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

NOROX SHP-40

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

1.1 Product identifier

   Trade name : NOROX SHP-40

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

   Use of the Substance/Mixture : Curing chemical

1.3 Details of the supplier of the safety data sheet

   Company : United Initiators GmbH
              Dr.-Gustav-Adolph-Str. 3
              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)
   Organic peroxides, Type D
   H242: Heating may cause a fire.

   Eye irritation, Category 2
   H319: Causes serious eye irritation.

   Skin sensitisation, Category 1
   H317: May cause an allergic skin reaction.

   Specific target organ toxicity - single exposure, Category 3, Respiratory system
   H335: May cause respiratory irritation.

2.2 Label elements

   Labelling (REGULATION (EC) No 1272/2008)
   Hazard pictograms :

   Signal word : Danger

   Hazard statements :
   H242 Heating may cause a fire.
   H317 May cause an allergic skin reaction.
   H319 Causes serious eye irritation.
   H335 May cause respiratory irritation.
Precautionary statements:

**Prevention:**
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.
P261  Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P262  Do not get in eyes, on skin, or on clothing.
P280  Wear protective gloves/ protective clothing/ eye protection/ face protection.

**Response:**
P305 + P351 + P338  IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333 + P313  If skin irritation or rash occurs: Get medical advice/ attention.
P337 + P313  If eye irritation persists: Get medical advice/ attention.
P362 + P364  Take off contaminated clothing and wash it before reuse.

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

Hazardous components which must be listed on the label:
2,4-Pentanedione, peroxide (CAS-No. 37187-22-7)
Diacetone alcohol (CAS-No. 123-42-2)
tert-Butyl perbenzoate (CAS-No. 614-45-9)

**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**

**3.2 Mixtures**

Chemical nature: Organic Peroxide
Liquid mixture

**Hazardous components**

<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>
</tr>
</thead>
<tbody>
<tr>
<td>2,4-Pentanedione, peroxide</td>
<td>37187-22-7</td>
<td></td>
<td></td>
<td>Org. Perox. D; H242</td>
<td>&gt;= 20 - &lt; 25</td>
</tr>
</tbody>
</table>
**SAFETY DATA SHEET**
according to Regulation (EC) No. 1907/2006

**NOROX SHP-40**

**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.
- 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.

**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.
- If on skin, rinse well with water.
- If on clothes, remove clothes.
- If symptoms persist, call a physician.

**In case of eye contact**

- In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- Remove contact lenses.
- Protect unharmed eye.
- Keep eye wide open while rinsing.
- If eye irritation persists, consult a specialist.

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**For explanation of abbreviations see section 16.**
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: May cause an allergic skin reaction. Causes serious eye irritation. May cause respiratory irritation.

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 cir-
cumstances 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.
- 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:
Keep away from heat and sources of ignition. Use only explosion-proof equipment. Keep away from combustible material.

Hygiene measures:
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:
0 - 25 °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

**Occupational Exposure Limits**

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diacetone alcohol</td>
<td>Diacetone alcohol</td>
<td>TWA</td>
<td>50 ppm 241 mg/m³</td>
<td>GB EH40</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL</td>
<td>75 ppm 362 mg/m³</td>
<td>GB EH40</td>
</tr>
<tr>
<td>dimethyl phthalate</td>
<td>Dimethyl phthalate</td>
<td>TWA</td>
<td>5 mg/m³</td>
<td>GB EH40</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL</td>
<td>10 mg/m³</td>
<td>GB EH40</td>
</tr>
</tbody>
</table>

