Consult a doctor quickly. In case of extensive burns Hospitalize immediately.
EYE CONTACT (*)	Wash well-open eyes immediately and abundantly with water for at least 15 minutes. (*) Consult an ophthalmologist immediately.
INGESTION (*)	Do not induce vomiting, rinse mouth and lips with plenty of water if the subject is conscious, then hospitalize immediately. (*)
PROTECTION OF FIRST-AIDERS	In case of insufficient ventilation, wear suitable respiratory equipment. Protective suit.

05 - FIRE-FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA
SPECIFIC HAZARDS

Water spray. After cooling : Dry powder or Carbon dioxide (CO₂).
The product burns violently (Protect people from possible projections)
Contact with combustible material may cause fire.
Through thermal decomposition, formation of very reactive free radicals.
Thermal decomposition giving flammable and harmful products :
Methane, Ethane, Ethylene.
Thermal decomposition giving flammable and toxic products : (*)
Carbon monoxide (*)

SPECIFIC METHODS

Fight fire from a distance (more than 15 m)
Cool containers / tanks with water spray.
Prohibit all sources of sparks and ignition - Do not smoke.
In case of fire, remove exposed containers.

SPECIAL PROTECTIVE EQUIPMENT
FOR FIREFIGHTERS

Wear a self-contained breathing apparatus and protective suit.

06 - ACCIDENTAL RELEASE MEASURES

PERSONAL PROTECTION

Evacuate non-essential staff and those not equipped with individual protection apparatus.
Prohibit contact with skin and eyes and inhalation of vapours.
Prohibit all sources of sparks and ignition - Do not smoke.
Wear personal protective equipment.

ENVIRONMENTAL PROTECTION

In case of insufficient ventilation, wear suitable respiratory equipment.
Do not release into the environment.
Do not let the product enter into drains.

METHODS FOR CLEANING UP
Recovery

-
Never return spillages to original containers for reuse. Collect into suitable labelled containers for disposal. Do not confine.
Use antispark tools.
Small quantities (30 kg) : soak up with inert absorbent material (approximately 6 kg of

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Disposal
vermiculite, perlite)
Do not confine.
See Section : 13.

07 - HANDLING AND STORAGE

HANDLING

Handling of this product must be in accordance with HSE Guidance Note CS 21 'The Storage and Handling of Organic Peroxides' and with ATOFINA brochure 'Safe Handling of Organic Peroxides'

Technical measures/Precautions

Storage and handling precautions applicable to products : (*)

LIQUID

OXIDIZING

CORROSIVE

HARMFUL (*)

FLAMMABLE (when hot)

Ensure appropriate exhaust and ventilation at machinery.

Provide showers, eye-baths.

Provide self-contained breathing apparatus nearby.

Safe handling advice

Great cleanliness in work areas is a necessary and important factor for safety. The product burns violently.

Strictly limit the quantities of product in the work area to those which are absolutely necessary for the work in hand (*)

Handle and open container with care.

Protect from contamination.

Never mix peroxides directly with accelerators (risk of explosion). Add each component separately to the resin.

In case of insufficient ventilation, wear suitable respiratory equipment.

STORAGE

Storage of this product must be in accordance with HSE Guidance Note CS 21 'The Storage and Handling of Organic Peroxides'

Technical measures/Storage conditions

Keep away from heat and sources of ignition.

Store in well insulated area (peroxide area) away from other substances.

Keep hermetically closed in a dry, cool and well-ventilated place.

Keep at temperatures below 30°C.

Use only very clean containers and equipment free from traces of impurities.

Keep only in original container.

Never return unused product to original container

Do not reuse empty packaging to store other products.

Limit storage time to 6 months after manufacturing date.

Provide a catch-tank in a bunded area.

Provide electrical earthing of equipment and electrical equipment usable in explosive atmospheres.

Consult ATOFINA before storing

Incompatible products (*)

Strong oxidizing agents, Reducing agents, Amines, Strong acids and strong bases,

Heavy metal compounds, heavy metals, Sulphur compounds,

Rust, dusts, ash.

