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

1.1 Product identifier
   Trade name : Permethrin / Piperonyl Butoxide Formulation

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

1.3 Details of the supplier of the safety data sheet
   Company : MSD
             20 Spartan Road
             1619 Spartan, South Africa
   Telephone : +27119239300
   Telefax : 908-735-1496
   E-mail address of person responsible for the SDS : EHSDATASTEWARD@msd.com

1.4 Emergency telephone number
   1-908-423-6000

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

   Classification (REGULATION (EC) No 1272/2008)
   Skin sensitisation, Category 1
   Aspiration hazard, Category 1
   Short-term (acute) aquatic hazard, Category 1
   Long-term (chronic) aquatic hazard, Category 1
   H317: May cause an allergic skin reaction.
   H304: May be fatal if swallowed and enters airways.
   H400: Very toxic to aquatic life.
   H410: Very toxic to aquatic life with long lasting effects.

2.2 Label elements

   Labelling (REGULATION (EC) No 1272/2008)
   Hazard pictograms :
   Signal word : Danger
   Hazard statements :
   H304 May be fatal if swallowed and enters airways.
   H317 May cause an allergic skin reaction.
   H410 Very toxic to aquatic life with long lasting effects.
Precautionary statements:

**Prevention:**
- P273 Avoid release to the environment.
- P280 Wear protective gloves.

**Response:**
- P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
- P331 Do NOT induce vomiting.
- P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
- P391 Collect spillage.

Hazardous components which must be listed on the label:
- Distillates (petroleum), solvent-refined light paraffinic
- Permethrin (ISO)

### 2.3 Other hazards
None known.

### SECTION 3: Composition/information on ingredients

#### 3.2 Mixtures

<table>
<thead>
<tr>
<th>Components</th>
<th>Chemical name</th>
<th>CAS-No. EC-No. Index-No. Registration number</th>
<th>Classification</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Distillates (petroleum), solvent-refined light paraffinic</td>
<td>64741-89-5 265-091-3 649-455-00-2</td>
<td>Asp. Tox.1; H304</td>
<td>&gt;= 70 - &lt; 90</td>
</tr>
<tr>
<td></td>
<td>Permethrin (ISO)</td>
<td>52645-53-1 258-067-9 613-058-00-2</td>
<td>Acute Tox.4; H302 Acute Tox.4; H332 Skin Sens.1; H317 Aquatic Acute1; H400 Aquatic Chronic1; H410</td>
<td>&gt;= 2.5 - &lt; 10</td>
</tr>
<tr>
<td></td>
<td>2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether</td>
<td>51-03-6 200-076-7</td>
<td>Aquatic Acute1; H400 Aquatic Chronic1; H410</td>
<td>&gt;= 2.5 - &lt; 10</td>
</tr>
</tbody>
</table>
SECTION 4: First aid measures

4.1 Description of first aid measures

General advice: In the case of accident or if you feel unwell, seek medical advice immediately. When symptoms persist or in all cases of doubt seek medical advice.

Protection of first-aiders: First Aid responders should pay attention to self-protection, and use the recommended personal protective equipment when the potential for exposure exists (see section 8).

If inhaled: If inhaled, remove to fresh air. Get medical attention if symptoms occur.

In case of skin contact: In case of contact, immediately flush skin with soap and plenty of water. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

In case of eye contact: Flush eyes with water as a precaution. Get medical attention if irritation develops and persists.

If swallowed: If swallowed, DO NOT induce vomiting. If vomiting occurs have person lean forward. Call a physician or poison control centre immediately. Never give anything by mouth to an unconscious person.

4.2 Most important symptoms and effects, both acute and delayed

Risks: May be fatal if swallowed and enters airways. May cause an allergic skin reaction.

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: None known.
5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting:
- Exposure to combustion products may be a hazard to health.

Hazardous combustion products:
- Chlorine compounds
- Carbon oxides

5.3 Advice for firefighters

Special protective equipment for firefighters:
- In the event of fire, wear self-contained breathing apparatus.
- Use personal protective equipment.

