SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Version 6.9
Revision Date 03.01.2024
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GENERIC EU MSDS - NO COUNTRY SPECIFIC DATA - NO OEL DATA

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : tert-Butyl hydroperoxide (70% solution in water) for synthesis

Product Number : 8.14006
Catalogue No. : 814006
Brand : Millipore
REACH No. : This product is a mixture. REACH Registration Number see section 3.

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Chemical for synthesis
Uses advised against : For R&D use only. Not for pharmaceutical, household or other uses.

1.3 Details of the supplier of the safety data sheet

Company : Merck Life Science S.r.l.
Via Monte Rosa 93
I-20149 MILANO

Telephone : +39 02 3341 7340
Fax : +39 02 3801 0737
E-mail address : serviziotecnico@merckgroup.com

1.4 Emergency telephone

Emergency Phone # : 800-789-767 (CHEMTREC Italia)
+39-02-4555-7031 (CHEMTREC chiamate internazionali)
+39 02-6610-1029 (Centro Antiveleni Niguarda Ca' Granda - Milano)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Flammable liquids, (Category 3) H226: Flammable liquid and vapor.

Organic peroxides, (Type F)	H242: Heating may cause a fire.
Acute toxicity, (Category 4)	H302: Harmful if swallowed.
Acute toxicity, (Category 2)	H330: Fatal if inhaled.
Acute toxicity, (Category 3)	H311: Toxic in contact with skin.
Skin corrosion, (Sub-category 1C)	H314: Causes severe skin burns and eye damage.
Serious eye damage, (Category 1)	H318: Causes serious eye damage.
Skin sensitization, (Category 1)	H317: May cause an allergic skin reaction.
Germ cell mutagenicity, (Category 2)	H341: Suspected of causing genetic defects.
Specific target organ toxicity - single exposure, (Category 3), Respiratory system	H335: May cause respiratory irritation.
Long-term (chronic) aquatic hazard, (Category 2)	H411: Toxic to aquatic life with long lasting effects.

2.2 Label elements

Labelling according Regulation (EC) No 1272/2008

Pictogram

Signal Word	Danger
Hazard Statements	
H226	Flammable liquid and vapor.
H242	Heating may cause a fire.
H302	Harmful if swallowed.
H311	Toxic in contact with skin.
H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H330	Fatal if inhaled.
H335	May cause respiratory irritation.
H341	Suspected of causing genetic defects.
H411	Toxic to aquatic life with long lasting effects.
Precautionary Statements	
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.

P304 + P340 + P310	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

Supplemental Hazard information (EU)

EUH044	Risk of explosion if heated under confinement.

Reduced Labeling (<= 125 ml)

Pictogram

Signal Word	Danger

Hazard Statements

H311	Toxic in contact with skin.
H330	Fatal if inhaled.
H317	May cause an allergic skin reaction.
H341	Suspected of causing genetic defects.
H314	Causes severe skin burns and eye damage.

Precautionary Statements

P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P304 + P340 + P310	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Supplemental Hazard information (EU)

EUH044	Risk of explosion if heated under confinement.

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Ecological information:
The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.
Toxicological information:
The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Component		Classification	Concentration
tert-Butyl hydroperoxide			
CAS-No. EC-No. Index-No.	75-91-2 200-915-7 617-023-00-2 *	Flam. Liq. 3; Org. Perox. A; Acute Tox. 4; Acute Tox. 2; Acute Tox. 3; Skin Corr. 1C; Eye Dam. 1; Skin Sens. 1; Muta. 2; STOT SE 3; Aquatic Chronic 2; H226, H240, H302, H330, H311, H314, H318, H317, H341, H335, H411	>= 70 - < 90 %
tert-Butyl hydroperoxide			
CAS-No. EC-No. Index-No.	75-91-2 200-915-7 617-023-00-2 *	Flam. Liq. 3; Org. Perox. A; Acute Tox. 4; Acute Tox. 2; Acute Tox. 3; Skin Corr. 1C; Eye Dam. 1; Skin Sens. 1; Muta. 2; STOT SE 3; Aquatic Chronic 2; H226, H240, H302, H330, H311, H314, H318, H317, H341, H335, H411	>= 70 - < 72 %

*A registration number is not available for this substance as the substance or its use are exempted from registration according to Article 2 REACH Regulation (EC) No 1907/2006, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance.

If inhaled
After inhalation: fresh air. Immediately call in physician. If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

In case of skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a physician immediately.

In case of eye contact
After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses.

