

according to Regulation (EC) No 1907/2006 (REACH) as amended

2,5-Dimethyl-2,5-di-(tert-butylperoxy)-hexane

Creation date	18th July 2022	Version	1.0
Revision date			

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

- 1.1. Product identifier**
 Substance / mixture: 2,5-Dimethyl-2,5-di-(tert-butylperoxy)-hexane
 Chemical name: Peroxide, 1,1'-(1,1,4,4-tetramethyl-1,4-butanediyl)bis[2-(1,1-dimethylethyl)]
 CAS number: 78-63-7
 EC (EINECS) number: 201-128-1
 Registration number: 01-2119875400-42-0001
- 1.2. Relevant identified uses of the substance or mixture and uses advised against**
Substance's intended use
 Polymerization initiator.
Substance uses advised against
 The product should not be used in ways other than those referred in Section 1.
- 1.3. Details of the supplier of the safety data sheet**
Supplier
 Name or trade name: Ing. Petr Švec - PENTA s.r.o.
 Address: Radiová 1122/1, Praha 10, 102 00
 Czech Republic
 Identification number (CRN): 02096013
 VAT Reg No: CZ02096013
 Phone: +420 226 060 681
 E-mail: info@pentachemicals.eu
 Web address: www.pentachemicals.eu
- Competent person responsible for the safety data sheet**
 Name: Ing. Petr Švec - PENTA s.r.o.
 E-mail: info@pentachemicals.eu
- 1.4. Emergency telephone number**
 European emergency number: 112

SECTION 2: Hazards identification

- 2.1. Classification of the substance or mixture**
Classification of the substance in accordance with Regulation (EC) No 1272/2008
 The substance is classified as dangerous.

Org. Perox. C, H242
 Skin Irrit. 2, H315

Full text of all classifications and hazard statements is given in the section 16.

Most serious adverse physico-chemical effects

Heating may cause a fire.

Most serious adverse effects on human health and the environment

Causes skin irritation.

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2.2. Label elements

Hazard pictogram



Signal word

Danger

Dangerous substance

Peroxide, 1,1'-(1,1,4,4-tetramethyl-1,4-butanediyl)bis[2-(1,1-dimethylethyl)]
(EC: 201-128-1; CAS: 78-63-7)

Hazard statements

H242 Heating may cause a fire.

H315 Causes skin irritation.

Precautionary statements

P220 Keep away from clothing and other combustible materials.

P235 Keep cool.

P280 Wear protective gloves/eye protection/face protection.

P333+P313 If skin irritation or rash occurs: Get medical advice/attention.

P370+P378 In case of fire: Use carbon dioxide to extinguish.

2.3. Other hazards

The substance does not have endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605. Substance does not meet the criteria for PBT or vPvB in accordance with Annex XIII of Regulation (EC) No. 1907/2006 (REACH) as amended.

SECTION 3: Composition/information on ingredients

3.1. Substances

Chemical characterization

The substance specified below.

Identification numbers	Substance name	Content in % weight	Classification according to Regulation (EC) No 1272/2008	Note
CAS: 78-63-7 EC: 201-128-1 Registration number: 01-2119875400-42-0001	substance main component Peroxide, 1,1'-(1,1,4,4-tetramethyl-1,4-butanediyl)bis[2-(1,1-dimethylethyl)]	100	Org. Perox. C, H242 Skin Irrit. 2, H315	

Full text of all classifications and hazard statements is given in the section 16.

SECTION 4: First aid measures

4.1. Description of first aid measures

Take care of your own safety. If any health problems are manifested or if in doubt, inform a doctor and show him information from this safety data sheet.

If inhaled

Terminate the exposure immediately; move the affected person to fresh air. Protect the person against growing cold. Provide medical treatment if irritation, dyspnoea or other symptoms persist.

If on skin

Remove contaminated clothes. Wash the affected area with plenty of water, lukewarm if possible. Soap, soap solution or shampoo should be used if there is no skin injury. Provide medical treatment if skin irritation persists.

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If in eyes

Rinse eyes immediately with a flow of running water, open the eyelids (also using force if needed); remove contact lenses immediately if worn by the affected person. Rinsing should continue at least for 10 minutes. Provide medical treatment, specialized if possible.

If swallowed

Rinse out the mouth with water and provide 2-5 dL of water. Provide medical treatment if the person has any health problems.

4.2. Most important symptoms and effects, both acute and delayed

If inhaled

Not expected.

If on skin

Causes skin irritation.

If in eyes

Not expected.

If swallowed

Irritation, nausea.

