

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

- **1.1 Product identifier**
- **Trade name:** PEROXAN DB-50
- **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  
Qualified person: E-mail: msds@pergan.com
- **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. F    H242 Heating may cause a fire.
  - Muta. 2          H341 Suspected of causing genetic defects.
  - Asp. Tox. 1      H304 May be fatal if swallowed and enters airways.
  - Aquatic Chronic 3 H412 Harmful to aquatic life with long lasting effects.
- **2.2 Label elements**
- **Labelling according to Regulation (EC) No 1272/2008**
- **Hazard pictograms**

The product is classified and labelled according to the GB CLP regulation.

GHS02 GHS08
- **Signal word**  
Danger
- **Hazard-determining components of labelling:**  
di-tert-butyl peroxide  
Hydrocarbons, C4, 1,3-butadiene-free, polymd., triisobutylene fraction, hydrogenated
- **Hazard statements**  
H225 Highly flammable liquid and vapour.  
H242 Heating may cause a fire.  
H341 Suspected of causing genetic defects.  
H304 May be fatal if swallowed and enters airways.  
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.
  - P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
  - P331      Do NOT induce vomiting.
  - P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
  - P405      Store locked up.
  - 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:** The substances in the mixture do not meet the PBT/vPvB criteria according to UK REACH, annex XIII.

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· **vPvB:** The substances in the mixture do not meet the PBT/vPvB criteria according to UK REACH, annex XIII.

### SECTION 3: Composition/information on ingredients

#### · 3.2 Mixtures

##### · Dangerous components:

CAS: 110-05-4 EINECS: 203-733-6 Index number: 617-001-00-2 Reg-No.: 01-2119513335-48	di-tert-butyl peroxide Flam. Liq. 2, H225; Org. Perox. E, H242; Muta. 2, H341; Aquatic Chronic 3, H412	40-50%
CAS: 93685-81-5 EINECS: 297-629-8 Reg-No.: 01-2119490725-29	Hydrocarbons, C4, 1,3-butadiene-free, polymd., triisobutylene fraction, hydrogenated Alternative CAS number: 13475-82-6 Flam. Liq. 3, H226; Asp. Tox. 1, H304; Aquatic Chronic 4, H413	40-50%
CAS: 75-91-2 EINECS: 200-915-7 Reg-No.: 01-2119446670-40	tert-butyl hydroperoxide 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 Specific concentration limits: Eye Dam. 1; H318: C ≥ 1 % Skin Sens. 1; H317: C ≥ 0.1 % STOT SE 3; H335: C ≥ 5 %	≤0.1%

· **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:

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:** CO<sub>2</sub>, sand, extinguishing powder. Do not use water.

##### · 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.

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

Dispose contaminated material as waste according to section 13.  
Ensure adequate ventilation.  
Do not flush with water or aqueous cleansing agents  
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 receptacles tightly sealed.  
Store in cool, dry place in tightly closed receptacles.  
Keep away from heat and direct sunlight.  
Ensure good ventilation/exhaustion at the workplace.  
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.  
Use only in well ventilated areas.  
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.  
Store in a cool place.

#### Recommended storage temperature (To maintain quality):

max.: +40 °C

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· **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

##### 110-05-4 di-tert-butyl peroxide

Dermal	DNEL Longterm System	3 mg/kg bw/day (Worker)
Inhalative	DNEL Longterm System	20 mg/m3 (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/m3 (Worker)
	DNEL Acute Local	28.4 mg/m3 (Worker)
	DNEL Longterm System	2.2 mg/m3 (Worker)
	DNEL Longterm Local	0.58 mg/m3 (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:

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.  
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)

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· <b>Penetration time of glove material</b>	Nitrile rubber, NBR Neoprene
· <b>Eye/face protection</b>	The exact break trough time has to be found out by the manufacturer of the protective gloves and has to be observed.
· <b>Body protection:</b>	 Tightly sealed goggles  Protective work clothing

### SECTION 9: Physical and chemical properties

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

##### · General Information

· Colour:	colourless - yellowish
· Odour:	Characteristic
· Odour threshold:	Not determined.
· Melting point/freezing point:	Not applicable.
· Boiling point or initial boiling point and boiling range	Not applicable.
· Flammability	Not applicable.
· Lower and upper explosion limit	
· Lower:	Not determined.
· Upper:	Not determined.
· Flash point:	10 °C
· Decomposition temperature:	+80 °C (SADT)
· pH	Not determined.
· Viscosity:	
· Kinematic viscosity	Not determined.
· Dynamic:	Not determined.
· Solubility	
· water:	Undetermined.
· Partition coefficient n-octanol/water (log value)	not determined
· Vapour pressure:	Not determined.
· Density and/or relative density	
· Density:	Not determined.
· Relative density	Not determined.
· Vapour density	Not determined.

