SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

TBHP-70-AQ

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

1.1 Product identifier

<table>
<thead>
<tr>
<th>Trade name</th>
<th>TBHP-70-AQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>REACH Registration Number</td>
<td>01-211946670-40-0001</td>
</tr>
<tr>
<td>Substance name</td>
<td>tert-butyl hydroperoxide</td>
</tr>
<tr>
<td>Index-No.</td>
<td>617-023-00-2</td>
</tr>
<tr>
<td>EC-No.</td>
<td>200-915-7</td>
</tr>
</tbody>
</table>

1.2 Relevant identified uses of the substance or mixture and uses advised against

Use of the Substance/Mixture: polymerisation initiators, Oxidizing agents

1.3 Details of the supplier of the safety data sheet

<table>
<thead>
<tr>
<th>Company</th>
<th>United Initiators GmbH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
<td>Dr.-Gustav-Adolph-Str. 3</td>
</tr>
<tr>
<td></td>
<td>82049 Pullach</td>
</tr>
<tr>
<td>Telephone</td>
<td>+49 / 89 / 74422 – 0</td>
</tr>
<tr>
<td>E-mail address of person responsible for the SDS</td>
<td><a href="mailto:contact@united-in.com">contact@united-in.com</a></td>
</tr>
</tbody>
</table>

1.4 Emergency telephone number

+49 / 89 / 74422 – 0 (24 h)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

<table>
<thead>
<tr>
<th>Classification (REGULATION (EC) No 1272/2008)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammable liquids, Category 3</td>
<td>H226: Flammable liquid and vapour.</td>
</tr>
<tr>
<td>Organic peroxides, Type F</td>
<td>H242: Heating may cause a fire.</td>
</tr>
<tr>
<td>Acute toxicity, Category 4</td>
<td>H302: Harmful if swallowed.</td>
</tr>
<tr>
<td>Acute toxicity, Category 2</td>
<td>H330: Fatal if inhaled.</td>
</tr>
<tr>
<td>Acute toxicity, Category 3</td>
<td>H311: Toxic in contact with skin.</td>
</tr>
<tr>
<td>Skin corrosion, Sub-category 1C</td>
<td>H314: Causes severe skin burns and eye damage.</td>
</tr>
<tr>
<td>Serious eye damage, Category 1</td>
<td>H318: Causes serious eye damage.</td>
</tr>
</tbody>
</table>
Skin sensitisation, Category 1
H317: May cause an allergic skin reaction.

Germ cell mutagenicity, Category 2
H341: Suspected of causing genetic defects.

Long-term (chronic) aquatic hazard, Category 2
H411: Toxic to aquatic life with long lasting effects.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>⚠️</td>
<td>Flammable liquid and vapour.</td>
</tr>
<tr>
<td>⚠️</td>
<td>Heating may cause a fire.</td>
</tr>
<tr>
<td>⚠️</td>
<td>Harmful if swallowed.</td>
</tr>
<tr>
<td>⚠️</td>
<td>Toxic in contact with skin.</td>
</tr>
<tr>
<td>⚠️</td>
<td>Causes severe skin burns and eye damage.</td>
</tr>
<tr>
<td>⚠️</td>
<td>May cause an allergic skin reaction.</td>
</tr>
<tr>
<td>⚠️</td>
<td>Fatal if inhaled.</td>
</tr>
<tr>
<td>⚠️</td>
<td>Suspected of causing genetic defects.</td>
</tr>
<tr>
<td>⚠️</td>
<td>Toxic to aquatic life with long lasting effects.</td>
</tr>
</tbody>
</table>

Signal word: Danger

Hazard statements:

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.
H317 May cause an allergic skin reaction.
H330 Fatal if inhaled.
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.
P262 Do not get in eyes, on skin, or on clothing.
P273 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 + P365 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
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 + P364  Take off contaminated clothing and wash it before reuse.
P370 + P378  In case of fire: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide to extinguish.

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

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

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.

SECTION 3: Composition/information on ingredients

3.1 Substances
Substance name : tert-butyl hydroperoxide
Index-No. : 617-023-00-2
EC-No. : 200-915-7
Chemical nature : Organic Peroxide

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>tert-butyl hydroperoxide</td>
<td>75-91-2</td>
<td>200-915-7</td>
<td>&gt;= 65 - &lt; 70</td>
</tr>
</tbody>
</table>

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.
- May cause an allergic skin reaction.
- Causes serious eye damage.
- Fatal if inhaled.
- 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 jet
- 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.
- Ensure adequate ventilation.
- 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 considerations".

