

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

1.1 Product identifier

Trade name: **PEROXAN DB**

CAS Number: 110-05-4
 EC number: 203-733-6
 Index number: 617-001-00-2
 Registration number: 01-2119513335-48

1.2 Relevant identified uses of the substance or mixture and uses advised against
 No further relevant information available.

Application of the substance / the mixture
 Reaction initiator
 For industrial use

1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier: PERGAN GmbH
 Hilfsstoffe für industrielle Prozesse
 Schlavenhorst 71
 D-46395 Bocholt
 Tel: +49 2871 9902-0
 Fax: +49 2871 9902-50

Further information obtainable from:

Competent person:
 * Sales Manager Germany: Mr. Ansgar Pappenheim, e-mail: a.pappenheim@pergan.com
 * Export Sales Manager: Mr. Dr. Thomas Philipps, e-mail: dr.philipps@pergan.com
 * Environment protection / : Mr. Christoph Wiltling, e-mail: c.wiltling@pergan.com
 Security of labour

1.4 Emergency telephone number:
 - Tel: +49 2871 9902-0

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

Flam. Liq. 2 H225 Highly flammable liquid and vapour.
 Org. Perox. E H242 Heating may cause a fire.
 Muta. 2 H341 Suspected of causing genetic defects.
 Aquatic Chronic 3 H412 Harmful to aquatic life with long lasting effects.

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008

The substance is classified and labelled according to the CLP regulation.

Hazard pictograms



GHS02 GHS08

Signal word

Danger

Hazard-determining components of labelling:

di-tert-butyl peroxide
 H225 Highly flammable liquid and vapour.
 H242 Heating may cause a fire.
 H341 Suspected of causing genetic defects.
 H412 Harmful 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.
 P220 Keep away from dirt, rust, chemicals in particular concentrated acids, alkalis and accelerators (e. g. heavy metal compounds and amines).
 P234 Keep only in original packaging.
 P243 Take action to prevent static discharges.
 P273 Avoid release to the environment.
 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.
 P410 Protect from sunlight.
 P411+P235 Store at temperatures not exceeding +40°C. Keep cool.
 P420 Store separately.
 P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Additional information:

Contains tert-butyl hydroperoxide. May produce an allergic reaction.

2.3 Other hazards

Results of PBT and vPvB assessment

PBT: This substance does not meet the PBT/vPvB criteria of REACH, Annex XIII.

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· **vPvB:** This substance does not meet the PBT/vPvB criteria of REACH, Annex XIII.**SECTION 3: Composition/information on ingredients**· **3.1 Substances**

- **CAS No. Description** 110-05-4 di-tert-butyl peroxide
- **Identification number(s)**
- **EC number:** 203-733-6
- **Index number:** 617-001-00-2

· **Dangerous components:**

CAS: 75-91-2	tert-butyl hydroperoxide	≤0,1%
EINECS: 200-915-7	Flam. Liq. 3, H226; Org. Perox. F, H242; Acute Tox. 3, H311; Acute Tox. 2, H330; Muta. 2, H341; Carc. 2, H351; Skin Corr. 1C, H314; Eye Dam. 1, H318; Aquatic Chronic 2, H411; Acute Tox. 4, H302; Skin Sens. 1, H317	
Reg-No.: 01-2119446670-40	Specific concentration limits: Eye Dam. 1; H318: C ≥ 1 % Skin Sens. 1; H317: C ≥ 0,1 % STOT SE 3; H335: C ≥ 5 %	

SECTION 4: First aid measures· **4.1 Description of first aid measures**· **General information:**

Take care of personal protection for the first aider.

- **After inhalation:** Take affected persons into fresh air and keep quiet.
- **After skin contact:** Immediately remove contaminated clothing.
- **After eye contact:** Rinse opened eye for several minutes under running water.
- **After swallowing:** If symptoms persist consult doctor.

· **4.2 Most important symptoms and effects, both acute and delayed**

No further relevant information available.

· **4.3 Indication of any immediate medical attention and special treatment needed**

No further relevant information available.

SECTION 5: Firefighting measures· **5.1 Extinguishing media**· **Suitable extinguishing agents:** CO₂, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.· **For safety reasons unsuitable extinguishing agents:**

Water with full jet

· **5.2 Special hazards arising from the substance or mixture**

Under certain fire conditions, traces of other toxic gases cannot be excluded. Hydrocarbons, carbon dioxide and -monoxid.

