


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 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.

Trade name: PEROXAN MI-60 KPX+

(Contd. of page 1)

| | |
|----------------|--|
| 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 | Store separately. |
| 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 REACH, annex XIII.
- **vPvB:** The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.

· **Determination of endocrine-disrupting properties**

| | | |
|----------|--------------------------|---------|
| 128-37-0 | Butylated hydroxytoluene | List II |
|----------|--------------------------|---------|

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% |

(Contd. on page 3)

MT

Trade name: **PEROXAN MI-60 KPX+**

(Contd. of page 2)

· **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:** 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, carbondioxide 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 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.
Ensure good ventilation/exhaustion at the workplace.

(Contd. on page 4)

MT

Trade name: **PEROXAN MI-60 KPX+**

(Contd. of page 3)

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).
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 |
|---------------------|---|

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

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

128-37-0 Butylated hydroxytoluene

| | |
|---------------------|---------------------------------------|
| WEL (Great Britain) | Long-term value: 10 mg/m ³ |
|---------------------|---------------------------------------|

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 |
|---------------------|---|

(Contd. on page 5)

Trade name: **PEROXAN MI-60 KPX+**

(Contd. of page 4)

| · 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) | |

(Contd. on page 6)

Trade name: PEROXAN MI-60 KPX+

(Contd. of page 5)

| 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.

(Contd. on page 7)

MT

Trade name: **PEROXAN MI-60 KPX+**

(Contd. of page 6)

| | |
|---|--|
| <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> |
|---|--|

· 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> |
|---|--|

· 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> |
|--|---|

(Contd. on page 8)

Trade name: **PEROXAN MI-60 KPX+**

(Contd. of page 7)

| | |
|--------------------------------|---------------------------|
| · 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) |
| 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) |

(Contd. on page 9)

Trade name: **PEROXAN MI-60 KPX+**

(Contd. of page 8)

- **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.
- **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
- **Carcinogenicity** Suspected of causing cancer.
- **Reproductive toxicity** Suspected of damaging the unborn child.
- **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**

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) |

(Contd. on page 10)

MT


Trade name: **PEROXAN MI-60 KPX+**

(Contd. of page 9)



| | |
|---|--|
| · Bioconcentration factor (BCF) | |
| 6846-50-0 1-isopropyl-2,2-dimethyltrimethylene diisobutyrate | |
| BCF | 183-194 (piscis) |
| 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 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 | 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 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 | UN3103 |
| · 14.2 UN proper shipping name | |
| · ADR | UN3103 ORGANIC PEROXIDE TYPE C, LIQUID (tert-BUTYL PEROXYBENZOATE), ENVIRONMENTALLY HAZARDOUS |
| · IMDG | ORGANIC PEROXIDE TYPE C, LIQUID (tert-BUTYL PEROXYBENZOATE), MARINE POLLUTANT |
| · IATA | ORGANIC PEROXIDE TYPE C, LIQUID (tert-BUTYL PEROXYBENZOATE) |
| · 14.3 Transport hazard class(es) | |
| · ADR | |
|  | |
| · Class | 5.2 (P1) Organic peroxides. |
| · Label | 5.2 |
| · IMDG | |
|  | |
| · Class | 5.2 Organic peroxides. |

(Contd. on page 11)

MT

Trade name: **PEROXAN MI-60 KPX+**

(Contd. of page 10)

| | |
|---|--|
| · Label | 5.2 |
| · 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

· 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.

(Contd. on page 12)

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Trade name: **PEROXAN MI-60 KPX+**

(Contd. of page 11)

| |
|---|
| · 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.

- **Contact:** Tel: +49 2871 9902-0
E-mail: mail@pergan.com
- **Version number of previous version:** 5
- **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
 - 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.**