PACKAGING MATERIALS

Recommended

-
Stainless steel (AISI 316), High density polyethylene and Polytetrafluoroethylene (PTFE)

Prohibited

Ordinary metals (Ordinary steel), Copper, Natural or synthetic rubber.

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To be avoided

Glass and Stoneware (risk of contents spurting or spraying out if container ruptures due to overpressurization)

08 - EXPOSURE CONTROLS / PERSONAL PROTECTION

PROTECTIVE PROVISIONS

Take off immediately all contaminated clothing.

Ensure sufficient air exchange and/or exhaust in work areas.

Exposure limits (*)

METHYL ETHYL KETONE PEROXIDES :

UK HSE EH40/98:

Short-term exposure limit (15-minute reference period) = 0.2 ppm, 1.5 mg/m³

FRANCE 1996 : VLE = 0.2 ml/m³ (1.5 mg/m³) (*)

USA-ACGIH 1998 : TLV-STEL = 0.2 ml/m³ (1.5 mg/m³) (*)

DIISOBUTYL PHTHALATE :

UK HSE EH40/98:

Long-term exposure limit (8-hour TWA reference period) = 5 mg/m³

4-HYDROXY-4-METHYLPENTAN-2-ONE :

UK HSE EH40/98:

Long-term exposure limit (8-hour TWA reference period) = 50 ppm, 24 mg/m³

Short-term exposure limit (15-minute reference period) = 75 ppm, 362 mg/m³

FRANCE 1996 : VME= 50 ml/m³ (240 mg/m³) (*)

USA-ACGIH 1998 : TLV-TWA = 50 ml/m³ (240 mg/m³) (*)

PERSONAL PROTECTION EQUIPMENT

Respiratory protection

-
In case of insufficient ventilation, wear suitable respiratory equipment.

In case of hazardous gases/vapours/fumes, wear a self-contained breathing apparatus.

Hand protection

Gloves

Eye protection

Safety glasses.

Skin and body protection

face-mask (during discharge) (*)

Protective clothing.

09 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE (20°C)

liquid

COLOUR

colourless

ODOUR

pungent

pH

4.7

BOILING POINT/RANGE

> 100 °C (exothermic decomposition)

DECOMPOSITION TEMPERATURE

Self-Accelerating Decomposition Temperature (SADT) = 60°C.

BAM method (Berlin)

FLASH POINT

Closed cup 78 °C

Standard : ISO-DIN 3680 (Setaflash).

AUTOIGNITION TEMPERATURE

> 200 °C

VAPOUR PRESSURE

20 °C : 20 hPa

DENSITY

20 °C : 1060 kg/m³

SOLUBILITY

-

Water

(20°C) : < 10 g/l

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Solvents

Partly soluble in :

Hexane and Chloroform < 10g/l

Methanol and Ethyl Acetate > 500 g/l

OTHER DATA

Amount of active oxygen : 9.2 %

Crystallization : < -20 °C

Viscosity (20°C) : 30 mPa.s

Refractive index (20°C) : 1.46

DIISOBUTYL PHTHALATE :

Henry's constant = 0.2 Pa.m³/mol

4-HYDROXY-4-METHYLPENTAN-2-ONE, Henry's constant = 0.43 mPa.m³/mol

10 - STABILITY AND REACTIVITY

CONDITIONS TO AVOID

Avoid temperatures above 30 °C (to maintain the technical properties of the product).

Keep away from heat and sources of ignition. (risk of exothermic decomposition).

MATERIALS TO AVOID

Strong oxidizing agents, Reducing agents, Amines, Acids and bases,

Sulphur compounds, Heavy metals, Heavy metal compounds, Rust...

HAZARDOUS DECOMPOSITION PRODUCTS

Through thermal decomposition, formation of very reactive free radicals.

Thermal decomposition giving flammable and harmful products :

Ethane - Methane - Ethylene. (*)

Thermal decomposition giving flammable and toxic products : (*)

Carbon monoxide (*)

11 - TOXICOLOGICAL INFORMATION

ACUTE TOXICITY (*)

-

Inhalation

4-HYDROXY-4-METHYLPENTAN-2-ONE : (*)

Effects of breathing high concentrations of vapour may include :

Headache, sleepiness, nausea, dizziness.