· **5.3 Advice for firefighters**· **Protective equipment:**

Do not inhale explosion gases or combustion gases.

· **Additional information**Cool endangered receptacles with water spray.
Self-protection first!**SECTION 6: Accidental release measures**· **6.1 Personal precautions, protective equipment and emergency procedures**Keep away from ignition sources.
In case of further temperature should be cooled with waterspray from a safe distance.
Wear breathing apparatus with filter A during decomposition of materials.
Wear protective equipment. Keep unprotected persons away.· **6.2 Environmental precautions:**

Inform respective authorities in case of seepage into water course or sewage system.



Do not allow to enter sewers/ surface or ground water.

· **6.3 Methods and material for containment and cleaning up:**Dispose contaminated material as waste according to section 13.
Ensure adequate ventilation.

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Large quantities should be diluted with suitable desensitisation agent to a concentration below 10 % before disposal.

Soak up with absorbant material (e. g. Vermiculit) and dispose of in accordance with government regulations.

· **6.4 Reference to other sections**

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

In case of large spillage the environmental authority should be informed.

SECTION 7: Handling and storage

· **7.1 Precautions for safe handling**

Keep away from heat and direct sunlight.

Open and handle receptacle with care.

Prevent formation of aerosols.

Wear suitable respiratory protective device when decanting larger quantities without extractor facilities.

Do not refill residue into storage receptacles.

Restrict the quantity stored at the work place.

Before break and at the end of work hands should be thoroughly washed.

Only use tools made of suitable materials (e. g. polyethylene or stainless steel).

Keep away from dirt, rust, chemicals in particular concentrated acids, alkalis and accelerators (e. g. heavy-metal compounds and amines).

While using do not eat, drink or smoke.

Do not generate flames or sparks.

Keep product and emptied container away from heat and sources of ignition.

Avoid shock and friction.

Take precautionary measures against static discharges.



Do not smoke.

· **Information about fire - and explosion protection:**

Protect from heat.

Protect against electrostatic charges.

Prevent impact and friction.

Use explosion-proof apparatus / fittings and spark-proof tools.

Fumes can combine with air to form an explosive mixture.



Wear shoes with conductive soles.

Formation of flammable or explosive gas/air-mixtures is possible.



Avoid open flames, sparks, direct sunlight and other sources of ignition.

Keep ignition sources away - Do not smoke.

· **7.2 Conditions for safe storage, including any incompatibilities**

· **Storage:**

Pay attention to the special requirements of your local authorities for storing dangerous goods.

· **Requirements to be met by storerooms and receptacles:**

Store in a cool location.

Store only in the original receptacle.

Prevent any seepage into the ground.

Use only receptacles specifically permitted for this substance/product.

· **Information about storage in one common storage facility:**

Do not store or park organic peroxide together with heavy metal compounds and amines.

Store away from foodstuffs, drinks and feeding stuffs.

· **Further information about storage conditions:**

Keep container tightly sealed.

Store in cool, dry conditions in well sealed receptacles.

Protect from heat and direct sunlight.

Protect from contamination.

· **Recommended storage temperature (To maintain quality):**

max.: +40 °C

· **Storage class:**

5.2

· **7.3 Specific end use(s)**

No further relevant information available.

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SECTION 8: Exposure controls/personal protection

- **8.1 Control parameters**
- **Ingredients with limit values that require monitoring at the workplace:** Not required.

· DNELs		
110-05-4 di-tert-butyl peroxide		
Dermal	DNEL Longterm System	3 mg/kg bw/day (Worker)
Inhalative	DNEL Longterm System	20 mg/m ³ (Worker)
75-91-2 tert-butyl hydroperoxide		
Dermal	DNEL Longterm System	0,21 mg/kg bw/day (Worker)
Inhalative	DNEL Acute Systemic	85,2 mg/m ³ (Worker)
	DNEL Acute Local	28,4 mg/m ³ (Worker)
	DNEL Longterm System	2,2 mg/m ³ (Worker)
	DNEL Longterm Local	0,58 mg/m ³ (Worker)

- **PNECs**


110-05-4 di-tert-butyl peroxide	
PNEC Marinewater sed	1,5 mg/kg sed dw (-)
PNEC Freshwater	0,144 mg/l (AF 50)
PNEC Freshwater sed	15 mg/kg sed dw (-)
PNEC Soil	2,94 mg/kg soil dw (-)
PNEC STP	10 mg/l (AF 100)
PNEC Marinewater	0,014 mg/l (AF 500)
75-91-2 tert-butyl hydroperoxide	
PNEC Marinewater sed	0,001 mg/kg sed dw
PNEC Freshwater	0,002 mg/l (AF 1.000)
PNEC Seawater	0 mg/l (AF 10.000)
PNEC Freshwater sed	0,006 mg/kg sed dw (-)
PNEC Soil	0,166 mg/kg soil dw (AF 1.000)
PNEC STP	0,17 mg/l (AF 100)

- **Additional information:** The lists valid during the making were used as basis.


