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

1.1 Product identifier
   Trade name : TAHP-88

1.2 Relevant identified uses of the substance or mixture and uses advised against
   Use of the Substance/Mixture : polymerisation initiators

1.3 Details of the supplier of the safety data sheet
   Company : United Initiators GmbH
              Dr.-Gustav-Adolph-Str. 3
              D-82049 Pullach

   E-mail address of person responsible for the SDS : contact@united-in.com

1.4 Emergency telephone number
   +49 / 89 / 74422 – 0 (24 h)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture
   Classification (REGULATION (EC) No 1272/2008)
   Flammable liquids, Category 3  H226: Flammable liquid and vapour.
   Organic peroxides, Type E  H242: Heating may cause a fire.
   Acute toxicity, Category 4  H302: Harmful if swallowed.
   Acute toxicity, Category 3  H331: Toxic if inhaled.
   Acute toxicity, Category 3  H311: Toxic in contact with skin.
   Skin corrosion, Category 1B  H314: Causes severe skin burns and eye damage.
   Serious eye damage, Category 1  H318: Causes serious eye damage.
   Skin sensitisation, Category 1  H317: May cause an allergic skin reaction.
   Germ cell mutagenicity, Category 2  H341: Suspected of causing genetic defects.
   Chronic aquatic toxicity, Category 2  H411: Toxic to aquatic life with long lasting effects.

2.2 Label elements
   Labelling (REGULATION (EC) No 1272/2008)
SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

TAHP-88

Hazard pictograms

Signal word: Danger

Hazard statements:
- H226 Flammable liquid and vapour.
- H242 Heating may cause a fire.
- H302 Harmful if swallowed.
- H311 + H331 Toxic in contact with skin or if inhaled.
- H314 Causes severe skin burns and eye damage.
- H317 May cause an allergic skin reaction.
- H341 Suspected of causing genetic defects.
- H411 Toxic to aquatic life with long lasting effects.

Precautionary statements:

Prevention:
- P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- P220 Keep/Store away from clothing/strong acids, bases, heavy metal salts and other reducing substances /combustible materials.
- P233 Keep container tightly closed.
- P235 Keep cool.
- P260 Do not breathe dust/fume/gas/mist/vapours/spray.
- P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
- P262 Do not get in eyes, on skin, or on clothing.
- P263 Avoid release to the environment.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.

Response:
- P301 + P312 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
- P302 + P352 + P312 IF ON SKIN: Wash with plenty of water. Call a POISON CENTER/doctor if you feel unwell.
- P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/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.
- P308 + P313 IF exposed or concerned: Get medical advice/attention.
- P315 Get immediate medical advice/attention.
- P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.
- P362 Take off contaminated clothing.
- P364 + P365 Take off contaminated clothing and wash it before reuse.

Storage:
- P403 + P235 Store in a well-ventilated place. Keep cool.

Disposal:
P501 Dispose of contents/ container to an approved waste disposal plant.

Hazardous components which must be listed on the label:
 tert-pentyl hydroperoxide  (CAS-No. 3425-61-4)

2.3 Other hazards
 This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.
 Vapours may form explosive mixture with air.

SECTION 3: Composition/information on ingredients

3.2 Mixtures
 Chemical nature : Organic Peroxide
                   Liquid mixture

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>Registration number</th>
<th>Classification</th>
<th>Concentration (% w/w)</th>
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</thead>
<tbody>
<tr>
<td>tert-pentyl hydroperoxide</td>
<td>3425-61-4</td>
<td>222-321-7</td>
<td>01-2119964027-36</td>
<td>Flam. Liq. 3; H226</td>
<td>&gt;= 85 - &lt; 90</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Org. Perox. E; H242</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Acute Tox. 4; H302</td>
<td></td>
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<td>Acute Tox. 3; H311</td>
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<td>Skin Corr. 1B; H314</td>
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<td></td>
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<td></td>
<td>Eye Irrit. 2; H319</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Skin Sens. 1; H317</td>
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<td></td>
<td></td>
<td>Muta. 2; H341</td>
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<td></td>
<td></td>
<td></td>
<td>Aquatic Chronic 2; H411</td>
<td></td>
</tr>
<tr>
<td>Di-tert-pentyl peroxide</td>
<td>10508-09-5</td>
<td>234-042-8</td>
<td>01-2119973183-35</td>
<td>Flam. Liq. 2; H225</td>
<td>&gt;= 1 - &lt; 2.5</td>
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<td></td>
<td></td>
<td></td>
<td>Aquatic Chronic 4; H413</td>
<td></td>
</tr>
</tbody>
</table>