Loss of consciousness

No mortality in rat at 7.1 mg/l (for 4 h).

METHYL ETHYL KETONE PEROXIDES :

In solution at 40 % in Dimethyl phthalate

LC50/inhalation/4h/rat = (17 - 50) mg/l.

Ingestion

According to its composition, must be considered as :

Harmful if swallowed. :

METHYL ETHYL KETONE PEROXIDES :

in solution at (60 - 40) % in Dimethyl phthalate

Severe burns in digestive system, Abdominal pain, Liver damage, Difficulty in breathing.

At high dose : lethal cases reported in man.

LD50/oral/rat = (484 - 1017) mg/kg

Skin-contact

According to its composition, can be considered as : Slightly harmful in contact with skin.

METHYL ETHYL KETONE PEROXIDES :

In solution at 60 % in Dimethyl phthalate

LD50/dermal/rat > 1.8 mg/kg - < 3.6 mg/kg

4-HYDROXY-4-METHYLPENTAN-2-ONE

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	Practically not harmful in contact with skin. LD50/dermal/rabbit = 13.5 g/kg.
LOCAL EFFECTS	-
Inhalation	4-HYDROXY-4-METHYLPENTAN-2-ONE : Risk of irritation of eyes and respiratory system
Skin-contact	According to its composition, must be considered as : Corrosive to skin. METHYL ETHYL KETONE PEROXIDES : in solution at 30 % in Dimethyl phthalate Corrosive to skin. (rat)
Eye-contact	According to its composition, must be considered as : Severely irritating, or even corrosive, to eyes. METHYL ETHYL KETONE PEROXIDES : In solution at (40 - 60) % in Dimethyl phthalate In animals : Severely irritating to eyes. (rabbit) In man : May cause irreversible eye damage.
SENSITIZATION	No data available on this product to our knowledge.
Skin-contact	METHYL ETHYL KETONE PEROXIDES : In man : Some cases of cutaneous sensitization reported.
SPECIFIC EFFECTS	GENOTOXICITY : METHYL ETHYL KETONE PEROXIDES : According to limited available data : In Vitro : Some positive tests, In Vivo : Not genotoxic.

12 - ECOLOGICAL INFORMATION

	According to its composition : Toxic to aquatic organisms. (*) May cause long-term adverse effects in the aquatic environment. (*)
PERSISTENCE/DEGRADABILITY	-
In water	METHYL ETHYL KETONE PEROXIDES : Readily biodegradable : 87 % after 28 d. OECD guideline 301D (Closed bottle test). DIISOBUTYL PHTHALATE : Readily biodegradable : BOD5/ThOD = 0.79 Slowly hydrolysable : t _{1/2} life = 1.6 y (pH = 9) - 156 y (pH =7) 4-HYDROXY-4-METHYLPENTAN-2-ONE : (*) Readily biodegradable : 100 % after 14 d.
In air (*)	DIISOBUTYL PHTHALATE : Degradation by radicals OH : t _{1/2} life = 1.8 d 4-HYDROXY-4-METHYLPENTAN-2-ONE : (*) Degradation by radicals OH : t _{1/2} life = 12 d (calculated) (*)
In soils and sediments	DIISOBUTYL PHTHALATE Strong adsorption : log Koc = 3.61 (calculated) 4-HYDROXY-4-METHYLPENTAN-2-ONE : Slight adsorption : log Koc = 1.3
BIOACCUMULATION	DIISOBUTYL PHTHALATE : Bioaccumulable : log Pow = 4.11

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ECOTOXICITY
AQUATIC TOXICITY
Acute toxicity

4-HYDROXY-4-METHYLPENTAN-2-ONE : (*)
Practically not bioaccumulable : log Pow = 1.03
-
-
METHYL ETHYL KETONE PEROXIDES :
Harmful to fish : LC50, 96h (Poecilia reticulata) = 44 mg/l
(OECD guideline 203)
DIISOBUTYL PHTHALATE
Toxic to fish : LC50, 96h = 4.2 mg/l
4-HYDROXY-4-METHYLPENTAN-2-ONE : (*)
Slightly harmful to fish : LC50, 96h (Lepomis macrochirus) = 420 mg/l
Practically not harmful to daphnia : EC(I)50, 24 h = 9016 mg/l (*)
Bacteria : EC3, 16h (Pseudomonas putida) = 825 mg/l (*)

