

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


- **1.1 Product identifier**
- **Trade name:** PEROXAN MI-60 KPX+
- **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 Wilting, e-mail: c.wilting@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. 3	H226	Flammable liquid and vapour.
Org. Perox. C	H242	Heating may cause a fire.
Acute Tox. 3	H331	Toxic if inhaled.
Skin Corr. 1C	H314	Causes severe skin burns and eye damage.
Eye Dam. 1	H318	Causes serious eye damage.
Skin Sens. 1	H317	May cause an allergic skin reaction.
Carc. 2	H351	Suspected of causing cancer.
Repr. 2	H361d	Suspected of damaging the unborn child.
Asp. Tox. 1	H304	May be fatal if swallowed and enters airways.
Aquatic Acute 1	H400	Very toxic to aquatic life.
Aquatic Chronic 2	H411	Toxic to aquatic life with long lasting effects.

- **2.2 Label elements**
- **Labelling according to Regulation (EC) No 1272/2008** The product is classified and labelled according to the GB CLP regulation.
- **Hazard pictograms**



GHS02 GHS05 GHS06 GHS08 GHS09
- **Signal word** Danger
- **Hazard-determining components of labelling:** Reaction mass of 4-methylpentane-2,2-diyl dihydroperoxide and 4-methylpentane-2-one and peroxybis-4-methylpentane-2,2-diyl dihydroperoxide
1-isopropyl-2,2-dimethyltrimethylene diisobutyrate
4-methylpentan-2-one
tert-butyl perbenzoate
- **Hazard statements**

H226 Flammable liquid and vapour.
H242 Heating may cause a fire.
H331 Toxic if inhaled.
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H351 Suspected of causing cancer.
H361d Suspected of damaging the unborn child.
H304 May be fatal if swallowed and enters airways.
H410 Very toxic to aquatic life with long lasting effects.
- **Precautionary statements**

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
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.

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P264	Wash thoroughly after handling.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P405	Store locked up.
P410	Protect from sunlight.
P411+P235	Store at temperatures not exceeding +25°C. Keep cool.
P420	Do not mix with peroxide-accelerators or reducing agents.
P501	Dispose of contents/container in accordance with local/regional/national/international regulations.

· **Additional information:** Product contains: Reportable explosives precursors. Making available, introduction, possession and use according to Regulation (EU) 2019/1148, Article 9.

· **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.
- **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:**


EC number: 942-932-9 Reg-No.: 01-2120103792-63	Reaction mass of 4-methylpentane-2,2-diyl dihydroperoxide and 4-methylpentane-2-one and peroxybis-4-methylpentane-2,2-diyl dihydroperoxide Alternative CAS number: 37206-20-5 Flam. Liq. 3, H226; Org. Perox. D, H242; Asp. Tox. 1, H304; Skin Corr. 1C, H314; Eye Dam. 1, H318; Aquatic Chronic 2, H411; Acute Tox. 4, H302; Acute Tox. 4, H332; Skin Sens. 1, H317	25-30%
CAS: 614-45-9 EINECS: 210-382-2 Reg-No.: 01-2119513317-46	tert-butyl perbenzoate Org. Perox. C, H242; Aquatic Acute 1, H400; Acute Tox. 4, H332; Skin Irrit. 2, H315; Skin Sens. 1, H317; Aquatic Chronic 3, H412	25-30%
CAS: 6846-50-0 EINECS: 229-934-9 Reg-No.: 01-2119451093-47	1-isopropyl-2,2-dimethyltrimethylene diisobutyrate Repr. 2, H361d; Aquatic Chronic 3, H412	10-20%
CAS: 123-42-2 EINECS: 204-626-7 Index number: 603-016-00-1 Reg-No.: 01-2119473975-21	4-hydroxy-4-methylpentan-2-one Flam. Liq. 3, H226; Repr. 2, H361d; Eye Irrit. 2, H319; STOT SE 3, H335 Specific concentration limit: Eye Irrit. 2; H319: C ≥ 10 %	5-20%
CAS: 108-10-1 EINECS: 203-550-1 Index number: 606-004-00-4 Reg-No.: 01-2119473980-30	4-methylpentan-2-one Flam. Liq. 2, H225; Carc. 2, H351; Acute Tox. 4, H332; Eye Irrit. 2, H319; STOT SE 3, H336, EUH066 ATE: LC50 / 4h inhalative: 11 mg/l	5-10%
CAS: 128-37-0 EINECS: 204-881-4 Reg-No.: 01-2119555270-46 01-2119565113-46	Butylated hydroxytoluene Aquatic Acute 1, H400; Aquatic Chronic 1, H410	1-2.5%
CAS: 7722-84-1 EINECS: 231-765-0 Index number: 008-003-00-9 Reg-No.: 01-2119485845-22	hydrogen peroxide solution Ox. Liq. 1, H271; Skin Corr. 1A, H314; Acute Tox. 4, H302; Acute Tox. 4, H332; STOT SE 3, H335; Aquatic Chronic 3, H412 Specific concentration limits: Skin Corr. 1A; H314: C ≥ 70 % Skin Corr. 1B; H314: 50 % ≤ C < 70 % Skin Irrit. 2; H315: 35 % ≤ C < 50 % Eye Dam. 1; H318: C ≥ 8 % Eye Irrit. 2; H319: 5 % ≤ C < 8 % STOT SE 3; C ≥ 35 % Ox. Liq. 1; H271: C ≥ 70 % Ox. Liq. 2; H272: 50 % ≤ C < 70 %	0.1-2.5%
CAS: 102-82-9 EINECS: 203-058-7 Reg-No.: 01-2119474898-14	tributylamine Acute Tox. 3, H311; Acute Tox. 1, H330; Acute Tox. 4, H302; Skin Irrit. 2, H315	0-1%