For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures
 General advice : Move out of dangerous area.
                  Show this safety data sheet to the doctor in attendance.
                  Do not leave the victim unattended.
                  Symptoms of poisoning may appear several hours later.
                  No artificial respiration, mouth-to-mouth or mouth to nose. Use
suitable instruments/apparatus. Call a physician immediately.

Protection of first-aiders: First Aid responders should pay attention to self-protection and use the recommended protective clothing.

If inhaled: Call a physician or poison control centre immediately. If unconscious, place in recovery position and seek medical advice. Keep respiratory tract clear. Call a physician immediately. If breathed in, move person into fresh air. Contact a poison control center.

In case of skin contact: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash contaminated clothing before re-use. Call a physician immediately. Contact a poison control center. If on skin, rinse well with water. If on clothes, remove clothes. If symptoms persist, call a physician.

In case of eye contact: Small amounts splashed into eyes can cause irreversible tissue damage and blindness. In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Continue rinsing eyes during transport to hospital. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.

If swallowed: Keep respiratory tract clear. Call a physician immediately. Rinse mouth thoroughly with water.

4.2 Most important symptoms and effects, both acute and delayed

Risks: Harmful if swallowed. Toxic in contact with skin or if inhaled. May cause an allergic skin reaction. Causes serious eye damage. Suspected of causing genetic defects. Causes severe burns.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment: Treat symptomatically and supportively.
SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media:
- Water spray
- Alcohol-resistant foam
- Carbon dioxide (CO2)
- Dry chemical

Unsuitable extinguishing media:
- High volume water jet

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting:
- Contact with incompatible materials or exposure to temperatures exceeding SADT may result in a self-accelerating decomposition reaction with release of flammable vapors which may auto-ignite.
- The product burns violently.
- Flash back possible over considerable distance.
- Vapours may form explosive mixtures with air.
- Cool closed containers exposed to fire with water spray.

5.3 Advice for firefighters

Special protective equipment for firefighters:
- Wear self-contained breathing apparatus for firefighting if necessary. Use personal protective equipment.

Specific extinguishing methods:
- Do not use a solid water stream as it may scatter and spread fire.
- Remove undamaged containers from fire area if it is safe to do so.
- Use water spray to cool unopened containers.

Further information:
- Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
- Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
- Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions:
- Use personal protective equipment.
- Remove all sources of ignition.
- Evacuate personnel to safe areas.
- Follow safe handling advice and personal protective equipment recommendations.
- Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.
- Never return spills in original containers for re-use.
- Treat recovered material as described in the section "Disposal..."
6.2 Environmental precautions

Environmental precautions:
- Prevent product from entering drains.
- Prevent further leakage or spillage if safe to do so.
- If the product contaminates rivers and lakes or drains inform respective authorities.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up:
- Contact with incompatible substances can cause decomposition at or below SADT.
- Clear spills immediately.
- Suppress (knock down) gases/vapours/mists with a water spray jet.
- To clean the floor and all objects contaminated by this material, use plenty of water.
- Soak up with inert absorbent material.
- Isolate waste and do not reuse.
- Non-sparking tools should be used.
- Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable.

6.4 Reference to other sections

For personal protection see section 8.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Technical measures:
- See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.