4.3. Indication of any immediate medical attention and special treatment needed

Symptomatic treatment.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

Alcohol-resistant foam, carbon dioxide, powder, water spray jet, water mist.

Unsuitable extinguishing media

Water - full jet.

5.2. Special hazards arising from the substance or mixture

Vapours mixed up with air can be explosive. In the event of fire, carbon monoxide, carbon dioxide and other toxic gases may arise. Inhalation of hazardous degradation (pyrolysis) products may cause serious health damage. The product burns violently. The possibility of backlash over a considerable distance. The product will float on water where it can re-ignite. In contact with incompatible materials or at temperatures exceeding SADT, decomposition and ignition of vapors may occur.

5.3. Advice for firefighters

Self-Contained Breathing Apparatus (SCBA) with a chemical protection suit only where personal (close) contact is likely. Use a self-contained breathing apparatus and full-body protective clothing. Closed containers with the product near the fire should be cooled with water. Do not allow run-off of contaminated fire extinguishing material to enter drains or surface and ground water.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

The substance is flammable. Heating may cause a fire. Use personal protective equipment for work. Follow the instructions in the Sections 7 and 8. Prevent contact with skin and eyes.

6.2. Environmental precautions

Prevent contamination of the soil and entering surface or ground water.

6.3. Methods and material for containment and cleaning up

Spilled product should be covered with suitable (non-flammable) absorbing material (sand, diatomaceous earth, earth and other suitable absorption materials); to be contained in well closed containers and removed as per the Section 13. In the event of leakage of the substantial amount of the product, inform fire brigade and other competent bodies. After removal of the product, wash the contaminated site with plenty of water.

6.4. Reference to other sections

See the Section 7, 8 and 13.

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SECTION 7: Handling and storage

7.1. Precautions for safe handling

Prevent contact with skin and eyes. Wash hands and exposed parts of the body thoroughly after handling. Use personal protective equipment as per Section 8. Observe valid legal regulations on safety and health protection. Ground and bond container and receiving equipment. Prevent aerosol formation. Do not return the product to its original packing. Avoid sealing in airtight packaging. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use non-sparking tools. Take action to prevent static discharges.

7.2. Conditions for safe storage, including any incompatibilities

Keep only in original packaging. Protect from sunlight. Store separately. Keep cool. Avoid pollution (e.g. dust, rust, ash) danger of decomposition. Open containers must be carefully closed and kept upright to prevent leakage. Do not store near strong acids, bases, salts of heavy metals and reducing substances.

Storage temperature

min 10 °C, max 40 °C

7.3. Specific end use(s)

not available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

DNEL

Peroxide, 1,1'-(1,1,4,4-tetramethyl-1,4-butanediyl)bis[2-(1,1-dimethylethyl)]

Workers / consumers	Route of exposure	Value	Effect	Value determination	Source
Workers	Dermal	15 mg/kg	Systemic chronic effects		
Workers	Inhalation	11 mg/m ³	Systemic chronic effects		

PNEC

Peroxide, 1,1'-(1,1,4,4-tetramethyl-1,4-butanediyl)bis[2-(1,1-dimethylethyl)]

Route of exposure	Value	Value determination	Source
Seawater	0.00065 mg/l		
Freshwater sediment	72.2 mg/kg		
Sea sediments	7.22 mg/kg		
Soil (agricultural)	14.4 mg/kg		

8.2. Exposure controls

Do not eat, drink and smoke during work. Wash your hands thoroughly with water and soap after work and before breaks for a meal and rest.

Eye/face protection

Protective goggles.

Skin protection

Hand protection: Protective gloves resistant to the product. When choosing appropriate thickness, material and permeability of the gloves, observe recommendations of their particular manufacturer. Observe other recommendations of the manufacturer. Other protection: protective workwear. Contaminated skin should be washed thoroughly. Hand protection: Protective gloves resistant to the product (nitrile rubber).

Respiratory protection

It is not needed.

Thermal hazard

Not available.

Environmental exposure controls

Observe usual measures for protection of the environment, see Section 6.2.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state

liquid

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Colour	colourless
Odour	after ether
Melting point/freezing point	data not available
Boiling point or initial boiling point and boiling range	data not available
Flammability	data not available
Lower and upper explosion limit	data not available
Flash point	74 °C
Auto-ignition temperature	data not available
Decomposition temperature	90 °C
pH	data not available
Kinematic viscosity	data not available
Solubility in water	<0,01 g/l 20°C
Solubility	alcohol, esters
Partition coefficient n-octanol/water (log value)	log Pow: 7,34 20°C
Vapour pressure	<0,01 hPa at 20 °C
Density and/or relative density	
Density	0,88 g/cm ³ at 20 °C
Relative vapour density	data not available
Particle characteristics	data not available

9.2. Other information

not available

SECTION 10: Stability and reactivity

10.1. Reactivity

not available

10.2. Chemical stability

The product is stable under normal conditions.