If swallowed
After swallowing: make victim drink water (two glasses at most), avoid vomiting (risk of perforation). Call a physician immediately. Do not attempt to neutralise.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Foam Carbon dioxide (CO2) Dry powder

Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture
Carbon oxides
Combustible.
Has a fire-promoting effect due to release of oxygen.
Explosive decomposition possible on heating.
Vapors are heavier than air and may spread along floors.
Forms explosive mixtures with air at elevated temperatures.
Development of hazardous combustion gases or vapours possible in the event of fire.

5.3 Advice for firefighters
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 Further information
Remove container from danger zone and cool with water. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition.
Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

6.2 Environmental precautions
Do not let product enter drains. Risk of explosion.

6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

6.4 Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling

Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.

Advice on protection against fire and explosion

Keep away from open flames, hot surfaces and sources of ignition.Take precautionary measures against static discharge.

Hygiene measures

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions

Tightly closed. Keep locked up or in an area accessible only to qualified or authorized persons. Separately or together with other organic peroxides only and away from sources of ignition and heat.

Recommended storage temperature see product label.

Storage class

Storage class (TRGS 510): 5.2: Organic peroxides and self-reacting hazardous materials

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

8.2 Exposure controls

Personal protective equipment

Eye/face protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Tightly fitting safety goggles

Skin protection
This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Full contact
Material: butyl-rubber
Minimum layer thickness: 0,7 mm
Break through time: > 480 min
Material tested:Butoject® (KCL 898)

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0,40 mm
Break through time: > 30 min
Material tested:Camatril® (KCL 730 / Aldrich Z677442, Size M)

Body Protection
Flame retardant antistatic protective clothing.

Respiratory protection
Recommended Filter type: filter ABEK

The entrepeneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.
required when vapours/aerosols are generated.
Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.
Recommended Filter type: Filter type ABEK

The entrepeneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

Control of environmental exposure
Do not let product enter drains. Risk of explosion.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Physical state	liquid
b)	Color	colorless
c)	Odor	stinging

d)	Melting point/freezing point	Melting point: -3 °C
e)	Initial boiling point and boiling range	37 °C at 20 hPa
f)	Flammability (solid, gas)	No data available
g)	Upper/lower flammability or explosive limits	No data available
h)	Flash point	38 °C
i)	Autoignition temperature	No data available
j)	Decomposition temperature	> 96 °C
k)	pH	No data available
l)	Viscosity	Viscosity, kinematic: No data available Viscosity, dynamic: 4,1 mPa.s at 20 °C
m)	Water solubility	130 - 150 g/l at 20 °C
n)	Partition coefficient: n-octanol/water	log Pow: 0,70 at 25 °C - Bioaccumulation is not expected.
o)	Vapor pressure	232 hPa at 60 °C
p)	Density	0,94 g/cm3 at 20 °C
	Relative density	No data available
q)	Relative vapor density	No data available
r)	Particle characteristics	No data available
s)	Explosive properties	Risk of explosion if heated under confinement.
t)	Oxidizing properties	Oxidizing potential

9.2 Other safety information

No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

Risk of explosion if heated under confinement.
Vapor/air-mixtures are explosive at intense warming.

10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

10.3 Possibility of hazardous reactions
Violent reactions possible with:
Strong acids
alkalines
Reducing agents
Metallic salts

10.4 Conditions to avoid
Heating.

10.5 Incompatible materials
No data available

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Mixture

Acute toxicity
LD50 Oral - Rat - 810 mg/kg
Symptoms: If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach.
Acute toxicity estimate Inhalation - 4 h - 1,2 mg/l - vapor(Calculation method)

Symptoms: mucosal irritations, Cough, Shortness of breath, Possible damages:, damage of respiratory tract
LD50 Dermal - Rabbit - 628 mg/kg

Skin corrosion/irritation
Remarks: Mixture causes burns.
Remarks: Mixture causes burns.

Serious eye damage/eye irritation
Remarks: Mixture causes serious eye damage.
Risk of blindness!

Respiratory or skin sensitization
Mixture may cause an allergic skin reaction.

Germ cell mutagenicity
Evidence of genetic defects.
Evidence of genetic defects.

Test Type: Ames test
Test system: Salmonella typhimurium
Result: positive
Remarks: (Lit.)
Test Type: Mutagenicity (mammal cell test): chromosome aberration.
Result: positive
Remarks: (Lit.)
Test Type: Mutagenicity (mammal cell test):
Result: positive
Remarks: (Lit.)

Carcinogenicity
No data available

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
Mixture may cause respiratory irritation.
Mixture may cause respiratory irritation.