· **Additional information:** For the wording of the listed hazard phrases refer to section 16.

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SECTION 4: First aid measures**4.1 Description of first aid measures**

- **General information:** Immediately remove any clothing soiled by the product.
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
-  Take care of personal protection for the first aider.
- **After inhalation:** Supply fresh air and to be sure call for a doctor.
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. Then consult a doctor.
- **After swallowing:** Call for a doctor immediately.
- **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.
- **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:** Mouth respiratory protective device.
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 item 13.
Ensure adequate ventilation.
Large quantities should be diluted with suitable desensitization 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.
Ensure good ventilation/exhaustion at the workplace.
Open and handle receptacle with care.
Prevent formation of aerosols.

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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).
Avoid contact with skin and eyes.
While using do not eat, drink or smoke.
Avoid shock and friction.



Do not smoke.

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

Protect from heat.
Prevent impact and friction.
Fumes can combine with air to form an explosive mixture.



Wear shoes with conductive soles.



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

· **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:** Keep container tightly sealed.
Protect from heat and direct sunlight.
Protect from contamination.
Store under lock and key and out of the reach of children.
Storage in a collecting room is required.

· **Recommended storage temperature (To maintain quality):** +5 +25 °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:**

123-42-2 4-hydroxy-4-methylpentan-2-one

WEL (Great Britain)	Short-term value: 362 mg/m ³ , 75 ppm Long-term value: 241 mg/m ³ , 50 ppm
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108-10-1 4-methylpentan-2-one

WEL (Great Britain)	Short-term value: 416 mg/m ³ , 100 ppm Long-term value: 208 mg/m ³ , 50 ppm Sk, BMGV
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IOELV (EU)	Short-term value: 208 mg/m ³ , 50 ppm Long-term value: 83 mg/m ³ , 20 ppm
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128-37-0 Butylated hydroxytoluene

WEL (Great Britain)	Long-term value: 10 mg/m ³
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7722-84-1 hydrogen peroxide solution