- **8.2 Exposure controls**
- **Appropriate engineering controls** No further data; see section 7.
- **Individual protection measures, such as personal protective equipment**
- **General protective and hygienic measures:**

The usual precautionary measures are to be adhered to when handling chemicals.
 Keep away from foodstuffs, beverages and feed.
 Immediately remove all soiled and contaminated clothing
 Wash hands before breaks and at the end of work.
 Store protective clothing separately.
 Do not eat, drink, smoke or sniff while working.
 Use skin protection cream for skin protection.
 Be sure to clean skin thoroughly after work and before breaks.
- **Respiratory protection:**

Not necessary if room is well-ventilated.
 Use suitable respiratory device when it exceed exposure limit and when insufficiently ventilated.


Filter A2
- **Hand protection**

Only use chemical-protective gloves with CE-labelling of category III.


Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

Protective gloves
- **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
 Butyl rubber, BR
 Fluorocarbon rubber (Viton)
 Nitrile rubber, NBR
 Neoprene
- **Penetration time of glove material**

The exact break trough time has to be found out by the manufacturer of the protective gloves and has to be observed.

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· Eye/face protection



Tightly sealed goggles

· Body protection:



Protective work clothing

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

· General Information	
· Physical state	Fluid
· Colour:	Colourless
· Odour:	Characteristic
· Odour threshold:	Not determined.
· Melting point/freezing point:	Not applicable.
· Boiling point or initial boiling point and boiling range	Not applicable.
· Flammability	May cause fire. Highly flammable.
· Lower and upper explosion limit	
· Lower:	0,74 Vol %
· Upper:	Not determined.
· Flash point:	< 6 °C
· Decomposition temperature:	+80 °C (SADT)
· pH	Not determined.
· Viscosity:	
· Kinematic viscosity	Not determined.
· Dynamic at 20 °C:	1 mPas
· Solubility	
· water:	Undetermined.
· Partition coefficient n-octanol/water (log value)	not determined Not determined.
· Vapour pressure at 20 °C:	24 hPa
· Density and/or relative density	
· Density at 20 °C:	0,8 g/cm ³
· Relative density	Not determined.
· Vapour density	Not determined.

9.2 Other information

· Appearance:	
· Form:	Fluid
· Important information on protection of health and environment, and on safety.	
· Ignition temperature:	Not determined.
· Explosive properties:	Product is not explosive. However, formation of explosive air/vapour mixtures are possible.
· Change in condition	
· Evaporation rate	Not determined.

Information with regard to physical hazard classes

· Explosives	Void
· Flammable gases	Void
· Aerosols	Void
· Oxidising gases	Void
· Gases under pressure	Void
· Flammable liquids	Highly flammable liquid and vapour.
· Flammable solids	Void
· Self-reactive substances and mixtures	Void
· Pyrophoric liquids	Void
· Pyrophoric solids	Void
· Self-heating substances and mixtures	Void
· Substances and mixtures, which emit flammable gases in contact with water	Void
· Oxidising liquids	Void
· Oxidising solids	Void
· Organic peroxides	Heating may cause a fire.
· Corrosive to metals	Void
· Desensitised explosives	Void

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- | | |
|---|--------------------|
| <ul style="list-style-type: none"> · Other safety characteristics · Active oxygen | <p>> 10,7 %</p> |
|---|--------------------|