**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>2,4-Pentanedione, peroxide</td>
<td>Workers</td>
<td>Inhalation</td>
<td>Long-term systemic effects</td>
<td>11.75 mg/m³</td>
</tr>
<tr>
<td></td>
<td>Workers</td>
<td>Skin contact</td>
<td>Long-term systemic effects</td>
<td>13.33 mg/kg bw/day</td>
</tr>
<tr>
<td>tert-Butylperbenzoat</td>
<td>Workers</td>
<td>Inhalation</td>
<td>Long-term systemic effects</td>
<td>4 mg/m³</td>
</tr>
<tr>
<td></td>
<td>Workers</td>
<td>Skin contact</td>
<td>Long-term systemic effects</td>
<td>6.25 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>2,4-Pentanedione, peroxide</td>
<td>Fresh water</td>
<td>0.054 mg/l</td>
</tr>
<tr>
<td></td>
<td>Marine water</td>
<td>0.0054 mg/l</td>
</tr>
<tr>
<td></td>
<td>Intermittent use/release</td>
<td>0.054 mg/l</td>
</tr>
<tr>
<td></td>
<td>Fresh water sediment</td>
<td>0.48 mg/kg</td>
</tr>
<tr>
<td></td>
<td>Marine sediment</td>
<td>0.048 mg/kg</td>
</tr>
<tr>
<td></td>
<td>Sewage treatment plant</td>
<td>6.2 mg/l</td>
</tr>
<tr>
<td></td>
<td>Soil</td>
<td>0.065 mg/kg</td>
</tr>
<tr>
<td>tert-Butylperbenzoat</td>
<td>Fresh water</td>
<td>0.0088 mg/l</td>
</tr>
<tr>
<td></td>
<td>Marine water</td>
<td>0.0009 mg/l</td>
</tr>
<tr>
<td></td>
<td>Intermittent use/release</td>
<td>0.008 mg/l</td>
</tr>
<tr>
<td></td>
<td>Sewage treatment plant</td>
<td>0.6 mg/l</td>
</tr>
<tr>
<td></td>
<td>Fresh water sediment</td>
<td>0.24 mg/kg</td>
</tr>
<tr>
<td></td>
<td>Marine sediment</td>
<td>0.024 mg/kg</td>
</tr>
<tr>
<td></td>
<td>Soil</td>
<td>0.043 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**: $\geq 480$ 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.

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

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>liquid</td>
</tr>
<tr>
<td>Colour</td>
<td>light yellow</td>
</tr>
<tr>
<td>Odour</td>
<td>mild</td>
</tr>
<tr>
<td>pH</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Melting point/range</td>
<td>No data available</td>
</tr>
<tr>
<td>Boiling point/boiling range</td>
<td>No data available</td>
</tr>
<tr>
<td>Flash point</td>
<td>65 °C</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Upper explosion limit</td>
<td>No data available</td>
</tr>
<tr>
<td>Lower explosion limit</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative vapour density</td>
<td>No data available</td>
</tr>
</tbody>
</table>
Density: 1.08 - 1.12 g/cm³

Solubility(ies):
- Water solubility: soluble

Partition coefficient: n-octanol/water:
- No data available

Viscosity:
- Viscosity, dynamic: ca. 32 mPa.s
- Viscosity, kinematic: No data available

Oxidizing properties:
- The substance or mixture is not classified as oxidizing.
  Organic peroxide

9.2 Other information
- Self-Accelerating decomposition temperature (SADT): 60 °C
  SADT-Self Accelerating Decomposition Temperature. Lowest temperature at which the tested package size will undergo a self-accelerating decomposition reaction.

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
Not classified based on available information.

Product:

Acute oral toxicity: Acute toxicity estimate: > 2,000 mg/kg
Method: Calculation method

Acute inhalation toxicity: Acute toxicity estimate: > 5 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: Calculation method

Acute dermal toxicity: Acute toxicity estimate: > 2,000 mg/kg
Method: Calculation method

Components:

2,4-Pentanedione, peroxide:

Acute oral toxicity: LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity: LC50 (Rat, male): > 13.1 mg/l
Exposure time: 1 h
Test atmosphere: dust/mist
Method: Expert judgement
Assessment: The substance or mixture has no acute inhalation toxicity

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

Diacetone alcohol:

Acute oral toxicity: LD50 (Rat): 3,002 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity: LC0 (Rat): >= 7.6 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Method: OECD Test Guideline 403
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity: LD0 (Rat): > 1,875 mg/kg
Method: OECD Test Guideline 402

tert-Butyl perbenzoate:
Acute oral toxicity: LD0 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 423
Assessment: The substance or mixture has no acute oral toxicity

Acute inhalation toxicity: LC50 (Rat): 1.01 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 436

Acute dermal toxicity: LD0 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 402
Assessment: The substance or mixture has no acute dermal toxicity

Acetylacetone:
Acute oral toxicity: LD50 (Rat): 570 mg/kg

Acute inhalation toxicity: LC50 (Rat): 5.1 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Method: OECD Test Guideline 403
Assessment: The component/mixture is toxic after short term inhalation.

Acute dermal toxicity: LD50 (Rabbit, female): 790 mg/kg

Skin corrosion/irritation
Not classified based on available information.

Product:
Remarks: May cause skin irritation and/or dermatitis.

Components:

2,4-Pentanedione, peroxide:
Species: Rabbit
Method: OECD Test Guideline 404
Result: No skin irritation

Diacetone alcohol:
Species: Rabbit
Method: OECD Test Guideline 404
Result: No skin irritation

tert-Butyl perbenzoate:
Species: Rabbit
Method: OECD Test Guideline 404
Result: Skin irritation
Acetylacetone:
Species: Rabbit
Result: No skin irritation

**Serious eye damage/eye irritation**
Causes serious eye irritation.

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

**Components:**

**2,4-Pentanedione, peroxide:**
Species: Rabbit
Method: OECD Test Guideline 405
Result: Eye irritation

**Diacetone alcohol:**
Species: Rabbit
Method: OECD Test Guideline 405
Result: Eye irritation

**tert-Butyl perbenzoate:**
Species: Rabbit
Method: OECD Test Guideline 405
Result: No eye irritation

**Acetylacetone:**
Species: Rabbit
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:**
Remarks: Causes sensitisation.

**Components:**

**2,4-Pentanedione, peroxide:**
Test Type: Maximisation Test
Exposure routes: Skin contact
Species: Guinea pig
Method: OECD Test Guideline 406
Result: Probability or evidence of skin sensitisation in humans
Remarks: Causes sensitisation.

**Diacetone alcohol:**
Species: Guinea pig  
Method: OECD Test Guideline 406  
Result: Does not cause skin sensitisation.

**tert-Butyl perbenzoate:**
Species: Mouse  
Method: OECD Test Guideline 429  
Result: Probability or evidence of high skin sensitisation rate in humans  
Remarks: May cause sensitisation by skin contact.

**Acetylacetone:**
Exposure routes: Skin contact  
Species: Mouse  
Method: OECD Test Guideline 429  
Result: Does not cause skin sensitisation.

**Germ cell mutagenicity**
Not classified based on available information.

**Components:**

**2,4-Pentanedione, peroxide:**
Genotoxicity in vitro:
- Test Type: Bacterial reverse mutation assay (AMES)  
  Method: OECD Test Guideline 471  
  Result: positive
- Test Type: In vitro mammalian cell gene mutation test  
  Method: OECD Test Guideline 476  
  Result: negative

Genotoxicity in vivo:
- Test Type: In vivo micronucleus test  
  Species: Mouse (male and female)  
  Application Route: Intraperitoneal injection  
  Method: OECD Test Guideline 474  
  Result: negative

**Diacetone alcohol:**
Genotoxicity in vitro:
- Method: OECD Test Guideline 476  
  Result: negative
- Method: OECD Test Guideline 471  
  Result: negative
- Method: OECD Test Guideline 473  
  Result: negative
### tert-Butyl perbenzoate:

**Genotoxicity in vitro**
- Test Type: Bacterial reverse mutation assay (AMES)
  - Method: OECD Test Guideline 471
  - Result: positive
- Test Type: In vitro mammalian cell gene mutation test
  - Method: OECD Test Guideline 476
  - Result: positive
- Test Type: Chromosome aberration test in vitro
  - Method: OECD Test Guideline 473
  - Result: positive
- Test Type: Mouse Lymphoma
  - Result: positive