WEL (Great Britain)	Short-term value: 2.8 mg/m ³ , 2 ppm Long-term value: 1.4 mg/m ³ , 1 ppm
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· DNELs		
Reaction mass of 4-methylpentane-2,2-diyl dihydroperoxide and 4-methylpentane-2-one and peroxybis-4-methylpentane-2,2-diyl dihydroperoxide		
Dermal	DNEL Longterm System	1.5 mg/kg bw/day (Worker)
Inhalative	DNEL Longterm System	2.64 mg/m ³ (Worker)
614-45-9 tert-butyl perbenzoate		
Dermal	DNEL Longterm System	17.5 mg/kg bw/day (Worker)
Inhalative	DNEL Longterm System	24.7 mg/m ³ (Worker)
6846-50-0 1-isopropyl-2,2-dimethyltrimethylene diisobutyrate		
Dermal	DNEL Longterm System	5 mg/kg bw/day (Worker)
Inhalative	DNEL Longterm System	17.62 mg/m ³ (Worker)
123-42-2 4-hydroxy-4-methylpentan-2-one		
Dermal	DNEL Longterm System	467 mg/kg bw/day (Worker)
Inhalative	DNEL Longterm System	32.6 mg/m ³ (Worker)
108-10-1 4-methylpentan-2-one		
Dermal	DNEL Longterm System	11.8 mg/kg bw/day (Worker)
Inhalative	DNEL Acute Systemic	208 mg/m ³ (Worker)
	DNEL Longterm System	83 mg/m ³ (Worker)
128-37-0 Butylated hydroxytoluene		
Dermal	DNEL Longterm System	0.5 mg/kg bw/day (Worker)
Inhalative	DNEL Longterm System	1.76 mg/m ³ (Worker)
7722-84-1 hydrogen peroxide solution		
Inhalative	DNEL Longterm Local	1.4 mg/m ³ (Worker)
102-82-9 tributylamine		
Inhalative	DNEL Acute Systemic	10.6 mg/m ³ (Worker)
	DNEL Longterm System	5.3 mg/m ³ (Worker)
	DNEL Longterm Local	15.2 mg/m ³ (Worker)
· PNECs		
Reaction mass of 4-methylpentane-2,2-diyl dihydroperoxide and 4-methylpentane-2-one and peroxybis-4-methylpentane-2,2-diyl dihydroperoxide		
PNEC Marinewater sed	0.06 mg/kg sed dw (-)	
PNEC Freshwater	0.00133 mg/l (AF 1.000)	
PNEC Freshwater sed	0.59 mg/kg sed dw (-)	
PNEC Soil	0.118 mg/kg soil dw (-)	
PNEC STP	1.28 mg/l (AF 10)	
PNEC Marinewater	0.000133 mg/l (AF 10.000)	
614-45-9 tert-butyl perbenzoate		
PNEC Marinewater sed	0.028 mg/kg sed dw	
PNEC Freshwater	0.01 mg/l (AF 10)	
PNEC Freshwater sed	0.28 mg/kg sed dw	
PNEC Soil	0.049 mg/kg soil dw	
PNEC STP	0.6 mg/l (AF 10)	
PNEC Marinewater	0.00101 mg/l (AF 100)	
6846-50-0 1-isopropyl-2,2-dimethyltrimethylene diisobutyrate		
PNEC Marinewater sed	0.529 mg/kg sed dw (-)	
PNEC Freshwater	0.014 mg/l (AF 50)	
PNEC Freshwater sed	5.29 mg/kg sed dw	
PNEC Soil	1.05 mg/kg soil dw	
PNEC STP	3 mg/l (AF 10)	
PNEC Marinewater	0.001 mg/l (AF 500)	
123-42-2 4-hydroxy-4-methylpentan-2-one		
PNEC Marinewater sed	0.74 mg/kg sed dw	
PNEC Freshwater	2 mg/l (AF 50)	
PNEC Freshwater sed	7.4 mg/kg sed dw	
PNEC Soil	0.31 mg/kg soil dw	
PNEC STP	100 mg/l (AF 10)	
PNEC Marinewater	0.2 mg/l (AF 500)	