Advice on safe handling:
- Do not swallow.
- Do not breathe vapours/dust.
- Avoid exposure - obtain special instructions before use.
- Avoid contact with skin and eyes.
- Avoid formation of aerosol.
- Take precautionary measures against static discharges.
- Never return any product to the container from which it was originally removed.
- Provide sufficient air exchange and/or exhaust in work rooms.
- Avoid confinement.
- Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- Smoking, eating and drinking should be prohibited in the application area.
- Wash thoroughly after handling.
- For personal protection see section 8.
- Persons susceptible to skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not
be employed in any process in which this mixture is being used.
Protect from contamination.

Advice on protection against fire and explosion: Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). Keep away from heat and sources of ignition. Use only explosion-proof equipment. Keep away from combustible material.

Hygiene measures: Avoid contact with skin, eyes and clothing. Keep away from food and drink. When using do not eat or drink. When using do not smoke. Wash hands before breaks and immediately after handling the product.

7.2 Conditions for safe storage, including any incompatibilities
Requirements for storage areas and containers: Avoid impurities (e.g. rust, dust, ash), risk of decomposition. Electrical installations / working materials must comply with the technological safety standards. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Store in original container. Keep containers tightly closed in a cool, well-ventilated place. Store in accordance with the particular national regulations.

Advice on common storage: Keep away from strong acids, bases, heavy metal salts and other reducing substances.

Recommended storage temperature: 5 - 30 °C

Other data: No decomposition if stored normally.

7.3 Specific end use(s)
Specific use(s): For further information, refer to the product technical data sheet.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters
Contains no substances with occupational exposure limit values.

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

<table>
<thead>
<tr>
<th>Substance name</th>
<th>End Use</th>
<th>Exposure routes</th>
<th>Potential health effects</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>tert-pentyl hydroperoxide</td>
<td>Workers</td>
<td>Inhalation</td>
<td>Long-term systemic effects</td>
<td>0.78 mg/m3</td>
</tr>
<tr>
<td></td>
<td>Workers</td>
<td>Skin contact</td>
<td>Long-term systemic effects</td>
<td>0.44 mg/kg bw/day</td>
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<tr>
<td>Di-tert-pentyl peroxide</td>
<td>Workers</td>
<td>Inhalation</td>
<td>Long-term systemic effects</td>
<td>2.35 mg/m3</td>
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<tr>
<td></td>
<td>Workers</td>
<td>Skin contact</td>
<td>Long-term systemic effects</td>
<td>0.67 mg/kg bw/day</td>
</tr>
</tbody>
</table>
SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

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Version 1.0
Revision Date: 24.04.2017
SDS Number: 600000000043
Print Date: 02.10.2017

<table>
<thead>
<tr>
<th>Consumers</th>
<th>Inhalation</th>
<th>Long-term systemic effects</th>
<th>1.17 mg/m³</th>
</tr>
</thead>
</table>

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

<table>
<thead>
<tr>
<th>Substance name</th>
<th>Environmental Compartment</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>tert-pentyl hydroperoxide</td>
<td>Fresh water</td>
<td>0.12 mg/l</td>
</tr>
<tr>
<td></td>
<td>Marine water</td>
<td>0.012 mg/l</td>
</tr>
<tr>
<td></td>
<td>Intermittent use/release</td>
<td>0.012 mg/l</td>
</tr>
<tr>
<td></td>
<td>Fresh water sediment</td>
<td>0.4374 mg/kg</td>
</tr>
<tr>
<td></td>
<td>Marine sediment</td>
<td>0.0437 mg/kg</td>
</tr>
<tr>
<td></td>
<td>Sewage treatment plant</td>
<td>3.3 mg/l</td>
</tr>
<tr>
<td></td>
<td>Soil</td>
<td>0.0804 mg/kg</td>
</tr>
</tbody>
</table>

8.2 Exposure controls

Engineering measures
Minimize workplace exposure concentrations.

Personal protective equipment

Eye protection: Tightly fitting safety goggles
Please wear suitable protective goggles. Also wear face protection if there is a splash hazard.
Ensure that eyewash stations and safety showers are close to the workstation location.

Hand protection

Material: butyl-rubber
Break through time: >= 480 min
Glove thickness: 0.5 mm

Remarks: Choose gloves to protect hands against chemicals depending on the concentration and quantity of the hazardous substance and specific to place of work. For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove manufacturer. Wash hands before breaks and at the end of workday.

