



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

- **1.1 Product identifier**
- **Trade name:** PEROXAN HX-45 P
- **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:**  
Environment protection / Security of labour  
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 Wiltig, e-mail: c.wiltig@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**  
Org. Perox. E H242 Heating may cause a fire.  
Skin Irrit. 2 H315 Causes skin irritation.
- **2.2 Label elements**
- **Labelling according to Regulation (EC) No 1272/2008** The product is classified and labelled according to the CLP regulation.
- **Hazard pictograms**    
GHS02 GHS07
- **Signal word** Warning
- **Hazard-determining components of labelling:** 2,5-Dimethyl-2,5-di-(tert.-butylperoxy)-hexane
- **Hazard statements** H242 Heating may cause a fire.  
H315 Causes skin irritation.
- **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.  
P264 Wash thoroughly after handling.  
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.  
P370+P378 In case of fire: Use CO<sub>2</sub>, powder or water spray to extinguish.  
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.
- **2.3 Other hazards**
- **Results of PBT and vPvB assessment**
- **PBT:** The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.
- **vPvB:** The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.

## SECTION 3: Composition/information on ingredients

### · 3.2 Mixtures

#### · **Dangerous components:**

CAS: 78-63-7 EINECS: 201-128-1 Reg-No.: 01-2119875400-42	2,5-Dimethyl-2,5-di-(tert.-butylperoxy)-hexane	Org. Perox. C, H242; Skin Irrit. 2, H315	40-50%
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· **Additional information:** For the wording of the listed hazard phrases refer to section 16.

### 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:

In case of unconsciousness place patient stably in side position for transportation.  
Take affected persons into fresh air and keep quiet.

##### · After skin contact:

Immediately wash with water and soap and rinse thoroughly.  
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:** CO<sub>2</sub>, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

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

Under certain fire conditions, traces of other toxic gases cannot be excluded.  
Hydrocarbons, carbondioxide 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:



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

#### · 6.3 Methods and material for containment and cleaning up:

Ensure adequate ventilation.  
Large quantities should be diluted with suitable desensitisation agent to a concentration below 10 % before disposal.  
Pick up mechanically, collect in a suitable receptacle and dispose 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 dust.  
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).

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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.  
Dust can combine with air to form an explosive mixture.  
Substance/product is oxidising when dry.  
Product is not explosive. However, formation of explosive air/dust mixtures are 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 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:**

Protect from heat and direct sunlight.  
Protect from contamination.

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

+10 .... +40 °C

· **Storage class:**

5.2

· **7.3 Specific end use(s)**

No further relevant information available.

## SECTION 8: Exposure controls/personal protection

· **8.1 Control parameters**

· **Ingredients with limit values that require monitoring at the workplace:**

The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

· **DNELs**

**78-63-7 2,5-Dimethyl-2,5-di-(tert.-butylperoxy)-hexane**

Dermal	DNEL Longterm System	15 mg/kg bw/day (Worker)
Inhalative	DNEL Longterm System	11 mg/m <sup>3</sup> (Worker)

· **PNECs**

**78-63-7 2,5-Dimethyl-2,5-di-(tert.-butylperoxy)-hexane**

PNEC Marinewater sed	7,22 mg/kg sed dw (-)
PNEC Freshwater	0,00065 mg/l (AF 10)
PNEC Freshwater sed	72,2 mg/kg sed dw (-)
PNEC Soil	14,4 mg/kg soil dw (-)
PNEC STP	100 mg/l (AF 10)
PNEC Marinewater	0,000065 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.

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<ul style="list-style-type: none"> <li>· <b>Respiratory protection:</b></li> <li>· <b>Hand protection</b></li> <li>· <b>Material of gloves</b></li> <li>· <b>Penetration time of glove material</b></li> <li>· <b>Eye/face protection</b></li> <li>· <b>Body protection:</b></li> </ul>	<p>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. Avoid close or long term contact with the skin. Avoid contact with the eyes and skin. 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. Not necessary if room is well-ventilated. Use suitable respiratory device when it exceed exposure limit and when insufficiently ventilated.</p> <p> Filter P2</p> <p>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</p> <p>Protective gloves</p> <p>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</p> <p>The exact break trough time has to be found out by the manufacturer of the protective gloves and has to be observed.</p> <p> Tightly sealed goggles</p> <p> Protective work clothing</p>
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## SECTION 9: Physical and chemical properties