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108-10-1 4-methylpentan-2-one	
PNEC Marinewater sed	0.83 mg/kg sed dw (-)
PNEC Freshwater	0.6 mg/l (AF 50)
PNEC Seawater	0.06 mg/l (AF 500)
PNEC Freshwater sed	8.27 mg/kg sed dw (-)
PNEC Soil	1.3 mg/kg soil dw (-)
PNEC STP	27.5 mg/l (AF 10)
128-37-0 Butylated hydroxytoluene	
PNEC Marinewater sed	0.046 mg/kg sed dw (-)
PNEC Freshwater	0.000199 mg/l (AF 1.000)
PNEC Seawater	0.00002 mg/l (AF 10.000)
PNEC Freshwater sed	0.458 mg/kg sed dw (-)
PNEC Soil	0.054 mg/kg soil dw (-)
PNEC STP	0.017 mg/l (AF 100)
7722-84-1 hydrogen peroxide solution	
PNEC Marinewater sed	0.047 mg/kg sed dw
PNEC Freshwater	0.013 mg/l (AF 50)
PNEC Freshwater sed	0.047 mg/kg sed dw
PNEC Soil	0.002 mg/kg soil dw
PNEC STP	4.66 mg/l (AF 100)
PNEC Marinewater	0.013 mg/l (AF 50)
102-82-9 tributylamine	
PNEC Marinewater sed	3.59 mg/kg sed dw
PNEC Freshwater	0.008 mg/l (AF 1.000)
PNEC Freshwater sed	35.85 mg/kg sed dw
PNEC Soil	7.17 mg/kg soil dw
PNEC STP	100 mg/l (AF 1)
PNEC Marinewater	0.0008 mg/l (AF 10.000)
· Ingredients with biological limit values:	
108-10-1 4-methylpentan-2-one	
BMGV (Great Britain)	20 µmol/L Medium: urine Sampling time: post shift Parameter: 4-methylpentan-2-one

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

· 8.2 Exposure controls

· Appropriate engineering controls

No further data; see item 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.

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.

· 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.

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<ul style="list-style-type: none"> · Penetration time of glove material · Eye/face protection · Body protection: 	<p>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>
	 Tightly sealed goggles
	 Protective work clothing

SECTION 9: Physical and chemical properties

· 9.1 Information on basic physical and chemical properties

· General Information

<ul style="list-style-type: none"> · Physical state · Colour: · Odour: · Odour threshold: · Melting point/freezing point: · Boiling point or initial boiling point and boiling range · Flammability · Lower and upper explosion limit · Lower: · Upper: · Flash point: · Decomposition temperature: · pH · Viscosity: · Kinematic viscosity · Dynamic: · Solubility · water: · Partition coefficient n-octanol/water (log value) · Vapour pressure: · Density and/or relative density · Density at 20 °C: · Relative density · Vapour density 	<p>Fluid</p> <p>Colourless</p> <p>Characteristic</p> <p>Not determined.</p> <p>Not applicable.</p> <p>Not applicable.</p> <p>May cause fire.</p> <p>Not determined.</p> <p>Not determined.</p> <p>59 °C</p> <p>> +60 °C (SADT)</p> <p>Mixture is non-soluble (in water).</p> <p>Not determined.</p> <p>Not determined.</p> <p>Undetermined.</p> <p>not determined</p> <p>Not determined.</p> <p>Not determined.</p> <p>0.991 g/cm³</p> <p>Not determined.</p> <p>Not determined.</p>
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· 9.2 Other information

<ul style="list-style-type: none"> · Appearance: · Form: · Important information on protection of health and environment, and on safety. · Auto-ignition temperature: · Explosive properties: · Change in condition · Evaporation rate 	<p>Fluid</p> <p>Product is not selfigniting.</p> <p>Product is not explosive. However, formation of explosive air/vapour mixtures are possible.</p> <p>Not determined.</p>
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· Information with regard to physical hazard classes

<ul style="list-style-type: none"> · Explosives · Flammable gases · Aerosols · Oxidising gases · Gases under pressure · Flammable liquids · Flammable solids · Self-reactive substances and mixtures · Pyrophoric liquids · Pyrophoric solids · Self-heating substances and mixtures · Substances and mixtures, which emit flammable gases in contact with water 	<p>Void</p> <p>Void</p> <p>Void</p> <p>Void</p> <p>Void</p> <p>Flammable liquid and vapour.</p> <p>Void</p> <p>Void</p> <p>Void</p> <p>Void</p> <p>Void</p> <p>Void</p>
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· Oxidising liquids	Void
· Oxidising solids	Void
· Organic peroxides	Heating may cause a fire.
· Corrosive to metals	Void
· Desensitised explosives	Void
· Other safety characteristics	Void
· Active oxygen	7.9 - 8.2 %

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 Toxic if inhaled.