Specific extinguishing methods:
- Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Use water spray to cool unopened containers.
- Remove undamaged containers from fire area if it is safe to do so.
- Evacuate area.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions:
- Use personal protective equipment.
- Follow safe handling advice and personal protective equipment recommendations.

6.2 Environmental precautions

Environmental precautions:
- Discharge into the environment must be avoided.
- Prevent further leakage or spillage if safe to do so.
- Prevent spreading over a wide area (e.g. by containment or oil barriers).
- Retain and dispose of contaminated wash water.
- Local authorities should be advised if significant spillages cannot be contained.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up:
- Soak up with inert absorbent material.
- For large spills, provide dyking or other appropriate containment to keep material from spreading. If dyked material can be pumped, store recovered material in appropriate container.
- Clean up remaining materials from spill with suitable absorbent.
- 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.
- Sections 13 and 15 of this SDS provide information regarding certain local or national requirements.

6.4 Reference to other sections

See sections: 7, 8, 11, 12 and 13.
SECTION 7: Handling and storage

7.1 Precautions for safe handling

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

Local/Total ventilation: Use only with adequate ventilation.

Advice on safe handling:
- Do not get on skin or clothing.
- Avoid inhalation of vapour or mist.
- Do not swallow.
- Avoid contact with eyes.
- Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment
- Keep container tightly closed.
- Take care to prevent spills, waste and minimize release to the environment.

Hygiene measures: If exposure to chemical is likely during typical use, provide eye flushing systems and safety showers close to the working place. When using do not eat, drink or smoke. Wash contaminated clothing before re-use.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers: Keep in properly labelled containers. Store locked up. Keep tightly closed. Store in accordance with the particular national regulations.

Advice on common storage: Do not store with the following product types: Strong oxidizing agents

7.3 Specific end use(s)

Specific use(s): No data available

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>Permethrin (ISO)</td>
<td>52645-53-1</td>
<td>TWA</td>
<td>80 µg/m³ (OEB 3)</td>
<td>Internal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wipe limit</td>
<td>800 µg/100 cm²</td>
<td>Internal</td>
</tr>
<tr>
<td>2-(2-butoxyethoxy)ethyl 6-propyliperonyl ether</td>
<td>51-03-6</td>
<td>TWA</td>
<td>4 mg/m³ (OEB 1)</td>
<td>Internal</td>
</tr>
</tbody>
</table>

Further information: Skin

### 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>
</table>
2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether

<table>
<thead>
<tr>
<th></th>
<th>Workers</th>
<th>Inhalation</th>
<th>Long-term systemic effects</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ingestion</td>
<td></td>
<td></td>
<td></td>
<td>1,14 mg/kg bw/day</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Acute systemic effects</td>
<td>2,3 mg/kg bw/day</td>
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<tr>
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<td></td>
<td></td>
<td>Long-term local effects</td>
<td>0,22 mg/cm²</td>
</tr>
<tr>
<td></td>
<td>Consumers</td>
<td></td>
<td>Long-term systemic effects</td>
<td>0,003 mg/l</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Acute systemic effects</td>
<td>0,002 mg/kg</td>
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<td></td>
<td>Long-term local effects</td>
<td>0,016 mg/kg</td>
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<tr>
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<td>12,53 mg/kg food</td>
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<td>9,33 mg/kg food</td>
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<td>10 mg/l</td>
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<td>1,14 mg/kg food</td>
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<td>0,22 mg/cm²</td>
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<td>55,5 mg/kg bw/day</td>
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<td>27,7 mg/kg bw/day</td>
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<td>0,44 mg/cm²</td>
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<td></td>
<td></td>
<td>0,888 mg/cm²</td>
</tr>
</tbody>
</table>

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

8.2 Exposure controls

**Engineering measures**

Ensure adequate ventilation, especially in confined areas.

Minimize workplace exposure concentrations.