10.3. Possibility of hazardous reactions

Vapors may form explosive mixtures with air. It may initiate explosive polymerisation of substances with unsaturated chemical bonds.

10.4. Conditions to avoid

Protect against pollution. Avoid sealing in airtight packaging. Contact with incompatible substances may cause decomposition at or below the self-accelerating decomposition temperature (SADT). The product is stable and no degradation occurs under normal use. Protect against flames, sparks, overheating and against frost. Heating may cause a fire.

10.5. Incompatible materials

Accelerators. Strong acids and basen. Reducing agents. Heavy metals (salts of heavy metals).

10.6. Hazardous decomposition products

Not developed under normal uses. Dangerous outcomes such as carbon monoxide and carbon dioxide are formed at high temperature and in fire.

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

No toxicological data is available for the substance.

Acute toxicity

Based on available data the classification criteria are not met.

Peroxide, 1,1'-(1,1,4,4-tetramethyl-1,4-butanediyl)bis[2-(1,1-dimethylethyl)]

Route of exposure	Parameter	Method	Value	Exposure time	Species	Sex
Dermal	LD50	OECD 402	4.100 mg/kg		Rabbit	

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Peroxide, 1,1'-(1,1,4,4-tetramethyl-1,4-butanediyl)bis[2-(1,1-dimethylethyl)]

Route of exposure	Parameter	Method	Value	Exposure time	Species	Sex
Oral	LD50	OECD 401	>2.000 mg/kg		Rat (Rattus norvegicus)	F/M

Skin corrosion/irritation

Causes skin irritation.

Serious eye damage/irritation

Based on available data the classification criteria are not met.

Respiratory or skin sensitisation

Based on available data the classification criteria are not met.

Germ cell mutagenicity

Based on available data the classification criteria are not met.

Carcinogenicity

Based on available data the classification criteria are not met.

Reproductive toxicity

Based on available data the classification criteria are not met.

Toxicity for specific target organ - single exposure

Based on available data the classification criteria are not met.

Toxicity for specific target organ - repeated exposure

Based on available data the classification criteria are not met.

Aspiration hazard

Based on available data the classification criteria are not met.

11.2. Information on other hazards

The substance does not have endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605.

SECTION 12: Ecological information

12.1. Toxicity

Acute toxicity

Peroxide, 1,1'-(1,1,4,4-tetramethyl-1,4-butanediyl)bis[2-(1,1-dimethylethyl)]

Parameter	Method	Value	Exposure time	Species	Environment
LC50	OECD 203	4.5 mg/l	96 hour	Fishes (Oryzias latipes)	
EC50	OECD 201	0.236 mg/l	72 hour	Algae (Pseudokirchneriella subcapitata)	
NOEC	OECD 211	>0.0065 mg/l	21 day	Daphnia (Daphnia magna)	
NOEC	OECD 209	>1.000 mg/l	3 hour		

12.2. Persistence and degradability

Biodegradability

Peroxide, 1,1'-(1,1,4,4-tetramethyl-1,4-butanediyl)bis[2-(1,1-dimethylethyl)]

Parameter	Method	Value	Exposure time	Environment	Result
	OECD 301D				Easily biodegradable

not available

12.3. Bioaccumulative potential

according to Regulation (EC) No 1907/2006 (REACH) as amended

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Peroxide, 1,1'-(1,1,4,4-tetramethyl-1,4-butanediyl)bis[2-(1,1-dimethylethyl)]

Parameter	Value	Exposure time	Species	Environment	Temperature [°C]
BCF	521-839				

Not available.

12.4. Mobility in soil

Not available.

12.5. Results of PBT and vPvB assessment

Product does not contain any substance meeting the criteria for PBT or vPvB in accordance with the Annex XIII of Regulation (EC) No 1907/2006 (REACH) as amended.

12.6. Endocrine disrupting properties

This substance does not have endocrine disrupting properties with respect to non-target organisms as it does not meet the criteria set out in section B of Regulation (EU) No 2017/2100. The substance does not have endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605.