· LD/LC50 values relevant for classification:

Reaction mass of 4-methylpentane-2,2-diyl dihydroperoxide and 4-methylpentane-2-one and peroxybis-4-methylpentane-2,2-diyl dihydroperoxide

Oral	LD50	1,575 mg/kg (rattus)
Dermal	LD50	>2,000 mg/kg (rattus)
Inhalative	LC50 / 4h	1.5 mg/l (rattus)

614-45-9 tert-butyl perbenzoate

Oral	LD50	4,838 mg/kg (rattus)
Dermal	LD50	3,817 mg/kg (rattus)
Inhalative	LC100 4h	4.9 mg/l (rattus)
	LC0 / 4h	1.01 mg/l (rattus)

6846-50-0 1-isopropyl-2,2-dimethyltrimethylene diisobutyrate

Oral	LD50	3,200 mg/kg (rattus)
Dermal	LD50	18,900 mg/kg (caviinae)

123-42-2 4-hydroxy-4-methylpentan-2-one

Oral	LD50	3,002 mg/kg (rattus)
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108-10-1 4-methylpentan-2-one

Oral	LD50	>2,080 mg/kg (rattus)
Dermal	LD50	>16,000 mg/kg (cuniculosus)
Inhalative	LC50 / 4h	11 mg/l (ATE)
	LC50 / 4h	11 mg/l

128-37-0 Butylated hydroxytoluene

Oral	LD50	>2,000 mg/kg (rattus)
Dermal	LD50	>2,000 mg/kg (cuniculosus)

102-82-9 tributylamine

Oral	LD50	540 mg/kg (rattus)
Dermal	LD50	250 mg/kg (cuniculosus)

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- **Skin corrosion/irritation** Causes severe skin burns and eye damage.
- **Serious eye damage/irritation** Causes serious eye damage.
- **Respiratory or skin sensitisation** May cause an allergic skin reaction.
- **Carcinogenicity** Suspected of causing cancer.
- **Reproductive toxicity** Suspected of damaging the unborn child.
- **Aspiration hazard** May be fatal if swallowed and enters airways.
- **11.2 Information on other hazards**

· **Endocrine disrupting properties**

128-37-0 Butylated hydroxytoluene

List II

SECTION 12: Ecological information

· **12.1 Toxicity**

· **Aquatic toxicity:**

Reaction mass of 4-methylpentane-2,2-diyl dihydroperoxide and 4-methylpentane-2-one and peroxybis-4-methylpentane-2,2-diyl dihydroperoxide

EC50 / 72h 1.33 mg/l (alga (Süßwasser))

LC50 / 96h 1.89 mg/l (piscis)

EC50 / 48h 4.48 mg/l (daphnia magna)

108-10-1 4-methylpentan-2-one

EC50 / 72h 146 mg/l (alga (Süßwasser))

LC50 / 96h 179 mg/l (brachydanio rerio)

EC50 / 48h 200 mg/l (daphnia magna)

128-37-0 Butylated hydroxytoluene

LC0 / 96h >0.57 mg/l (piscis)

EC50 / 48h 0.61 mg/l (daphnia magna)

IC50 / 72h >0.4 mg/l (alga)

· **12.2 Persistence and degradability**

· **Degree of elimination:**

· **Classification:**

614-45-9 tert-butyl perbenzoate

Degradation (Readily biodegradable) (OECD 301 D)

6846-50-0 1-isopropyl-2,2-dimethyltrimethylene diisobutyrate

Degradation (Readily biodegradable, failing 10-d wind) (OECD 301 B)

123-42-2 4-hydroxy-4-methylpentan-2-one

Degradation (Readily biodegradable) (OECD 301 A)

108-10-1 4-methylpentan-2-one

Degradation (Readily biodegradable) (OECD 301 F)

128-37-0 Butylated hydroxytoluene

Degradation (Not readily biodegradable)

7722-84-1 hydrogen peroxide solution

Degradation (Readily biodegradable)

102-82-9 tributylamine

Degradation (Readily biodegradable) (OECD 301 B)

· **12.3 Bioaccumulative potential**

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

614-45-9 tert-butyl perbenzoate 3 (25°C)

123-42-2 4-hydroxy-4-methylpentan-2-one -0,09 (20°C)

108-10-1 4-methylpentan-2-one 1,9

128-37-0 Butylated hydroxytoluene 5,1

7722-84-1 hydrogen peroxide solution -1,57 (20°C)

102-82-9 tributylamine 3,34 (25 °C)

67-56-1 methanol -0,77 (20°C)

· **Bioconcentration factor (BCF)**

6846-50-0 1-isopropyl-2,2-dimethyltrimethylene diisobutyrate

BCF 183-194 (piscis)