### · 9.1 Information on basic physical and chemical properties

#### · General Information

<ul style="list-style-type: none"> <li>· <b>Colour:</b></li> <li>· <b>Odour:</b></li> <li>· <b>Odour threshold:</b></li> <li>· <b>Melting point/freezing point:</b></li> <li>· <b>Boiling point or initial boiling point and boiling range</b></li> <li>· <b>Flammability</b></li> <li>· <b>Lower and upper explosion limit</b></li> <li>· <b>Lower:</b></li> <li>· <b>Upper:</b></li> <li>· <b>Flash point:</b></li> <li>· <b>Decomposition temperature:</b></li> <li>· <b>pH</b></li> <li>· <b>Viscosity:</b></li> <li>· <b>Kinematic viscosity</b></li> <li>· <b>Dynamic:</b></li> <li>· <b>Solubility</b></li> <li>· <b>water:</b></li> <li>· <b>Partition coefficient n-octanol/water (log value)</b></li> <li>· <b>Vapour pressure:</b></li> <li>· <b>Density and/or relative density</b></li> <li>· <b>Density:</b></li> <li>· <b>Relative density</b></li> <li>· <b>Bulk density at 20 °C:</b></li> <li>· <b>Vapour density</b></li> <li>· <b>Particle characteristics</b></li> </ul>	<p>white - yellowish Characteristic Not determined. Not applicable. Not applicable. May cause fire.  Not determined. Not determined. Not applicable. +80 °C (SADT) Not applicable.  Not applicable. Not applicable.  Undetermined. not determined Not applicable.  Not determined. Not determined. 365 kg/m<sup>3</sup> Not applicable.</p>
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See section 3.

#### · 9.2 Other information

No further relevant information available.

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· <b>Appearance:</b>	
· <b>Form:</b>	Powder
· <b>Important information on protection of health and environment, and on safety.</b>	
· <b>Ignition temperature:</b>	Product is not selfigniting.
· <b>Explosive properties:</b>	Product is not explosive. However, formation of explosive air/dust mixtures are possible.
· <b>Change in condition</b>	
· <b>Evaporation rate</b>	Not applicable.
· <b>Information with regard to physical hazard classes</b>	
· <b>Explosives</b>	Void
· <b>Flammable gases</b>	Void
· <b>Aerosols</b>	Void
· <b>Oxidising gases</b>	Void
· <b>Gases under pressure</b>	Void
· <b>Flammable liquids</b>	Void
· <b>Flammable solids</b>	Void
· <b>Self-reactive substances and mixtures</b>	Void
· <b>Pyrophoric liquids</b>	Void
· <b>Pyrophoric solids</b>	Void
· <b>Self-heating substances and mixtures</b>	Void
· <b>Substances and mixtures, which emit flammable gases in contact with water</b>	Void
· <b>Oxidising liquids</b>	Void
· <b>Oxidising solids</b>	Void
· <b>Organic peroxides</b>	Heating may cause a fire.
· <b>Corrosive to metals</b>	Void
· <b>Desensitised explosives</b>	Void
· <b>Other safety characteristics</b>	
· <b>Active oxygen</b>	4,7 - 5,2 %

### SECTION 10: Stability and reactivity

· <b>10.1 Reactivity</b>	No further relevant information available.
· <b>10.2 Chemical stability</b>	
· <b>Thermal decomposition / conditions to be avoided:</b>	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 cause 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.
· <b>10.3 Possibility of hazardous reactions</b>	Self-accelerating decomposition at SADT.
· <b>10.4 Conditions to avoid</b>	No further relevant information available.
· <b>10.5 Incompatible materials:</b>	Rapid decomposition by dirt, rust, chemicals in particular concentrated acids, alkalis and accelerators (e. g. heavy-metal compounds and amines).
· <b>10.6 Hazardous decomposition products:</b>	Hydrocarbons, carbondioxide and -monoxid. No hazardous decomposition products if used and stored according to specifications.
· <b>Additional information:</b>	Emergency procedures will vary depending on conditions. The customer should have an emergency response plane in place.