SECTION 10: Stability and reactivity

- **10.1 Reactivity** No further relevant information available.
- **10.2 Chemical stability**
- **Thermal decomposition / conditions to be avoided:** SADT (Self Accelerating Decomposition Temperature) is the lowest temperature at which self accelerating decomposition may occur with substance in the packaging as used in transport. A dangerous self-accelerating decomposition reaction and, under certain circumstances, explosion or fire can be caused by decomposition at and above the temperature. Contact with incompatible substances can cause decomposition at or below the SADT.
No decomposition if used and stored according to specifications.
To avoid thermal decomposition do not overheat.
- **10.3 Possibility of hazardous reactions** Self-accelerating decomposition at SADT.
- **10.4 Conditions to avoid** No further relevant information available.
- **10.5 Incompatible materials:** Rapid decomposition by dirt, rust, chemicals in particular concentrated acids, alkalis and accelerators (e. g. heavy-metal compounds and amines).
- **10.6 Hazardous decomposition products:** Hydrocarbons, carbon dioxide and -monoxid.
No hazardous decomposition products if used and stored according to specifications.
- **Additional information:** Emergency procedures will vary depending on conditions. The customer should have an emergency response plan in place.

* SECTION 11: Toxicological information

- **11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008**
- **Acute toxicity** Based on available data, the classification criteria are not met.

· LD/LC50 values relevant for classification:

110-05-4 di-tert-butyl peroxide

Oral	LD50	>25.000 mg/kg (rattus)
Dermal	LD50	>19.000 mg/kg (mus)
Inhalative	LC50 / 4h	>24,5 mg/l (rattus)

75-91-2 tert-butyl hydroperoxide

Oral	LD50	805 mg/kg /(70%) (rattus)
Dermal	LD50	633 mg/kg /(70%) (cuniculosus)
Inhalative	LC50 / 4h	1,2 mg/l /(70%) (rattus)

- **Skin corrosion/irritation** Based on available data, the classification criteria are not met.
- **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** Suspected of causing genetic defects.
- **Carcinogenicity** Based on available data, the classification criteria are not met.
- **Reproductive toxicity** Based on available data, the classification criteria are not met.
- **STOT-single exposure** Based on available data, the classification criteria are not met.
- **STOT-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

· Endocrine disrupting properties

None of the ingredients is listed.

SECTION 12: Ecological information

· 12.1 Toxicity

· Aquatic toxicity:

75-91-2 tert-butyl hydroperoxide

EC50 / 72h	2,1 mg/l /(70%)	(selenastrum capricornutum)
LC50 / 96h	42,3 mg/l /(70%)	(pimephales promelas)
EC50	24,3 mg/l /(70%)	(activa sludge)

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EC50 / 48h	20 mg/l / (70%) (daphnia magna)	
12.2 Persistence and degradability		
· Degree of elimination:		
· Classification:		
110-05-4 di-tert-butyl peroxide		
Degradation	(Not readily biodegradable) (OECD 301 D)	
75-91-2 tert-butyl hydroperoxide		
Degradation	(Not readily biodegradable) (OECD 301 D)	
12.3 Bioaccumulative potential		
· Partition coefficient: nOctanol/water: [Log Kow]		
110-05-4	di-tert-butyl peroxide	3,2 (22°C)
75-65-0	2-methylpropan-2-ol	0,32 (20°C)
75-91-2	tert-butyl hydroperoxide	0,85 (30 °C)
· 12.4 Mobility in soil		
No further relevant information available.		
12.5 Results of PBT and vPvB assessment		
· PBT:		
This substance does not meet the PBT/vPvB criteria of REACH, Annex XIII.		
· vPvB:		
This substance does not meet the PBT/vPvB criteria of REACH, Annex XIII.		
12.6 Endocrine disrupting properties		
The product does not contain substances with endocrine disrupting properties.		
12.7 Other adverse effects		
· Remark:		
Harmful to fish		
Additional ecological information:		
· General notes:		
Harmful to aquatic organisms		
Water hazard class 1 (German Regulation) (Assessment by list): slightly hazardous for water		
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.		

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Recommendation



After diluting with a suitable desensitisation agent to 10 %, the solution must be supplied to a special treatment (e. g. thermal utilization) under observance of all official regulations.

Must not be disposed together with household garbage. Do not allow product to reach sewage system.

Waste disposal key:

Please contact your hazardous waste disposers to assign the right EWC-(European waste catalog)-number.

Uncleaned packaging:

Recommendation:

This material and its container must be disposed of as hazardous waste.