Skin and body protection: Select appropriate protective clothing based on chemical resistance data and an assessment of the local exposure potential.

Respiratory protection: In the case of dust or aerosol formation use respirator with an approved filter.

Filter type: ABEK-filter

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance: liquid
Colour: colourless
SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

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Odour : characteristic
Odour Threshold : No data available
pH : No data available
Melting point/range : No data available
Boiling point/boiling range : Decomposition: Decomposes below the boiling point.
Flash point : 47 °C
   Method: ISO 3679
Evaporation rate : No data available
Flammability (solid, gas) : Not applicable
Upper explosion limit : No data available
Lower explosion limit : No data available
Vapour pressure : 43.2 hPa (25 °C)
Relative vapour density : No data available
Density : 0.92 g/cm3 (20 °C)
Solubility(ies)
   Water solubility : 63.3 g/l soluble
Partition coefficient: n-octanol/water : log Pow: 2.9
   Based on data from similar materials
Viscosity
   Viscosity, dynamic : 5.2 mPa.s (20 °C)
Explosive properties : Not explosive
Oxidizing properties : The substance or mixture is not classified as oxidizing.
   Organic peroxide

9.2 Other information
Self-Accelerating decomposition temperature (SADT) : 80 °C
   Method: UN-Test H.4
   SADT-Self Accelerating Decomposition Temperature. Lowest temperature at which the tested package size will undergo a self-accelerating decomposition reaction.

Refractive index : 1.41 at 20 °C
SECTION 10: Stability and reactivity

10.1 Reactivity
Stable under recommended storage conditions.

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
Hazardous reactions: Vapours may form explosive mixture with air.

10.4 Conditions to avoid
Conditions to avoid: Protect from contamination. Contact with incompatible substances can cause decomposition at or below SADT. Heat, flames and sparks. Avoid confinement.

10.5 Incompatible materials
Materials to avoid: Accelerators, strong acids and bases, heavy metals and heavy metal salts, reducing agents

10.6 Hazardous decomposition products
Irritant, caustic, flammable, noxious/toxic gases and vapours can develop in the case of fire and decomposition

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
Harmful if swallowed. Toxic in contact with skin or if inhaled.

Product:
Acute oral toxicity: LD50 (Rat): 500 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity: LC50 (Rat): 2.4 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Method: OECD Test Guideline 403

Acute dermal toxicity: LD50 (Rat): 446 mg/kg
Method: OECD Test Guideline 402

Components:

tert-pentyl hydroperoxide:
Acute oral toxicity: LD50 (Rat): 500 mg/kg
SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

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Method: OECD Test Guideline 401

Acute inhalation toxicity: LC50 (Rat): 2.4 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Method: OECD Test Guideline 403

Acute dermal toxicity: LD50 (Rat): 446 mg/kg
Method: OECD Test Guideline 402

Di-tert-pentyl peroxide:
Acute oral toxicity: LD50 (Rat): > 5,000 mg/kg
Method: OECD Test Guideline 423
Assessment: The substance or mixture has no acute oral toxicity

Acute inhalation toxicity: LC50 (Rat): > 22 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Method: OECD Test Guideline 436
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity: LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 402
Assessment: The substance or mixture has no acute dermal toxicity

Skin corrosion/irritation
Causes severe burns.

Product:
Remarks: Extremely corrosive and destructive to tissue.

Species: Rabbit
Method: OECD Test Guideline 404
Result: Causes burns.

Components:

tert-pentyl hydroperoxide:
Species: Rabbit
Method: OECD Test Guideline 404
Result: Causes burns.

Di-tert-pentyl peroxide:
Species: Rabbit
Method: OECD Test Guideline 404
Result: Irritating to skin.
Serious eye damage/eye irritation
Causes serious eye damage.