**Personal protective equipment**
SAFETY DATA SHEET

Permethrin / Piperonyl Butoxide Formulation

Eye protection: Wear the following personal protective equipment: Safety glasses

Hand protection

Material: Chemical-resistant gloves

Remarks: Choose gloves to protect hands against chemicals depending on the concentration and quantity of the hazardous substance and specific to place of work. Breakthrough time is not determined for the product. Change gloves often! 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. Skin contact must be avoided by using impervious protective clothing (gloves, aprons, boots, etc).

Respiratory protection

If adequate local exhaust ventilation is not available or exposure assessment demonstrates exposures outside the recommended guidelines, use respiratory protection.

Filter type: Combined particulates and organic vapour type (A-P)

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance: liquid
Colour: amber
Odour: odourless
Odour Threshold: No data available

pH: No data available
Melting point/freezing point: No data available
Initial boiling point and boiling range: No data available
Flash point: No data available
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: < 2 mmHg (25 °C)
Relative vapour density: No data available
Density : 0.885 g/cm³

Solubility(ies)
  Water solubility : negligible
  Partition coefficient: n-octanol/water : No data available
  Auto-ignition temperature : No data available
  Decomposition temperature : No data available

Viscosity
  Viscosity, dynamic : 40 mPa.s
  Viscosity, kinematic : No data available

Explosive properties : Not explosive

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

9.2 Other information
  Flammability (liquids) : No data available
  Molecular weight : No data available
  Particle size : No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
  Not classified as a reactivity hazard.

10.2 Chemical stability
  Stable under normal conditions.

10.3 Possibility of hazardous reactions
  Hazardous reactions : Can react with strong oxidizing agents.

10.4 Conditions to avoid
  Conditions to avoid : None known.

10.5 Incompatible materials
  Materials to avoid : Oxidizing agents

10.6 Hazardous decomposition products
  No hazardous decomposition products are known.

SECTION 11: Toxicological information

11.1 Information on toxicological effects
  Information on likely routes of : Inhalation
SAFETY DATA SHEET

Permethrin / Piperonyl Butoxide Formulation

exposure
Skin contact
Ingestion
Eye contact

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

Components:
Distillates (petroleum), solvent-refined light paraffinic:
Acute oral toxicity : LD50 (Rat): > 5.000 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC50 (Rat): > 5.53 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Rabbit): > 5.000 mg/kg
Method: OECD Test Guideline 402

Permethrin (ISO):
Acute oral toxicity : LD50 (Rat): 480 - 554 mg/kg

Acute inhalation toxicity : LC50 (Rat): 2.3 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rabbit): > 2.000 mg/kg

2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether:
Acute oral toxicity : LD50 (Rat): > 2.000 mg/kg
Method: OECD Test Guideline 423

Acute inhalation toxicity : LC50 (Rat): > 5.2 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403

Acute dermal toxicity : LD50 (Rabbit): > 2.000 mg/kg
Method: OECD Test Guideline 402
Skin corrosion/irritation
Not classified based on available information.

**Components:**

**Distillates (petroleum), solvent-refined light paraffinic:**
Species: Rabbit  
Result: No skin irritation  

**Permethrin (ISO):**
Species: Rabbit  
Result: No skin irritation  

2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether:
Species: Rabbit  
Method: OECD Test Guideline 404  
Result: No skin irritation  

Serious eye damage/eye irritation
Not classified based on available information.

**Components:**

**Distillates (petroleum), solvent-refined light paraffinic:**
Species: Rabbit  
Result: No eye irritation  

**Permethrin (ISO):**
Species: Rabbit  
Result: No eye irritation  

2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether:
Species: Rabbit  
Method: OECD Test Guideline 405  
Result: No eye irritation  

Respiratory or skin sensitisation

Skin sensitisation
May cause an allergic skin reaction.

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

**Components:**

**Distillates (petroleum), solvent-refined light paraffinic:**
Test Type: Buehler Test  
Exposure routes: Skin contact  
Species: Guinea pig  
Method: OECD Test Guideline 406  
Result: negative
Permethrin (ISO):
Test Type: Buehler Test
Exposure routes: Skin contact
Species: Guinea pig
Result: positive
Assessment: Probability or evidence of skin sensitisation in humans

2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether:
Test Type: Maximisation Test
Exposure routes: Skin contact
Species: Guinea pig
Method: OECD Test Guideline 406
Result: negative

Germ cell mutagenicity
Not classified based on available information.