#### · 9.2 Other information

· Appearance:	No further relevant information available.
· Form:	Fluid
· Important information on protection of health and environment, and on safety.	
· Ignition temperature:	Product is not selfigniting.
· 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

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· Desensitised explosives	Void
· Other safety characteristics	
· Active oxygen	ca. 5.5 %

## 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 -monoxide. 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)

#### 93685-81-5 Hydrocarbons, C4, 1,3-butadiene-free, polymd., triisobutylene fraction, hydrogenated

Oral	LD50	>5,000 mg/kg (rattus)
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#### 75-91-2 tert-butyl hydroperoxide

Oral	LD50	805 mg/kg / (70%) (rattus)
Dermal	LD50	633 mg/kg / (70%) (cuniculus)
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	May be fatal if swallowed and enters airways.

### · 11.2 Information on other hazards

#### · Endocrine disrupting properties

None of the ingredients is listed.

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**SECTION 12: Ecological information**· **12.1 Toxicity**· **Aquatic toxicity:****93685-81-5 Hydrocarbons, C4, 1,3-butadiene-free, polymd., triisobutylene fraction, hydrogenated**

EC50 / 48h &gt;0.04 mg/l (daphnia)

IC50 / 72h &gt;0.04 mg/l (alga)

**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)

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)

**93685-81-5 Hydrocarbons, C4, 1,3-butadiene-free, polymd., triisobutylene fraction, hydrogenated**

Degradation (Not readily biodegradable)

**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:** The substances in the mixture do not meet the PBT/vPvB criteria according to UK REACH, annex XIII.· **vPvB:** The substances in the mixture do not meet the PBT/vPvB criteria according to UK 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.

· **Remark:**

Harmful to fish

· **Additional ecological information:**· **General notes:**

Harmful to aquatic organisms

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 desentisation 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**

UN3109

· **14.2 UN proper shipping name**· **ADR**

UN3109 ORGANIC PEROXIDE TYPE F, LIQUID (DI-tert-BUTYL PEROXIDE)



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· IMDG, IATA	ORGANIC PEROXIDE TYPE F, 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.
· Label	5.2
· 14.4 Packing group	
· ADR, IMDG, IATA	Void
· 14.5 Environmental hazards:	
· Marine pollutant:	No
· 14.6 Special precautions for user	Warning: Organic peroxides.
· Hazard identification number (Kemler code):	-
· Stowage Category	D
· Stowage Code	SW1 Protected from sources of heat.
· Segregation Code	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)	125 ml
· Excepted quantities (EQ)	Code: E0 Not permitted as Excepted Quantity
· Transport category	2
· Tunnel restriction code	D
· RID / GGVSEB:	like ADR
· IMDG	
· Limited quantities (LQ)	125 ml
· Excepted quantities (EQ)	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

#### · Poisons Act

##### · Regulated explosives precursors

None of the ingredients is listed.

##### · Regulated poisons

None of the ingredients is listed.

##### · Reportable explosives precursors

None of the ingredients is listed.

##### · Reportable poisons

None of the ingredients is listed.

#### · Directive 2012/18/EU

##### · Qualifying quantity (tonnes) for the application of lower-tier requirements

50 t

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- **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.

- **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.

- **National regulations:**

- **Other regulations, limitations and prohibitive regulations**

- **Please note:** Take care of the respective local regulations.

## 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.

- **Relevant phrases**

H225 Highly flammable liquid and vapour.  
H226 Flammable liquid and vapour.  
H242 Heating may cause a fire.  
H302 Harmful if swallowed.  
H304 May be fatal if swallowed and enters airways.  
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.  
H351 Suspected of causing cancer.  
H411 Toxic to aquatic life with long lasting effects.  
H412 Harmful to aquatic life with long lasting effects.  
H413 May cause long lasting harmful effects to aquatic life.

- **Department issuing SDS:**

Environment protection / Security of labour

- **Contact:**

Tel: +49 2871 9902-0

E-mail: mail@pergan.com

- **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 (UK REACH)  
PNEC: Predicted No-Effect Concentration (UK 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  
Asp. Tox. 1: Aspiration hazard – Category 1  
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

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Aquatic Chronic 4: Hazardous to the aquatic environment - long-term aquatic hazard – Category 4

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· \* Data compared to the  
previous version altered.

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