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:** 2 - 35 °C

**Further information on storage stability:** 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-butyl hydroperoxide</td>
<td>Workers</td>
<td>Inhalation</td>
<td>Long-term systemic effects</td>
<td>3.1 mg/m³</td>
</tr>
<tr>
<td></td>
<td>Workers</td>
<td>Inhalation</td>
<td>Acute systemic effects</td>
<td>10.4 mg/m³</td>
</tr>
</tbody>
</table>
SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

TBHP-70-AQ

Version 1.2  Revision Date: 12.08.2020  SDS Number: 600000000045  Date of last issue: 07.06.2017

Date of first issue: 03.05.2016

Effects

<table>
<thead>
<tr>
<th>Workers</th>
<th>Inhalation</th>
<th>Long-term local effects</th>
<th>0.83 mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workers</td>
<td>Inhalation</td>
<td>Acute local effects</td>
<td>21.3 mg/m³</td>
</tr>
<tr>
<td>Workers</td>
<td>Skin contact</td>
<td>Long-term systemic effects</td>
<td>12.5 mg/kg bw/day</td>
</tr>
</tbody>
</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-butyl hydroperoxide</td>
<td>Fresh water</td>
<td>0.0015 mg/l</td>
</tr>
<tr>
<td></td>
<td>Marine water</td>
<td>0.00015 mg/l</td>
</tr>
<tr>
<td></td>
<td>Intermittent use/release</td>
<td>0.015 mg/l</td>
</tr>
<tr>
<td></td>
<td>Sewage treatment plant</td>
<td>0.17 mg/l</td>
</tr>
<tr>
<td></td>
<td>Fresh water sediment</td>
<td>0.00621 mg/l</td>
</tr>
<tr>
<td></td>
<td>Soil</td>
<td>0.00036 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

Material: Nitrile rubber
Break through time: 480 min
Glove thickness: 0.4 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
- **Odour**: characteristic
- **Odour Threshold**: No data available
- **pH**: No data available
- **Melting point/range**: < 0 °C
- **Boiling point/boiling range**: Decomposition: Decomposes below the boiling point.
- **Flash point**: 38 °C
  Method: ISO 3679
- **Evaporation rate**: No data available
- **Flammability (solid, gas)**: Not applicable
- **Upper explosion limit / Upper flammability limit**: No data available
- **Lower explosion limit / Lower flammability limit**: No data available
- **Vapour pressure**: 50.78 hPa (25 °C)
- **Density**: 0.93 g/cm³ (20 °C)
- **Solubility(ies)**: Water solubility: > 691 g/l soluble (20 °C)
- **Partition coefficient: n-octanol/water**: log Pow: 0.85 (20 °C)
- **Viscosity**: Viscosity, dynamic: 4.1 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 decomposi-**: 80 °C
tion temperature (SADT) 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 : 1.387 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.
Fatal if inhaled.

Product:
Acute oral toxicity : LD50 (Rat): 560 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC50 (Rat): 1.85 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Acute dermal toxicity
LD50 (Rabbit): 440 mg/kg
Method: OECD Test Guideline 402

Components:
tert-butyl hydroperoxide:
Acute oral toxicity
LD50 (Rat): 560 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity
LC50 (Rat): 1.85 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Method: OECD Test Guideline 403

Acute dermal toxicity
LD50 (Rabbit): 440 mg/kg
Method: OECD Test Guideline 402

Skin corrosion/irritation
Causes severe burns.

Product:
Species: Rabbit
Method: Draize Test
Result: Corrosive, category 1C - where responses occur after exposures between 1 hour and 4 hours and observations up to 14 days.
Remarks: Extremely corrosive and destructive to tissue.

Components:
tert-butyl hydroperoxide:
Species: Rabbit
Method: Draize Test
Result: Corrosive, category 1C - where responses occur after exposures between 1 hour and 4 hours and observations up to 14 days.
Remarks: Extremely corrosive and destructive to tissue.

Serious eye damage/eye irritation
Causes serious eye damage.

Product:
Species: Rabbit
Method: OECD Test Guideline 405
Result: Irreversible effects on the eye
Remarks: May cause irreversible eye damage.
Components:

tert-butyl hydroperoxide:
Species: Rabbit
Method: OECD Test Guideline 405
Result: Irreversible effects on the eye
Remarks: May cause irreversible eye damage.

Respiratory or skin sensitisation
Skin sensitisation
May cause an allergic skin reaction.
Respiratory sensitisation
Not classified based on available information.