Components:
Distillates (petroleum), solvent-refined light paraffinic:
Genotoxicity in vitro: Test Type: Chromosome aberration test in vitro
Result: negative
Remarks: Based on data from similar materials

Genotoxicity in vivo: Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
Species: Mouse
Application Route: Intraperitoneal injection
Result: negative

Permethrin (ISO):
Genotoxicity in vitro: Test Type: Bacterial reverse mutation assay (AMES)
Result: negative

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

Test Type: Chromosome aberration test in vitro
Result: negative

Test Type: DNA damage and repair, unscheduled DNA synthesis in mammalian cells (in vitro)
Result: negative

Test Type: Chromosome aberration test in vitro
Result: positive

Genotoxicity in vivo: Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
Species: Mouse
Result: negative

Test Type: Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis)
Species: Mouse
Result: negative

Test Type: Rodent dominant lethal test (germ cell) (in vivo)
Species: Mouse
Result: negative

Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
Species: Rat
Application Route: Intraperitoneal injection
Result: negative

Test Type: Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis)
Species: Mouse
Application Route: Ingestion
Result: positive

Germ cell mutagenicity - Assessment: Weight of evidence does not support classification as a germ cell mutagen.

2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether:
Genotoxicity in vitro: Test Type: Bacterial reverse mutation assay (AMES)
Result: negative

Carcinogenicity
Not classified based on available information.

Components:

Distillates (petroleum), solvent-refined light paraffinic:
Species: Mouse, female
Application Route: Skin contact
Exposure time: 18 Months
Method: OECD Test Guideline 451
Result: negative
Carcinogenicity - Assessment: Classified based on DMSO extract content < 3% (Regulation (EC) 1272/2008, Annex VI, Part 3, Note L)

Permethrin (ISO):
Species: Rat
Result: negative
Species: Mouse
Result: negative
2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether:
Species: Rat
Application Route: Ingestion
Exposure time: 107 weeks
Method: OECD Test Guideline 451
Result: negative

Reproductive toxicity
Not classified based on available information.

Components:

Distillates (petroleum), solvent-refined light paraffinic:
Effects on fertility: Test Type: One-generation reproduction toxicity study
Species: Rat
Application Route: Ingestion
Result: negative

Permethrin (ISO):
Effects on fertility: Test Type: Two-generation reproduction toxicity study
Species: Rat
Application Route: Ingestion
Result: negative

Effects on foetal development: Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test
Species: Rat
Application Route: Ingestion
Result: negative

2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether:
Effects on fertility: Test Type: Two-generation reproduction toxicity study
Species: Rat
Application Route: Ingestion
Result: negative

Effects on foetal development: Test Type: Embryo-foetal development
Species: Rat
Application Route: Ingestion
Result: negative

STOT - single exposure
Not classified based on available information.

STOT - repeated exposure
Not classified based on available information.

Repeated dose toxicity

Components:

Distillates (petroleum), solvent-refined light paraffinic:
Species: Rabbit
NOAEL: 1.000 mg/kg
Application Route: Skin contact
Exposure time: 4 Weeks
Method: OECD Test Guideline 410
Remarks: Based on data from similar materials

Species: Rat
NOAEL: > 980 mg/m3
Application Route: inhalation (dust/mist/fume)
Exposure time: 4 Weeks
Remarks: Based on data from similar materials

Permethrin (ISO):

Species: Rat
NOAEL: 0,2201 mg/l
Application Route: Inhalation
Exposure time: 90 Days

Species: Rat
NOAEL: 175 mg/kg
Application Route: Ingestion
Exposure time: 90 Days

2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether:

Species: Rat
NOAEL: 1.323 mg/kg
Application Route: Ingestion
Exposure time: 7 Weeks

Aspiration toxicity
May be fatal if swallowed and enters airways.