**Product:**
Remarks: May cause irreversible eye damage.

**Components:**

**tert-pentyl hydroperoxide:**
Species: Rabbit
Result: irritating

**Di-tert-pentyl peroxide:**
Species: Rabbit
Method: OECD Test Guideline 437
Result: No eye irritation

Respiratory or skin sensitisation

**Skin sensitisation**
May cause an allergic skin reaction.

**Respiratory sensitisation**
Not classified based on available information.

**Product:**
Result: Probability or evidence of skin sensitisation in humans
Remarks: Causes sensitisation.

**Components:**

**tert-pentyl hydroperoxide:**
Result: Probability or evidence of skin sensitisation in humans

**Di-tert-pentyl peroxide:**
Species: Guinea pig
Method: OECD Test Guideline 406
Result: Does not cause skin sensitisation.

Germ cell mutagenicity
Suspected of causing genetic defects.

**Product:**
Genotoxicity in vitro:
  Test Type: Ames test
  Result: negative

  Method: OECD Test Guideline 487
  Result: positive
**SAFETY DATA SHEET**

according to Regulation (EC) No. 1907/2006

**TAHP-88**

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<th>Revision Date:</th>
<th>SDS Number:</th>
<th>Print Date:</th>
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<td>24.04.2017</td>
<td>600000000043</td>
<td>02.10.2017</td>
</tr>
</tbody>
</table>

: Test Type: In vitro mammalian cell gene mutation test  
Result: negative

Genotoxicity in vivo : Remarks: No data available

**Components:**

**tert-pentyl hydroperoxide:**

Genotoxicity in vitro : Test Type: Ames test  
Result: positive

Germ cell mutagenicity- Assessment : In vitro tests showed mutagenic effects

Di-tert-pentyl peroxide:

Genotoxicity in vitro : Method: OECD Test Guideline 471  
Result: negative

: Method: OECD Test Guideline 473  
Result: negative

Genotoxicity in vivo : Species: Mouse  
Application Route: Intraperitoneal injection  
Method: OECD Test Guideline 474  
Result: positive

Germ cell mutagenicity- Assessment : Positive result(s) from in vivo mammalian somatic cell mutagenicity tests.

**Carcinogenicity**

Not classified based on available information.

**Product:**

Remarks: This information is not available.

**Reproductive toxicity**

Not classified based on available information.

**Product:**

Effects on fertility : Remarks: No data available

Effects on foetal development : Remarks: No data available

**Components:**

**tert-pentyl hydroperoxide:**

Effects on fertility : Remarks: No data available
**Di-tert-pentyl peroxide:**

**Effects on fertility**

- **Species:** Rat
- **Application Route:** Ingestion
- **General Toxicity - Parent:** NOAEL: 100 mg/kg body weight
- **Method:** OECD Test Guideline 422
- **Remarks:** Based on data from similar materials

- **Species:** Rat
- **Application Route:** Ingestion
- **General Toxicity - Parent:** LOAEL: 300 mg/kg body weight
- **Method:** OECD Test Guideline 422
- **Remarks:** Based on data from similar materials

**Effects on foetal development:**

- **General Toxicity Maternal:** NOAEL: 1,000 mg/kg body weight
- **Method:** OECD Test Guideline 414
- **Result:** negative
- **Remarks:** Based on data from similar materials

**STOT - single exposure**

Not classified based on available information.

**Product:**

Remarks: No data available

**Components:**

**tert-pentyl hydroperoxide:**

Remarks: No data available

**STOT - repeated exposure**

Not classified based on available information.

**Product:**

Remarks: No data available

**Components:**

**tert-pentyl hydroperoxide:**

Remarks: No data available

**Repeated dose toxicity**

**Product:**

- **Species:** Rat
- **NOAEL:** 100 mg/kg
- **Application Route:** oral (gavage)
- **Method:** OECD Test Guideline 421
Components:

**tert-pentyl hydroperoxide:**
Species: Rat  
NOAEL: 100 mg/kg  
Application Route: oral (gavage)  
Method: OECD Test Guideline 421

**Di-tert-pentyl peroxide:**
Species: Rat  
NOAEL: 300 mg/kg  
Application Route: oral (gavage)  
Exposure time: 28 d  
Method: OECD Test Guideline 407

Aspiration toxicity
Not classified based on available information.