BEHAVIOUR IN WATER TREATMENT
PLANTS

METHYL ETHYL KETONE PEROXIDES :
Respiration inhibition of activated sludge : EC 50, 30 min = 16 mg/l

13 - DISPOSAL CONSIDERATIONS

DISPOSAL OF PRODUCT

Do not dispose of waste into sewer.
Eliminate the product by incineration after dilution in a suitable flammable solvent at an approved waste disposal site (in accordance with local and national regulations).
Amount of active oxygen must be below : 1 %. CONSULT ATOFINA.

DISPOSAL OF PACKAGING

Do not release into the environment.

14 - TRANSPORT INFORMATION

UN Number

3105

ADR/RID

Item (letter) : 5°b

Class : 5.2

Prescriptions

Labels : 5.2

IMDG

UN Nr (IMDG) : 3105

Packaging group : II

Class : 5.2

Prescriptions

Labels : 5.2

IATA

UN Nr (IATA) or ID Nr : 3105

Class : 5.2

Packaging group : II

Prescriptions

Labels : 5.2

Consult ATOFINA's safety department for any further information (*)

15 - REGULATORY INFORMATION

EEC DIRECTIVE

-

SAFETY DATA SHEETS

D. 91/155/EEC amended by D.93/112/EEC : Dangerous substances and preparations

EC CLASSIFICATION / LABELLING

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DANGEROUS PREPARATIONS

D. 88/379/EEC amended by D. 93/18/EEC (3rd ATP)

O _ OXIDIZING

C _ CORROSIVE

R7 _ May cause fire.

R22 _ Harmful if swallowed.

R34 _ Causes burns.

S3/7 _ Keep container tightly closed in a cool place.

S14 _ Keep away from reducing agents (amines), acids, alkalis, heavy metal salts (accelerators)

S26 _ In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. (*)

S36/37/39 _ Wear suitable protective clothing, gloves and eye/face protection.

BRITISH REGULATION SAFETY DATA SHEET

-
Chip2: Chemical (Hazard Information and Packaging for Supply) Regulations 1994, SI No. 3247

CLASSIFICATION / LABELLING INVENTORIES

-
EINECS (EU) : conforms
TSCA (USA) : conforms
DSL (Canada) : conforms (*)
AICS (Australia) : conforms
ECL (Korea) : conforms
ENCS (Japan) : conforms (*)

16 - OTHER INFORMATION

RECOMMENDED USES

UP hardener (unsaturated polyesters)

BIBLIOGRAPHY REFERENCES

HSE Guidance Note CS 21 'The Storage and Handling of Organic Peroxides'
ATOFINA brochure : Safe Handling of Organic Peroxides
Fiche toxicologique INRS : N° 50, Peroxyde de méthyléthylcétone commercial (1988).
BG-CHEMIE : Merkblatt M 001 : Organische Peroxide

FURTHER INFORMATION

THIS PRODUCT MUST BE HANDLED ONLY BY PERSONNEL WELL INFORMED OF SAFETY CONDITIONS
WHEN USED IN FORMULATIONS, CONTACT US FOR LABELLING. (*)

This information applies to the PRODUCT AS SUCH and conforming to specifications of ATOFINA.

In case of formulations or mixtures, it is necessary to ascertain that a new danger will not appear.

The information contained is based on our knowledge of the product, at the date of publishing and it is given quite sincerely. However the revision of some data is in progress.

Users are advised of possible additional hazards when the product is used in applications for which it was not intended. This sheet shall only be used and reproduced for prevention and security purposes.

The references to legislative, regulatory and codes of practice documents cannot be considered as exhaustive.

It is the responsibility of the person receiving the product to refer to the totality of the official documents concerning the use, the possession and the handling of the product.

It is also the responsibility of the handlers of the product to pass on to any subsequent persons who will come into contact with the product (usage, storage, cleaning of containers, other processes) the totality of the information contained within this safety data sheet and necessary for safety at work, the protection of health and the protection of environment.

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The (*) indicate the changes made with respect to the previous version.

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