### SECTION 11: Toxicological information

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

· **LD/LC50 values relevant for classification:**

**78-63-7 2,5-Dimethyl-2,5-di-(tert.-butylperoxy)-hexane**

Oral	LD50	>2.000 mg/kg (rattus)
Dermal	LD50	>2.000 mg/kg (cuniculosus)

· <b>Skin corrosion/irritation</b>	Causes skin irritation.
· <b>Serious eye damage/irritation</b>	Based on available data, the classification criteria are not met.
· <b>Respiratory or skin sensitisation</b>	Based on available data, the classification criteria are not met.

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- **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.
- **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:** No further relevant information available.
- **12.2 Persistence and degradability**
- **Degree of elimination:**

· **Classification:**

**78-63-7 2,5-Dimethyl-2,5-di-(tert.-butylperoxy)-hexane**

Degradation (Not readily biodegradable) (OECD 301 D)

· **12.3 Bioaccumulative potential**

· **Partition coefficient: nOctanol/water: [Log Kow]**

78-63-7	2,5-Dimethyl-2,5-di-(tert.-butylperoxy)-hexane	7,34 (20°C)
75-65-0	2-methylpropan-2-ol	0,32 (20°C)
110-05-4	di-tert-butyl peroxide	3,2 (22°C)

· **Bioconcentration factor (BCF)**

**78-63-7 2,5-Dimethyl-2,5-di-(tert.-butylperoxy)-hexane**

BCF 521-839

- **12.4 Mobility in soil** No further relevant information available.
- **12.5 Results of PBT and vPvB assessment**
- **PBT:** The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.
- **vPvB:** The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.
- **12.6 Endocrine disrupting properties** The product does not contain substances with endocrine disrupting properties.
- **12.7 Other adverse effects** No further relevant information available.
- **Additional ecological information:**
- **General notes:** Water hazard class 1 (German Regulation) (Self-assessment): 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 inert solid material to 10 %, the product 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**

UN3108

· **14.2 UN proper shipping name**

· **ADR**

UN3108 ORGANIC PEROXIDE TYPE E, SOLID (2,5-DIMETHYL-2,5-DI-(tert.-BUTYLPEROXY)-HEXANE)



· **IMDG, IATA**

ORGANIC PEROXIDE TYPE E, SOLID (2,5-DIMETHYL-2,5-DI-(tert.-BUTYLPEROXY)-HEXANE)

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· <b>14.3 Transport hazard class(es)</b>	
· <b>ADR</b>	
	
· <b>Class</b>	5.2 (P1) Organic peroxides.
· <b>Label</b>	5.2
· <b>IMDG, IATA</b>	
	
· <b>Class</b>	5.2 Organic peroxides.
· <b>Label</b>	5.2
· <b>14.4 Packing group</b>	
· <b>ADR, IMDG, IATA</b>	Void
· <b>14.5 Environmental hazards:</b>	
· <b>Marine pollutant:</b>	No
· <b>14.6 Special precautions for user</b>	
· <b>Hazard identification number (Kemler code):</b>	Warning: Organic peroxides.
· <b>Stowage Category</b>	-
· <b>Stowage Code</b>	D
· <b>Segregation Code</b>	SW1 Protected from sources of heat. SG35 Stow "separated from" SGG1-acids SG36 Stow "separated from" SGG18-alkalis.
· <b>14.7 Maritime transport in bulk according to IMO instruments</b>	
Not applicable.	
· <b>Transport/Additional information:</b>	
· <b>ADR</b>	
· <b>Limited quantities (LQ)</b>	500 g
· <b>Excepted quantities (EQ)</b>	Code: E0 Not permitted as Excepted Quantity
· <b>Transport category</b>	2
· <b>Tunnel restriction code</b>	D
· <b>RID / GGVSEB:</b>	
like ADR	
· <b>IMDG</b>	
· <b>Limited quantities (LQ)</b>	500 g
· <b>Excepted quantities (EQ)</b>	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 None of the ingredients is 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

#### · 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

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

None of the ingredients is listed.

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Trade name: **PEROXAN HX-45 P**

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· **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.

· **Department issuing SDS:** Environment protection / Security of labour  
 · **Contact:** Tel: +49 2871 9902-0  
 E-mail: mail@pergan.com

· **Version number of previous version:**

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· **Abbreviations and acronyms:**

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)  
 ICAO: International Civil Aviation Organisation  
 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  
 Org. Perox. C: Organic peroxides – Type C/D  
 Org. Perox. E: Organic peroxides – Type E/F  
 Skin Irrit. 2: Skin corrosion/irritation – Category 2

· \* **Data compared to the previous version altered.**