SECTION 14: Transport information

14.1 UN number or ID number	
· ADR, IMDG, IATA	UN3107
14.2 UN proper shipping name	
· ADR	UN3107 ORGANIC PEROXIDE TYPE E, LIQUID (DI-tert-BUTYL PEROXIDE)
· IMDG, IATA	ORGANIC PEROXIDE TYPE E, LIQUID (DI-tert-BUTYL PEROXIDE)
14.3 Transport hazard class(es)	
· ADR	
· Class	5.2 (P1) Organic peroxides.
· Label	5.2
· IMDG, IATA	
· Class	5.2 Organic peroxides.

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· Label	5.2
· 14.4 Packing group · ADR, IMDG, IATA	Void
· 14.5 Environmental hazards:	Not applicable.
· 14.6 Special precautions for user · Hazard identification number (Kemler code): · Stowage Category · Stowage Code · Segregation Code	Warning: Organic peroxides. - D SW1 Protected from sources of heat. SG35 Stow "separated from" SGG1-acids SG36 Stow "separated from" SGG18-alkalis. SG72 See 7.2.6.3.2.
· 14.7 Maritime transport in bulk according to IMO instruments	Not applicable.
· Transport/Additional information:	
· ADR · Limited quantities (LQ) · Excepted quantities (EQ)	125 ml Code: E0 Not permitted as Excepted Quantity
· Transport category · Tunnel restriction code	2 D
· RID / GGVSEB:	like ADR
· IMDG · Limited quantities (LQ) · Excepted quantities (EQ)	125 ml Code: E0 Not permitted as Excepted Quantity

SECTION 15: Regulatory information

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

- Directive 2012/18/EU
- Named dangerous substances
 - ANNEX I Substance is not listed.
- Seveso category P6b SELF-REACTIVE SUBSTANCES AND MIXTURES and ORGANIC PEROXIDES
- Qualifying quantity (tonnes) for the application of lower-tier requirements 50 t
- Qualifying quantity (tonnes) for the application of upper-tier requirements 200 t
- REGULATION (EC) No 1907/2006 ANNEX XVII Conditions of restriction: 3

· DIRECTIVE 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment – Annex II

None of the ingredients is listed.

· REGULATION (EU) 2019/1148

· Annex I - RESTRICTED EXPLOSIVES PRECURSORS (Upper limit value for the purpose of licensing under Article 5(3))

None of the ingredients is listed.

· Annex II - REPORTABLE EXPLOSIVES PRECURSORS

None of the ingredients is listed.

· Regulation (EC) No 273/2004 on drug precursors

None of the ingredients is listed.

· Regulation (EC) No 111/2005 laying down rules for the monitoring of trade between the Community and third countries in drug precursors

None of the ingredients is listed.

SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

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- **Contact:** Tel: +49 2871 9902-0
E-mail: mail@pergan.com
- **Version number of previous version:** 13
- **Abbreviations and acronyms:**
 - ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)
 - IMDG: International Maritime Code for Dangerous Goods
 - IATA: International Air Transport Association
 - GHS: Globally Harmonised System of Classification and Labelling of Chemicals
 - EINECS: European Inventory of Existing Commercial Chemical Substances
 - ELINCS: European List of Notified Chemical Substances
 - CAS: Chemical Abstracts Service (division of the American Chemical Society)
 - DNEL: Derived No-Effect Level (REACH)
 - PNEC: Predicted No-Effect Concentration (REACH)
 - LC50: Lethal concentration, 50 percent
 - LD50: Lethal dose, 50 percent
 - PBT: Persistent, Bioaccumulative and Toxic
 - vPvB: very Persistent and very Bioaccumulative
 - Flam. Liq. 2: Flammable liquids – Category 2
 - Flam. Liq. 3: Flammable liquids – Category 3
 - Org. Perox. E: Organic peroxides – Type E/F
 - Org. Perox. F: Organic peroxides – Type E/F
 - Acute Tox. 4: Acute toxicity – Category 4
 - Acute Tox. 3: Acute toxicity – Category 3
 - Acute Tox. 2: Acute toxicity – Category 2
 - Skin Corr. 1C: Skin corrosion/irritation – Category 1C
 - Eye Dam. 1: Serious eye damage/eye irritation – Category 1
 - Skin Sens. 1: Skin sensitisation – Category 1
 - Muta. 2: Germ cell mutagenicity – Category 2
 - Carc. 2: Carcinogenicity – Category 2
 - Aquatic Chronic 2: Hazardous to the aquatic environment - long-term aquatic hazard – Category 2
 - Aquatic Chronic 3: Hazardous to the aquatic environment - long-term aquatic hazard – Category 3
- *** Data compared to the previous version altered.**