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

11.2 Additional Information

Endocrine disrupting properties

Product:

Assessment	The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Other dangerous properties can not be excluded.

This substance should be handled with particular care.

Handle in accordance with good industrial hygiene and safety practice.

Components

tert-Butyl hydroperoxide

Acute toxicity
LD50 Oral - Rat - male and female - 560 mg/kg
Remarks: Aqueous solution
(ECHA)

LC50 Inhalation - Rat - male and female - 4 h - 0,84 mg/l - vapor
(OECD Test Guideline 403)
LD50 Dermal - Rabbit - male and female - 440 mg/kg
(OECD Test Guideline 402)
Remarks: Aqueous solution

Skin corrosion/irritation
Skin - Rabbit
Result: Corrosive, category 1C - where responses occur after exposures between 1 hour and 4 hours and observations up to 14 days. - 24 h
Remarks: Aqueous solution

Serious eye damage/eye irritation
Eyes - Rabbit
Result: Corrosive - 21 d
Remarks: Aqueous solution

Respiratory or skin sensitization
Maximization Test - Guinea pig
Result: positive
(OECD Test Guideline 406)
Remarks: Aqueous solution

Germ cell mutagenicity
Suspected of causing genetic defects.
Test Type: Mutagenicity (mammal cell test): chromosome aberration.
Test system: Chinese hamster cells
Result: positive
Remarks: (in analogy to similar products)
Test Type: In vitro mammalian cell gene mutation test
Test system: Mouse lymphoma test
Result: positive
Remarks: (in analogy to similar products)
Test Type: Ames test
Test system: S. typhimurium
Result: positive
Remarks: (in analogy to similar products)
Method: Regulation (EC) No. 440/2008, Annex, B.12
Species: Mouse - male and female
Result: negative
Remarks: (in analogy to similar products)
Method: Regulation (EC) No. 440/2008, Annex, B.12
Species: Mouse - male
Result: positive
Remarks: (in analogy to similar products)
Species: Rat - male
Result: negative
Remarks: (in analogy to similar products)
(ECHA)

Carcinogenicity
No data available

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
May cause respiratory irritation.

Specific target organ toxicity - repeated exposure

Aspiration hazard
No data available

tert-Butyl hydroperoxide

Acute toxicity
LD50 Oral - Rat - male and female - 560 mg/kg
Remarks: Aqueous solution
(ECHA)
LC50 Inhalation - Rat - male and female - 4 h - 0,84 mg/l - vapor
(OECD Test Guideline 403)
LD50 Dermal - Rabbit - male and female - 440 mg/kg
(OECD Test Guideline 402)
Remarks: Aqueous solution

Skin corrosion/irritation
Skin - Rabbit
Result: Corrosive, category 1C - where responses occur after exposures between 1 hour and 4 hours and observations up to 14 days. - 24 h
Remarks: Aqueous solution

Serious eye damage/eye irritation
Eyes - Rabbit
Result: Corrosive - 21 d
Remarks: Aqueous solution

Respiratory or skin sensitization
Maximization Test - Guinea pig
Result: positive
(OECD Test Guideline 406)
Remarks: Aqueous solution

Germ cell mutagenicity
Suspected of causing genetic defects.
Test Type: Mutagenicity (mammal cell test): chromosome aberration.
Test system: Chinese hamster cells
Result: positive
Remarks: (in analogy to similar products)
Test Type: In vitro mammalian cell gene mutation test
Test system: Mouse lymphoma test
Result: positive
Remarks: (in analogy to similar products)
Test Type: Ames test
Test system: S. typhimurium
Result: positive
Remarks: (in analogy to similar products)
Method: Regulation (EC) No. 440/2008, Annex, B.12
Species: Mouse - male and female

Result: negative
Remarks: (in analogy to similar products)
Method: Regulation (EC) No. 440/2008, Annex, B.12
Species: Mouse - male
Result: positive
Remarks: (in analogy to similar products)
Species: Rat - male
Result: negative
Remarks: (in analogy to similar products)
(ECHA)

Carcinogenicity
No data available

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
May cause respiratory irritation.