**Product:**
No data available

Components:

**tert-pentyl hydroperoxide:**
No data available

Further information

**Product:**
Remarks: Solvents may degrease the skin.

### SECTION 12: Ecological information

#### 12.1 Toxicity

**Product:**

<table>
<thead>
<tr>
<th>Toxicity to fish</th>
<th>Remarks: No data available</th>
</tr>
</thead>
</table>
| Toxicity to daphnia and other aquatic invertebrates | EC50 (Daphnia magna (Water flea)): 6.7 mg/l  
Method: OECD Test Guideline 202  
Remarks: Based on data from similar materials |
| Toxicity to algae | ErC50 (Pseudokirchneriella subcapitata (green algae)): 1.2 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201 |
| Toxicity to microorganisms | EC50 (Bacteria): 138 mg/l  
Method: OECD Test Guideline 209 |
Remarks: Based on data from similar materials:

- EC10 (Bacteria): 33 mg/l
  Method: OECD Test Guideline 209
  Remarks: Based on data from similar materials

**Components:**

**tert-pentyl hydroperoxide:**

Toxicity to fish

Remarks: No data available

Toxicity to daphnia and other aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 6.7 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

Toxicity to algae

ErC50 (Pseudokirchneriella subcapitata (green algae)): 1.2 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

Toxicity to microorganisms

EC50 (Bacteria): 138 mg/l
Method: OECD Test Guideline 209
Remarks: Based on data from similar materials

EC10 (Bacteria): 33 mg/l
Method: OECD Test Guideline 209
Remarks: Based on data from similar materials

**Di-tert-pentyl peroxide:**

Toxicity to fish

LC50: 1,000 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 73.1 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

Toxicity to algae

EC50 (Pseudokirchneriella subcapitata (green algae)): 36 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): 15 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

Toxicity to microorganisms

EC50 (Bacteria): 1,000 mg/l
Exposure time: 0.5 h
Method: OECD Test Guideline 209

**Ecotoxicology Assessment**

Acute aquatic toxicity

This product has no known ecotoxicological effects.
12.2 Persistence and degradability

Product:
Biodegradability : Result: Not readily biodegradable.
Method: OECD Test Guideline 301D
Remarks: Based on data from similar materials

Components:
tert-pentyl hydroperoxide:
Biodegradability : Result: Not readily biodegradable.
Method: OECD Test Guideline 301D
Remarks: Based on data from similar materials

Di-tert-pentyl peroxide:
Biodegradability : Result: Not readily biodegradable.
Method: OECD Test Guideline 301D

12.3 Bioaccumulative potential

Components:
tert-pentyl hydroperoxide:
Partition coefficient: n-octanol/water : log Pow: 2.9
Remarks: Based on data from similar materials

Di-tert-pentyl peroxide:
Bioaccumulation : Bioconcentration factor (BCF): 614
Partition coefficient: n-octanol/water : log Pow: 4.7

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment

Product:
Assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Other adverse effects

Product:
Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Toxic to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

**Product**: The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of wastes in an approved waste disposal facility.

**Contaminated packaging**: Empty remaining contents. Dispose of as unused product. Do not re-use empty containers. Do not burn, or use a cutting torch on, the empty drum. Dispose of in accordance with local regulations.

SECTION 14: Transport information

14.1 UN number

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<table>
<thead>
<tr>
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<tr>
<td><strong>ADN</strong></td>
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<tr>
<td><strong>IATA</strong></td>
<td>UN 3107</td>
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14.2 UN proper shipping name

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<tr>
<td><strong>ADN</strong></td>
<td>ORGANIC PEROXIDE TYPE E, LIQUID (tert-AMYL HYDROPEROXIDE)</td>
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<tr>
<td><strong>ADR</strong></td>
<td>ORGANIC PEROXIDE TYPE E, LIQUID (tert-AMYL HYDROPEROXIDE)</td>
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<td><strong>RID</strong></td>
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<tr>
<td><strong>IMDG</strong></td>
<td>ORGANIC PEROXIDE TYPE E, LIQUID (tert-AMYL HYDROPEROXIDE)</td>
</tr>
<tr>
<td><strong>IATA</strong></td>
<td>Organic peroxide type E, liquid (tert-Amyl hydroperoxide)</td>
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14.3 Transport hazard class(es)