**Genotoxicity in vivo**
- Test Type: Micronucleus test
  - Species: Mouse (male and female)
  - Application Route: Oral
  - Result: negative

### Acetylacetone:

**Genotoxicity in vitro**
- Method: OECD Test Guideline 471
  - Result: negative
- Method: OECD Test Guideline 479
  - Result: positive
- Method: OECD Test Guideline 473
  - Result: positive
- Method: OECD Test Guideline 476
  - Result: negative

**Genotoxicity in vivo**
- Method: OECD Test Guideline 474
  - Result: positive
- Method: OECD Test Guideline 483
  - Result: negative
- Method: OECD Test Guideline 475
  - Result: negative
- Method: OECD Test Guideline 478
  - Result: Equivocal
  - Test Type: DNA Repair
  - Species: Rat
  - Application Route: Oral
  - Result: negative
  - Species: Rat
  - Application Route: inhalation (vapour)
Carcinogenicity
Not classified based on available information.

Components:

2,4-Pentanediene, peroxide:
Remarks: This information is not available.

Diacetone alcohol:
Application Route: inhalation (vapour)
1.847 mg/l
Method: OECD Test Guideline 451
Remarks: Based on data from similar materials

tert-Butyl perbenzoate:
Remarks: This information is not available.

Reproductive toxicity
Not classified based on available information.

Components:

2,4-Pentanediene, peroxide:
Effects on fertility : Remarks: No data available
Effects on foetal development

Diacetone alcohol:
Effects on fertility : Species: Rat
Application Route: oral (gavage)
General Toxicity - Parent: NOAEL: 300 mg/kg body weight
General Toxicity F1: NOAEL: 300 mg/kg body weight
Method: OECD Test Guideline 422
Effects on foetal development : Species: Rat
Application Route: inhalation (vapour)
General Toxicity Maternal: NOAEL: 4.106
Embryo-foetal toxicity: NOAEL: 12,292
Method: OECD Test Guideline 414

tert-Butyl perbenzoate:
Effects on fertility : Species: Rat
Application Route: Oral
General Toxicity - Parent: NOAEL: 300 mg/kg body weight
Method: OECD Test Guideline 421
Effects on foetal development:
Species: Rat
Application Route: Oral
General Toxicity Maternal: NOAEL: 300 mg/kg body weight
Method: OECD Test Guideline 414

Acetylacetone:
Effects on foetal development:
Species: Rat
Application Route: inhalation (vapour)
Duration of Single Treatment: 13 d
General Toxicity Maternal: NOAEC: 200
Teratogenicity: NOAEC Parent: 400
Embryo-foetal toxicity: NOAEC F1: 50
Method: OECD Test Guideline 414

Species: Rat
Application Route: inhalation (vapour)
Duration of Single Treatment: 13 d
General Toxicity Maternal: LOAEC: 400
Embryo-foetal toxicity: LOAEC F1: 200
Method: OECD Test Guideline 414

STOT - single exposure
May cause respiratory irritation.

Components:

Diacetone alcohol:
Target Organs: Respiratory system
Assessment: May cause respiratory irritation.

STOT - repeated exposure
Not classified based on available information.

Repeated dose toxicity

Components:

Diacetone alcohol:
Species: Rat
NOAEL: 1.04 mg/l
LOAEL: 4.685 mg/l
Application Route: inhalation (vapour)
Exposure time: 6 w
Method: OECD Test Guideline 412

Species: Rat
NOAEL: 100 mg/kg
Application Route: oral (gavage)
Method: OECD Test Guideline 422

Acetylacetone:
Species: Rat
Components:

**Acetylacetone:**
No aspiration toxicity classification

Further information

**Product:**
Remarks: No data available

Components:

**2,4-Pentanedione, peroxide:**
Remarks: No data available

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

SECTION 12: Ecological information

12.1 Toxicity

Components:

**2,4-Pentanedione, peroxide:**

<table>
<thead>
<tr>
<th>Toxicity to fish</th>
<th>LC50 (Danio rerio (zebra fish)): &gt; 67.6 mg/l</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure time</td>
<td>96 h</td>
</tr>
<tr>
<td>Test Type</td>
<td>semi-static test</td>
</tr>
<tr>
<td>Method</td>
<td>OECD Test Guideline 203</td>
</tr>
</tbody>
</table>

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): 7.05 mg/l
**SAFETY DATA SHEET**
according to Regulation (EC) No. 1907/2006

**NOROX SHP-40**

| aquatic invertebrates | Exposure time: 48 h  
| Method: OECD Test Guideline 202 |
|---|---|

**Toxicity to algae**

| EC50 (Pseudokirchneriella subcapitata (green algae)): 5.36 mg/l  
| Exposure time: 72 h  
| Method: OECD Test Guideline 201 |

**Toxicity to microorganisms**

| EC50 : 614 mg/l  
| Exposure time: 3 h  
| Method: OECD Test Guideline 209 |

**Diacetone alcohol:**

**Toxicity to fish**

| LC50 (Oryzias latipes (Orange-red killifish)): > 100 mg/l  
| Exposure time: 96 h  
| Method: OECD Test Guideline 203 |

**Toxicity to daphnia and other aquatic invertebrates**

| EC50 (Daphnia magna (Water flea)): > 1,000 mg/l  
| Exposure time: 48 h  
| Method: OECD Test Guideline 202 |

**NOEC (Daphnia magna (Water flea)): 1,000 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202**

**Toxicity to algae**

| EbC50 (Pseudokirchneriella subcapitata (green algae)): > 1,000 mg/l  
| Exposure time: 72 h  
| Method: OECD Test Guideline 201 |

**NOEC (Pseudokirchneriella subcapitata (green algae)): 1,000 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201**

**Toxicity to microorganisms**

| EC50 : > 1,000 mg/l  
| Exposure time: 3 h  
| Method: OECD Test Guideline 209 |

**Ecotoxicology Assessment**

**Acute aquatic toxicity**

| This product has no known ecotoxicological effects. |

**Chronic aquatic toxicity**

| This product has no known ecotoxicological effects. |

**tert-Butyl perbenzoate:**

**Toxicity to fish**

| LC50 (Danio rerio (zebra fish)): 1.6 mg/l  
| Exposure time: 96 h  
| Method: OECD Test Guideline 203 |

**Toxicity to daphnia and other aquatic invertebrates**

| EC50 (Daphnia magna (Water flea)): 11 mg/l  
| Exposure time: 48 h  
| Method: OECD Test Guideline 202 |
Toxicity to algae:
EC50 (Pseudokirchneriella subcapitata (green algae)): 0.8 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): 0.72 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

M-Factor (Acute aquatic toxicity): 1

Toxicity to microorganisms:
EC50: 43 mg/l
Exposure time: 0.5 h
Method: OECD Test Guideline 209

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity):
EC10: 0.49 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Method: OECD Test Guideline 211

Acetylacetone:
Toxicity to fish:
LC50 (Pimephales promelas (fathead minnow)): 104 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates:
EC50 (Daphnia magna (Water flea)): 25.9 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

NOEC (Daphnia magna (Water flea)): 4.3 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

Toxicity to algae:
EC50 (Pseudokirchneriella subcapitata (green algae)): 83.22 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): 3.2 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

Toxicity to microorganisms:
EC50: 107.6 mg/l
Exposure time: 3 h
Method: OECD Test Guideline 209

EC10: 13.2 mg/l
Exposure time: 3 h
Method: OECD Test Guideline 209
Toxicity to fish (Chronic toxicity):
- NOEC: 10 mg/l
  - Exposure time: 34 d
  - Species: Pimephales promelas (fathead minnow)
  - Method: OECD Test Guideline 210
- LOEC: 22 mg/l
  - Exposure time: 34 d
  - Species: Pimephales promelas (fathead minnow)
  - Method: OECD Test Guideline 210