12.7. Other adverse effects

Not available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Hazard of environmental contamination; dispose of the waste in accordance with the local and/or national regulations. Proceed in accordance with valid regulations on waste disposal. Any unused product and contaminated packaging should be put in labelled containers for waste collection and submitted for disposal to a person authorised for waste removal (a specialized company) that is entitled for such activity. Do not empty unused product in drainage systems. The product must not be disposed of with municipal waste. Dispose of packaging as unused product. Do not reuse empty packaging. Do not burn or cut empty containers with a torch.

Waste management legislation

Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste, as amended. Decision 2000/532/EC establishing a list of wastes, as amended.

SECTION 14: Transport information

14.1. UN number or ID number

UN 3103

14.2. UN proper shipping name

ORGANIC PEROXIDE TYPE C, LIQUID

14.3. Transport hazard class(es)

5.2 Organic peroxides

14.4. Packing group

not relevant

14.5. Environmental hazards

not relevant

14.6. Special precautions for user

not available

14.7. Maritime transport in bulk according to IMO instruments

not relevant

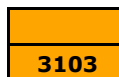
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Additional information

Hazard identification No.
UN number
Classification code
Safety signs



P1
5.2



Air transport - ICAO/IATA

Packaging instructions passenger	570
Cargo packaging instructions	570

Marine transport - IMDG

EmS (emergency plan)	F-J, S-R
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SECTION 15: Regulatory information

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

Regulation (EC) No. 1907/2006 of the European Parliament and of the Council of 18th December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing the European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No. 793/93 and Commission Regulation (EC) No. 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, as amended. Regulation (EC) No. 1272/2008 of the European Parliament and of the Council of 16th December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No. 1907/2006, as amended.

15.2. Chemical safety assessment

not available

SECTION 16: Other information

A list of standard risk phrases used in the safety data sheet

H242	Heating may cause a fire.
H315	Causes skin irritation.

Guidelines for safe handling used in the safety data sheet

P280	Wear protective gloves/eye protection/face protection.
P220	Keep away from clothing and other combustible materials.
P235	Keep cool.
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
P370+P378	In case of fire: Use carbon dioxide to extinguish.

Other important information about human health protection

The product must not be - unless specifically approved by the manufacturer/importer - used for purposes other than as per the Section 1. The user is responsible for adherence to all related health protection regulations.

Key to abbreviations and acronyms used in the safety data sheet

ADR	European agreement concerning the international carriage of dangerous goods by road
BCF	Bioconcentration Factor
CAS	Chemical Abstracts Service
CLP	Regulation (EC) No 1272/2008 on classification, labelling and packaging of substance and mixtures
DNEL	Derived no-effect level

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EC50	Concentration of a substance when it is affected 50% of the population
EINECS	European Inventory of Existing Commercial Chemical Substances
EmS	Emergency plan
ES	Identification code for each substance listed in EINECS
EU	European Union
EuPCS	European Product Categorisation System
IATA	International Air Transport Association
IBC	International Code For The Construction And Equipment of Ships Carrying Dangerous Chemicals
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods
INCI	International Nomenclature of Cosmetic Ingredients
ISO	International Organization for Standardization
IUPAC	International Union of Pure and Applied Chemistry
LC50	Lethal concentration of a substance in which it can be expected death of 50% of the population
LD50	Lethal dose of a substance in which it can be expected death of 50% of the population
log Kow	Octanol-water partition coefficient
MARPOL	International Convention for the Prevention of Pollution from Ships
NOEC	No observed effect concentration
OEL	Occupational Exposure Limits
PBT	Persistent, Bioaccumulative and Toxic
PNEC	Predicted no-effect concentration
ppm	Parts per million
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	Agreement on the transport of dangerous goods by rail
UN	Four-figure identification number of the substance or article taken from the UN Model Regulations
UVCB	Substances of unknown or variable composition, complex reaction products or biological materials
VOC	Volatile organic compounds
vPvB	Very Persistent and very Bioaccumulative

Org. Perox. Organic peroxide
Skin Irrit. Skin irritation

Training guidelines

Inform the personnel about the recommended ways of use, mandatory protective equipment, first aid and prohibited ways of handling the product.

Recommended restrictions of use

not available

Information about data sources used to compile the Safety Data Sheet

REGULATION (EC) No. 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL (REACH) as amended.
REGULATION (EC) No. 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL as amended. Data from the manufacturer of the substance / mixture, if available - information from registration dossiers.

More information

Classification procedure - calculation method.

Statement

according to Regulation (EC) No 1907/2006 (REACH) as amended

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The safety data sheet provides information aimed at ensuring safety and health protection at work and environmental protection. The provided information corresponds to the current status of knowledge and experience and complies with valid legal regulations. The information should not be understood as guaranteeing the suitability and usability of the product for a particular application.