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<thead>
<tr>
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<tbody>
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</tbody>
</table>
SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

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14.4 Packing group

ADN
Packing group : Not assigned by regulation
Classification Code : P1
Labels : 5.2

ADR
Packing group : Not assigned by regulation
Classification Code : P1
Labels : 5.2
Tunnel restriction code : (D)

RID
Packing group : Not assigned by regulation
Classification Code : P1
Hazard Identification Number : 539
Labels : 5.2

IMDG
Packing group : Not assigned by regulation
Labels : 5.2
EmS Code : F-J, S-R

IATA (Cargo)
Packing instruction (cargo aircraft) : 570
Packing group : Not assigned by regulation
Labels : Organic Peroxides, Keep Away From Heat

IATA (Passenger)
Packing instruction (passenger aircraft) : 570
Packing group : Not assigned by regulation
Labels : Organic Peroxides, Keep Away From Heat

14.5 Environmental hazards

ADN
Environmentally hazardous : yes

ADR
Environmentally hazardous : yes

RID
Environmentally hazardous : yes

IMDG
Marine pollutant : yes

14.6 Special precautions for user
Not applicable

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code
Not applicable for product as supplied.
SECTION 15: Regulatory information

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

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59):
: Not applicable

Regulation (EC) No 1005/2009 on substances that deplete the ozone layer:
: Not applicable

Regulation (EC) No 850/2004 on persistent organic pollutants:
: Not applicable


<table>
<thead>
<tr>
<th>Substance</th>
<th>Category</th>
<th>Quantity 1</th>
<th>Quantity 2</th>
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<tbody>
<tr>
<td>H2</td>
<td>ACUTE TOXIC</td>
<td>50 t</td>
<td>200 t</td>
</tr>
<tr>
<td>P6b</td>
<td>SELF-REACTIVE SUBSTANCES AND MIXTURES and ORGANIC PEROXIDES</td>
<td>50 t</td>
<td>200 t</td>
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<tr>
<td>E2</td>
<td>ENVIRONMENTAL HAZARDS</td>
<td>200 t</td>
<td>500 t</td>
</tr>
</tbody>
</table>

Other regulations:
: Gefahrengruppe nach § 3 BGV B4: Ib (German regulatory requirements)

Take note of Directive 92/85/EEC regarding maternity protection or stricter national regulations, where applicable.

Take note of Directive 94/33/EC on the protection of young people at work or stricter national regulations, where applicable.

The components of this product are reported in the following inventories:

NZIoC (NZ):
: On the inventory, or in compliance with the inventory

ENCS (JP):
: On the inventory, or in compliance with the inventory

ISHL (JP):
: On the inventory, or in compliance with the inventory

IECSC (CN):
: On the inventory, or in compliance with the inventory

TCSI (TW):
: On the inventory, or in compliance with the inventory

TSCA (US):
: On TSCA Inventory

15.2 Chemical safety assessment
This information is not available.
SECTION 16: Other information

Full text of H-Statements

H225: Highly flammable liquid and vapour.
H226: Flammable liquid and vapour.
H242: Heating may cause a fire.
H302: Harmful if swallowed.
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.
H319: Causes serious eye irritation.
H331: Toxic if inhaled.
H341: Suspected of causing genetic defects.
H411: Toxic to aquatic life with long lasting effects.
H413: May cause long lasting harmful effects to aquatic life.

Full text of other abbreviations

Acute Tox.: Acute toxicity
Aquatic Chronic: Chronic aquatic toxicity
Eye Irrit.: Eye irritation
Flam. Liq.: Flammable liquids
Muta.: Germ cell mutagenicity
Org. Perox.: Organic peroxides
Skin Corr.: Skin corrosion
Skin Irrit.: Skin irritation
Skin Sens.: Skin sensitisation

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road; AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50% of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evalua-
Further information
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.