Product:
The substance or mixture is known to cause human aspiration toxicity hazards or has to be regarded as if it causes a human aspiration toxicity hazard.

Components:

Distillates (petroleum), solvent-refined light paraffinic:
The substance or mixture is known to cause human aspiration toxicity hazards or has to be regarded as if it causes a human aspiration toxicity hazard.

SECTION 12: Ecological information

12.1 Toxicity

Components:

Distillates (petroleum), solvent-refined light paraffinic:
Toxicity to fish: LL50 (Pimephales promelas (fathead minnow)): > 100 mg/l
Exposure time: 96 h
## Test substance: Water Accommodated Fraction

### Method: OECD Test Guideline 203

### Exposure time: 48 h

### Test substance: Water Accommodated Fraction

### Toxicity to algae/aquatic plants:

- **NOEC (Pseudokirchneriella subcapitata (green algae)):** 10 mg/l
  - **Exposure time:** 72 h
  - **Species:** Daphnia magna (Water flea)

### Toxicity to fish (Chronic toxicity):

- **NOEC (Danio rerio (zebra fish)):** 0,00041 mg/l
  - **Exposure time:** 35 d
  - **Species:** Danio rerio (zebra fish)
  - **Method:** OECD Test Guideline 210

### Toxicity to microorganisms:

- **EC50:** > 1,000 mg/l
  - **Exposure time:** 3 h

### Toxicity to fish:

- **LC50 (Lepomis macrochirus (Bluegill sunfish)):** 0,00079 mg/l
  - **Exposure time:** 96 h

### Toxicity to algae/aquatic plants:

- **ErC50 (Pseudokirchneriella subcapitata (green algae)):** 0,0023 mg/l
  - **Exposure time:** 72 h

### M-Factor (Acute aquatic toxicity):

- **10,000**

### Toxicity to daphnia and other aquatic invertebrates:

- **NOEC (Daphnia magna (Water flea)):** > 10,000 mg/l
  - **Exposure time:** 48 h

### Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity):

- **NOEC:** 10 mg/l
  - **Species:** Daphnia magna (Water flea)

### Toxicity to daphnia and other aquatic invertebrates:

- **LL50 (Daphnia magna (Water flea)):** > 10,000 mg/l
  - **Exposure time:** 48 h

### Toxicity to algae/aquatic plants:

- **NOEC (Pseudokirchneriella subcapitata (green algae)):** > 100 mg/l
  - **Exposure time:** 72 h

### Toxicity to fish:

- **LC50 (Cyprinodon variegatus (sheepshead minnow)):** 3,94 mg/l
  - **Exposure time:** 96 h
  - **Method:** OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates
- EC50 (Daphnia magna (Water flea)): 0.51 mg/l
  Exposure time: 48 h
  Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants
- ErC50 (Pseudokirchneriella subcapitata (green algae)): 3.89 mg/l
  Exposure time: 72 h
  Method: OECD Test Guideline 201

  NOEC (Pseudokirchneriella subcapitata (green algae)): 0.824 mg/l
  Exposure time: 72 h
  Method: OECD Test Guideline 201

M-Factor (Acute aquatic toxicity): 1

Toxicity to microorganisms
- EC50: > 1.000 mg/l
  Exposure time: 3 h
  Method: OECD Test Guideline 209

Toxicity to fish (Chronic toxicity)
- NOEC: 0.18 mg/l
  Exposure time: 35 d
  Species: Pimephales promelas (fathead minnow)

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)
- NOEC: 0.03 mg/l
  Exposure time: 21 d
  Species: Daphnia magna (Water flea)

M-Factor (Chronic aquatic toxicity): 1

12.2 Persistence and degradability

Components:

Distillates (petroleum), solvent-refined light paraffinic:
- Biodegradability: Result: Not readily biodegradable.
  Biodegradation: 4 %
  Exposure time: 28 d
  Method: OECD Test Guideline 301B

Permethrin (ISO):
- Biodegradability: Result: Not readily biodegradable.
  Method: OECD Test Guideline 301F