Product:
Species: Guinea pig
Method: OECD Test Guideline 406
Result: May cause sensitisation by skin contact.
Remarks: Causes sensitisation.

Components:

tert-butyl hydroperoxide:
Species: Guinea pig
Method: OECD Test Guideline 406
Result: May cause sensitisation by skin contact.
Remarks: Causes sensitisation.

Germ cell mutagenicity
Suspected of causing genetic defects.

Product:
Genotoxicity in vitro: Test Type: Chromosome aberration test in vitro
Method: OECD Test Guideline 473
Result: positive

Test Type: In vitro mammalian cell gene mutation test
Method: OECD Test Guideline 476
Result: positive

Result: negative
Result: positive
Germ cell mutagenicity- Assessment: Positive results from in vitro mammalian mutagenicity assays, chemical structure activity relationship to known germ cell mutagens

Components:

tert-butyl hydroperoxide:

Genotoxicity in vitro: Test Type: Chromosome aberration test in vitro Method: OECD Test Guideline 473 Result: positive
Test Type: In vitro mammalian cell gene mutation test Method: OECD Test Guideline 476 Result: positive


Germ cell mutagenicity- Assessment: Positive results from in vitro mammalian mutagenicity assays, chemical structure activity relationship to known germ cell mutagens

Carcinogenicity
Not classified based on available information.

Reproductive toxicity
Not classified based on available information.

Product:
Effects on fertility: Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test Species: Rat Application Route: Oral General Toxicity - Parent: NOAEL: 21 mg/kg body weight Method: OECD Test Guideline 422


Components:

tert-butyl hydroperoxide:

Effects on fertility: Species: Rat Application Route: Oral General Toxicity - Parent: NOAEL: 21 mg/kg body weight
Method: OECD Test Guideline 422

Effects on foetal development:
Species: Rat
Application Route: Oral
General Toxicity Maternal: NOAEL: 35 mg/kg body weight
Developmental Toxicity: NOAEL: 35 mg/kg body weight
Method: OECD Test Guideline 414

STOT - single exposure
Not classified based on available information.

Product:
Remarks: No data available

STOT - repeated exposure
Not classified based on available information.

Repeated dose toxicity

Product:
Species: Rat
NOAEL: 21 mg/kg
Application Route: Oral
Exposure time: 28 d
Method: OECD Test Guideline 422

Species: Rat
LOAEL: 0.022 mg/l
Application Route: Inhalation
Exposure time: 28 d
Method: OECD Test Guideline 412

Components:
tert-butyl hydroperoxide:
Species: Rat
NOAEL: 21 mg/kg
Application Route: Oral
Method: OECD Test Guideline 422

Species: Rat
LOAEL: 0.022 mg/l
Application Route: Inhalation
Method: OECD Test Guideline 412

Aspiration toxicity
Not classified based on available information.

Product:
Not classified due to data which are conclusive although insufficient for classification.
Further information

**Product:**
Remarks : This information is not available.

### SECTION 12: Ecological information

#### 12.1 Toxicity

**Product:**

**Toxicity to fish**
LC50 (Pimephales promelas (fathead minnow)): 29.61 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203

**Toxicity to daphnia and other aquatic invertebrates**
EC50 (Daphnia magna (Water flea)): 14.07 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202

**Toxicity to algae/aquatic plants**
EC50 (Pseudokirchneriella subcapitata (green algae)): 1.47 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201

**Toxicity to microorganisms**  
EC50 (Bacteria): 17 mg/l

**Components:**

tert-butyl hydroperoxide:

**Toxicity to fish**
LC50 (Pimephales promelas (fathead minnow)): 29.61 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203

**Toxicity to daphnia and other aquatic invertebrates**
EC50 (Daphnia magna (Water flea)): 14.07 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202

**Toxicity to algae/aquatic plants**
EC50 (Pseudokirchneriella subcapitata (green algae)): 1.47 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201

**Toxicity to microorganisms**  
EC50 (Bacteria): 17 mg/l

#### 12.2 Persistence and degradability

**Product:**

Biodegradability  : Result: Not readily biodegradable.
Components:
tert-butyl hydroperoxide:

Biodegradability : Result: Not readily biodegradable.

12.3 Bioaccumulative potential

Components:
tert-butyl hydroperoxide:

Partition coefficient: n-octanol/water : log Pow: 0.85 (20 °C)

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.