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity):
- NOEC: 18 mg/l
  - Exposure time: 21 d
  - Species: Daphnia magna (Water flea)
  - Method: OECD Test Guideline 211

12.2 Persistence and degradability

Components:

2,4-Pentanedione, peroxide:
- Biodegradability: Result: Readily biodegradable.
  - Method: OECD Test Guideline 301D

Diacetone alcohol:
- Biodegradability: Result: Readily biodegradable.
  - Method: OECD Test Guideline 301A

tert-Butyl perbenzoate:
- Biodegradability: Result: Readily biodegradable.
  - Method: OECD Test Guideline 301D

Acetylacetone:
- Biodegradability: Result: Readily biodegradable.
  - Method: OECD Test Guideline 301C

12.3 Bioaccumulative potential

Components:

2,4-Pentanedione, peroxide:
- Partition coefficient: n-octanol/water: log Pow: 1.1 (25 °C)
  - Method: OECD Test Guideline 117

Diacetone alcohol:
- Partition coefficient: n-octanol/water: log Pow: 1.9

tert-Butyl perbenzoate:
- Partition coefficient: n-octanol/water: log Pow: 2.89 (25 °C)
octanol/water

**Acetylacetone:**
- **Bioaccumulation:** Bioconcentration factor (BCF): 3.16
  Remarks: Calculation
- **Partition coefficient: n-octanol/water:** log Pow: 0.68 (40 °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.

**Components:**

2,4-Pentanedione, peroxide:
- **Additional ecological information:** An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
  Toxic to aquatic life.

**Acetylacetone:**
- **Additional ecological information:** An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
  Harmful to aquatic life.

**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.
Dispoze 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

| ADR       | UN 3105 |
| RID       | UN 3105 |
| IMDG      | UN 3105 |

14.2 UN proper shipping name

| ADR                                      | ORGANIC PEROXIDE TYPE D, LIQUID (ACETYL ACETONE PEROXIDE, tert-BUTYL PEROXYBENOZATE) |
| RID                                      | ORGANIC PEROXIDE TYPE D, LIQUID (ACETYL ACETONE PEROXIDE, tert-BUTYL PEROXYBENOZATE) |
| IMDG                                     | ORGANIC PEROXIDE TYPE D, LIQUID (ACETYL ACETONE PEROXIDE, tert-BUTYL PEROXYBENOZATE) |

14.3 Transport hazard class(es)

| ADR       | 5.2 |
| RID       | 5.2 |
| IMDG      | 5.2 |

14.4 Packing group

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

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

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

14.5 Environmental hazards

| ADR                                      | Environmentally hazardous: no |
RID
Environmentally hazardous : no

IMDG
Marine pollutant : no

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

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

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:

DSL (CA) : All components of this product are on the Canadian DSL

AICS (AU) : On the inventory, or in compliance with the inventory

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

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

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

H226 : Flammable liquid and vapour.
H242 : Heating may cause a fire.
H302 : Harmful if swallowed.
H311 : Toxic in contact with skin.
H315 : Causes skin irritation.
H317 : May cause an allergic skin reaction.
H319 : Causes serious eye irritation.
H331 : Toxic if inhaled.
H332 : Harmful if inhaled.
H335 : May cause respiratory irritation.
H400 : Very toxic to aquatic life.
H412 : Harmful to aquatic life with long lasting effects.

Full text of other abbreviations

Acute Tox. : Acute toxicity
Aquatic Acute : Acute aquatic toxicity
Aquatic Chronic : Chronic aquatic toxicity
Eye Irrit. : Eye irritation
Flam. Liq. : Flammable liquids
Org. Perox. : Organic peroxides
Skin Irrit. : Skin irritation
Skin Sens. : Skin sensitisation
STOT SE : Specific target organ toxicity - single exposure

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 Substanc-
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.

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