2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether:
- Biodegradability: Result: Not readily biodegradable.
  Biodegradation: 0 %
  Exposure time: 28 d
  Method: OECD Test Guideline 301D
12.3 Bioaccumulative potential

Components:

Permethrin (ISO):
Bioaccumulation: Species: Lepomis macrochirus (Bluegill sunfish)
Bioconcentration factor (BCF): 570

Partition coefficient: n-octanol/water: log Pow: 4.67

2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether:
Partition coefficient: n-octanol/water: log Pow: 5

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
Not relevant

12.6 Other adverse effects
No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods
Product: Dispose of in accordance with local regulations.
According to the European Waste Catalogue, Waste Codes are not product specific, but application specific.
Waste codes should be assigned by the user, preferably in discussion with the waste disposal authorities.

Contaminated packaging: Empty containers should be taken to an approved waste handling site for recycling or disposal.
If not otherwise specified: Dispose of as unused product.

SECTION 14: Transport information

14.1 UN number

UN 3082

14.2 UN proper shipping name

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
(Permethrin (ISO), 2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether)
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Date of first issue: 16.05.2016

N.O.S. (Permethrin (ISO), 2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether)

RID : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Permethrin (ISO), 2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether)

IMDG : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Permethrin (ISO), 2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether)

IATA : Environmentally hazardous substance, liquid, n.o.s. (Permethrin (ISO), 2-(2-butoxyethoxy)ethyl 6-propylpiperonyl ether)

14.3 Transport hazard class(es)

ADN : 9
ADR : 9
RID : 9
IMDG : 9
IATA : 9

14.4 Packing group

ADN
Packing group : III
Classification Code : M6
Hazard Identification Number : 90
Labels : 9

ADR
Packing group : III
Classification Code : M6
Hazard Identification Number : 90
Labels : 9
Tunnel restriction code : (-)

RID
Packing group : III
Classification Code : M6
Hazard Identification Number : 90
Labels : 9

IMDG
Packing group : III
Labels : 9
EmS Code : F-A, S-F

IATA (Cargo)
Packing instruction (cargo aircraft) : 964
Packing instruction (LQ) : Y964
Packing group : III
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Labels: Miscellaneous

IATA (Passenger)
Packing instruction (passenger aircraft): 964
Packing instruction (LQ): Y964
Packing group: III
Labels: Miscellaneous

14.5 Environmental hazards

ADN
Environmentally hazardous: yes

ADR
Environmentally hazardous: yes

RID
Environmentally hazardous: yes

IMDG
Marine pollutant: yes

IATA (Passenger)
Environmentally hazardous: yes

IATA (Cargo)
Environmentally hazardous: 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
Remarks: Not applicable for product as supplied.

SECTION 15: Regulatory information

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

The components of this product are reported in the following inventories:
AICS: not determined
DSL: not determined
IECSC: not determined

15.2 Chemical safety assessment
A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

Other information: Items where changes have been made to the previous version are highlighted in the body of this document by two vertical lines.
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Full text of H-Statements

H302 : Harmful if swallowed.
H304 : May be fatal if swallowed and enters airways.
H317 : May cause an allergic skin reaction.
H332 : Harmful if inhaled.
H400 : Very toxic to aquatic life.
H410 : Very toxic to aquatic life with long lasting effects.

Full text of other abbreviations

Acute Tox. : Acute toxicity
Aquatic Acute : Short-term (acute) aquatic hazard
Aquatic Chronic : Long-term (chronic) aquatic hazard
Asp. Tox. : Aspiration hazard
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, 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

Further information

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<table>
<thead>
<tr>
<th>Classification of the mixture:</th>
<th>Classification procedure:</th>
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<tbody>
<tr>
<td>Skin Sens. 1</td>
<td>H317</td>
</tr>
<tr>
<td>Asp. Tox. 1</td>
<td>H304</td>
</tr>
<tr>
<td>Aquatic Acute 1</td>
<td>H400</td>
</tr>
<tr>
<td>Aquatic Chronic 1</td>
<td>H410</td>
</tr>
</tbody>
</table>

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 is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user’s end product, if applicable.

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