Components:
tert-butyl hydroperoxide:

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.
## SECTION 14: Transport information

### 14.1 UN number

<table>
<thead>
<tr>
<th>ADR</th>
<th>RID</th>
<th>IMDG</th>
<th>IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN 3109</td>
<td>UN 3109</td>
<td>UN 3109</td>
<td>UN 3109</td>
</tr>
</tbody>
</table>

### 14.2 UN proper shipping name

<table>
<thead>
<tr>
<th>ADR</th>
<th>RID</th>
<th>IMDG</th>
<th>IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORGANIC PEROXIDE TYPE F, LIQUID (tert-BUTYL HYDROPEROXIDE)</td>
<td>ORGANIC PEROXIDE TYPE F, LIQUID (tert-BUTYL HYDROPEROXIDE)</td>
<td>ORGANIC PEROXIDE TYPE F, LIQUID (tert-BUTYL HYDROPEROXIDE)</td>
<td>Organic peroxide type F, liquid (tert-Butyl hydroperoxide)</td>
</tr>
</tbody>
</table>

### 14.3 Transport hazard class(es)

<table>
<thead>
<tr>
<th>ADR</th>
<th>RID</th>
<th>IMDG</th>
<th>IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2</td>
<td>5.2</td>
<td>5.2</td>
<td>5.2</td>
</tr>
</tbody>
</table>

### 14.4 Packing group

<table>
<thead>
<tr>
<th>ADR</th>
<th>RID</th>
<th>IMDG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not assigned by regulation</td>
<td>Not assigned by regulation</td>
<td>Not assigned by regulation</td>
</tr>
</tbody>
</table>

- **Classification Code**
  - ADR: P1
  - RID: P1
  - IMDG: P1

- **Hazard Identification Number**
  - ADR: 539
  - RID: 539
  - IMDG: 539

- **Labels**
  - ADR: 5.2 (8)
  - RID: 5.2 (8)
  - IMDG: 5.2 (8)

- **Tunnel restriction code**
  - ADR: (D)
  - RID: (D)
  - IMDG: (D)

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.
IATA (Cargo)
Packing instruction (cargo aircraft) : 570
Packing group : Not assigned by regulation
Labels : Division 5.2 - Organic peroxides, Handling Label - Keep Away From Heat

IATA (Passenger)
Packing instruction (passenger aircraft) : 570
Packing group : Not assigned by regulation
Labels : Division 5.2 - Organic peroxides, Handling Label - Keep Away From Heat

14.5 Environmental hazards

ADR
Environmentally hazardous : yes

RID
Environmentally hazardous : yes

IMDG
Marine pollutant : yes

14.6 Special precautions for user
The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

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
REACH - List of substances subject to authorisation (Annex XIV) : 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
Regulation (EC) No 649/2012 of the European Parliament and the Council concerning the export and import of dangerous chemicals: Not applicable

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII): Conditions of restriction for the following entries should be considered:
Number on list 40, 3


<table>
<thead>
<tr>
<th>Number on list</th>
<th>Acute Toxic</th>
<th>Quantity 1</th>
<th>Quantity 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>40, 3</td>
<td>H2</td>
<td>50 t</td>
<td>200 t</td>
</tr>
<tr>
<td></td>
<td>P6b</td>
<td>50 t</td>
<td>200 t</td>
</tr>
<tr>
<td></td>
<td>E2</td>
<td>200 t</td>
<td>500 t</td>
</tr>
</tbody>
</table>

Other regulations:

- Gefahrgruppe nach § 3 BGV B4: II (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:

- TCSI (TW): On the inventory, or in compliance with the inventory
- TSCA (US): All substances listed as active on the TSCA inventory
- AICS (AU): On the inventory, or in compliance with the inventory
- DSL (CA): All components of this product are on the Canadian DSL
- ENCS (JP): On the inventory, or in compliance with the inventory
- ISHL (JP): On the inventory, or in compliance with the inventory
- KECI (KR): On the inventory, or in compliance with the inventory
- PICCS (PH): On the inventory, or in compliance with the inventory
IECSC (CN) : On the inventory, or in compliance with the inventory
NZIoC (NZ) : On the inventory, or in compliance with the inventory

15.2 Chemical safety assessment
A Chemical Safety Assessment has been carried out for this substance.
For further information see eSDS.

SECTION 16: Other information

Further information
Other information : This safety datasheet only contains information relating to safety and does not replace any product information or product specification. These safety instructions also apply to empty packaging which may still contain product residues.


Full text of other abbreviations
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 Organization 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
SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

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1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of very high concern; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

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.

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