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128-37-0 Butylated hydroxytoluene	
BCF 1,277	
102-82-9 tributylamine	
BCF 7.3	
· 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	For information on endocrine disrupting properties see section 11.
· 12.7 Other adverse effects	
· Remark:	Very toxic for fish
· Additional ecological information:	
· General notes:	Must not reach sewage water or drainage ditch undiluted or unneutralised. Also poisonous for fish and plankton in water bodies. Very toxic for aquatic organisms Water hazard class 2 (German Regulation) (Self-assessment): hazardous for water Do not allow product to reach ground water, water course or sewage system. Danger to drinking water if even small quantities leak into the ground.

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	UN3103
· 14.2 UN proper shipping name · ADR · IMDG · IATA	UN3103 ORGANIC PEROXIDE TYPE C, LIQUID (tert-BUTYL PEROXYBENZOATE), ENVIRONMENTALLY HAZARDOUS ORGANIC PEROXIDE TYPE C, LIQUID (tert-BUTYL PEROXYBENZOATE), MARINE POLLUTANT ORGANIC PEROXIDE TYPE C, LIQUID (tert-BUTYL PEROXYBENZOATE)
· 14.3 Transport hazard class(es) · ADR	
 	
· Class · Label	5.2 (P1) Organic peroxides. 5.2
· IMDG	
 	
· Class · Label	5.2 Organic peroxides. 5.2

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· IATA	
· Class	5.2 Organic peroxides.
· Label	5.2
· 14.4 Packing group	
· ADR, IMDG, IATA	Void
· 14.5 Environmental hazards:	Product contains environmentally hazardous substances: tert-BUTYL PEROXYBENZOATE
· Marine pollutant:	Symbol (fish and tree)
· Special marking (ADR):	Symbol (fish and tree)
· 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.
· 14.7 Maritime transport in bulk according to IMO instruments	Not applicable.
· Transport/Additional information:	
· ADR	
· Limited quantities (LQ)	25 ml
· Excepted quantities (EQ)	Code: E0 Not permitted as Excepted Quantity
· Transport category	1
· Tunnel restriction code	D
· RID / GGVSEB:	
	like ADR
· IMDG	
· Limited quantities (LQ)	25 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

· Directive 2012/18/EU

· Named dangerous substances

- ANNEX I None of the ingredients is listed.
- Seveso category H2 ACUTE TOXIC
P6b SELF-REACTIVE SUBSTANCES AND MIXTURES and ORGANIC PEROXIDES
E1 Hazardous to the Aquatic Environment

· 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.

· 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.

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Safety data sheet
 according to 1907/2006/EC, Article 31

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- **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.
H271	May cause fire or explosion; strong oxidiser.
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.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H330	Fatal if inhaled.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
H351	Suspected of causing cancer.
H361d	Suspected of damaging the unborn child.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H411	Toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.
EUH066	Repeated exposure may cause skin dryness or cracking.
- **Contact:**

Tel: +49 2871 9902-0
 E-mail: mail@pergan.com
- **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 (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
 Ox. Liq. 1: Oxidizing liquids – Category 1
 Org. Perox. C: Organic peroxides – Type C/D
 Org. Perox. D: Organic peroxides – Type C/D
 Acute Tox. 4: Acute toxicity – Category 4
 Acute Tox. 3: Acute toxicity – Category 3
 Acute Tox. 1: Acute toxicity – Category 1
 Skin Corr. 1A: Skin corrosion/irritation – Category 1A
 Skin Corr. 1C: Skin corrosion/irritation – Category 1C
 Skin Irrit. 2: Skin corrosion/irritation – Category 2
 Eye Dam. 1: Serious eye damage/eye irritation – Category 1
 Eye Irrit. 2: Serious eye damage/eye irritation – Category 2
 Skin Sens. 1: Skin sensitisation – Category 1
 Carc. 2: Carcinogenicity – Category 2
 Repr. 2: Reproductive toxicity – Category 2
 STOT SE 3: Specific target organ toxicity (single exposure) – Category 3
 Asp. Tox. 1: Aspiration hazard – Category 1
 Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1
 Aquatic Chronic 1: Hazardous to the aquatic environment - long-term aquatic 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

- * **Data compared to the previous version altered.**