Specific target organ toxicity - repeated exposure

Aspiration hazard
No data available

SECTION 12: Ecological information

12.1 Toxicity

Mixture

Toxicity to fish	LC50 - Pimephales promelas (fathead minnow) - 42,3 mg/l - 96 h (OECD Test Guideline 203)
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 20 mg/l - 48 h (OECD Test Guideline 202)
Toxicity to algae	- algae - 1,2 mg/l - 72 h Remarks: (External MSDS)

12.2 Persistence and degradability
Biodegradability

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Endocrine disrupting properties
Product:
Assessment : The substance/mixture does not contain components

considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other adverse effects

No data available

Components

tert-Butyl hydroperoxide

Toxicity to fish	semi-static test LC50 - Pimephales promelas (fathead minnow) - 29,61 mg/l - 96 h (OECD Test Guideline 203) Remarks: Aqueous solution
Toxicity to daphnia and other aquatic invertebrates	static test EC50 - Daphnia magna (Water flea) - 14,1 mg/l - 48 h (OECD Test Guideline 202) Remarks: Aqueous solution
Toxicity to algae	static test ErC50 - Pseudokirchneriella subcapitata - 1,5 mg/l - 72 h (OECD Test Guideline 201) Remarks: Aqueous solution
Toxicity to bacteria	Growth inhibition EC50 - activated sludge - 17 mg/l - 30 h (OECD Test Guideline 209) Remarks: Aqueous solution

Components

tert-Butyl hydroperoxide

Toxicity to fish	semi-static test LC50 - Pimephales promelas (fathead minnow) - 29,61 mg/l - 96 h (OECD Test Guideline 203) Remarks: Aqueous solution
Toxicity to daphnia and other aquatic invertebrates	static test EC50 - Daphnia magna (Water flea) - 14,1 mg/l - 48 h (OECD Test Guideline 202) Remarks: Aqueous solution
Toxicity to algae	static test ErC50 - Pseudokirchneriella subcapitata - 1,5 mg/l - 72 h (OECD Test Guideline 201) Remarks: Aqueous solution

Toxicity to bacteria	Growth inhibition EC50 - activated sludge - 17 mg/l - 30 h (OECD Test Guideline 209) Remarks: Aqueous solution

SECTION 13: Disposal considerations

13.1 Waste treatment methods

No data available

SECTION 14: Transport information

14.1 UN number

ADR/RID: 3109 IMDG: 3109 IATA: 3109

14.2 UN proper shipping name

ADR/RID: ORGANIC PEROXIDE TYPE F, LIQUID (tert-BUTYL HYDROPEROXIDE)
IMDG: ORGANIC PEROXIDE TYPE F, LIQUID (tert-BUTYL HYDROPEROXIDE)
IATA: Organic peroxide type F, liquid (tert-Butyl hydroperoxide)
Special Provisions: "Keep away from heat" label required.

14.3 Transport hazard class(es)

ADR/RID: 5.2 (8) IMDG: 5.2 (8) IATA: 5.2 (8)

14.4 Packaging group

ADR/RID: - IMDG: - IATA: -

14.5 Environmental hazards

ADR/RID: no IMDG Marine pollutant: no IATA: no

14.6 Special precautions for user

Tunnel restriction code : (D)

Further information : No data available

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

Authorisations and/or restrictions on use

National legislation

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council	H2	ACUTE TOXIC

on the control of major-accident hazards involving dangerous substances.

P6b	SELF-REACTIVE SUBSTANCES AND MIXTURES and ORGANIC PEROXIDES
E2	ENVIRONMENTAL HAZARDS

Other regulations
Observe work restrictions regarding maternity protection in accordance to Dir 92/85/EEC or stricter national regulations where applicable.

Take note of Dir 94/33/EC on the protection of young people at work.

15.2 Chemical Safety Assessment
For this product a chemical safety assessment was not carried out

SECTION 16: Other information

Full text of H-Statements

H226	Flammable liquid and vapor.
H240	Heating may cause an explosion.
H302	Harmful if swallowed.
H311	Toxic in contact with skin.
H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H330	Fatal if inhaled.
H335	May cause respiratory irritation.
H341	Suspected of causing genetic defects.
H411	Toxic to aquatic life with long lasting effects.

Full text of other abbreviations

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Classification of the mixture		**Classification procedure:**
Flam. Liq.3	H226	Based on product data or assessment
Org. Perox.F	H242	Based on product data or assessment
Acute Tox.4	H302	Based on product data or assessment
Acute Tox.2	H330	Calculation method
Acute Tox.3	H311	Based on product data or assessment
Skin Corr.1C	H314	Calculation method
Eye Dam.1	H318	Calculation method
Skin Sens.1	H317	Calculation method

Muta.2	H341	Calculation method
STOT SE3	H335	Calculation method
Aquatic Chronic2	H411	Calculation method

Further information

The information is believed to be correct but is not exhaustive and will be used solely as a guideline, which is based on current knowledge of the chemical substance or mixture and is applicable to appropriate safety precautions for the product. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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