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

1.1 Product identifier
   Trade name : Flumethrin (1%) 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
   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)
   Flammable liquids, Category 3     H226: Flammable liquid and vapour.
   Acute toxicity, Category 4        H302: Harmful if swallowed.
   Acute toxicity, Category 3        H311: Toxic in contact with skin.
   Skin irritation, Category 2       H315: Causes skin irritation.
   Eye irritation, Category 2        H319: Causes serious eye irritation.
   Reproductive toxicity, Category 1B H360D: May damage the unborn child.
   Specific target organ toxicity - single exposure, Category 2 H371: May cause damage to organs.
   Specific target organ toxicity - repeated exposure, Category 2 H373: May cause damage to organs through prolonged or repeated exposure.
   Aspiration hazard, Category 1     H304: May be fatal if swallowed and enters airways.
   Long-term (chronic) aquatic hazard, Category 3 H412: Harmful to aquatic life with long lasting effects.

2.2 Label elements

   Labelling (REGULATION (EC) No 1272/2008)
   Hazard pictograms :
   Signal word : Danger
Hazard statements: H226 Flammable liquid and vapour.
          H302 Harmful if swallowed.
          H304 May be fatal if swallowed and enters airways.
          H311 Toxic in contact with skin.
          H315 Causes skin irritation.
          H319 Causes serious eye irritation.
          H360D May damage the unborn child.
          H371 May cause damage to organs.
          H373 May cause damage to organs through prolonged or repeated exposure.
          H412 Harmful to aquatic life with long lasting effects.

Precautionary statements:

Prevention:
P201 Obtain special instructions before use.
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
P308 + P311 IF exposed or concerned: Call a POISON CENTER/ doctor.

Hazardous components which must be listed on the label:
Paraffin oil
Xylene
Flumethrin

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

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Components

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>Index-No.</th>
<th>Registration number</th>
<th>Classification</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paraffin oil</td>
<td>8012-95-1</td>
<td>232-384-2</td>
<td></td>
<td></td>
<td>Asp. Tox. 1; H304 Aquatic Chronic 4; H413</td>
<td>&gt;= 50 - &lt; 70</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Xylene</td>
<td>1330-20-7</td>
<td>215-535-7</td>
<td>601-022-00-9</td>
<td></td>
<td>Flam. Liq. 3; H226 Acute Tox. 4; H332 Acute Tox. 4; H312</td>
<td>&gt;= 10 - &lt; 20</td>
</tr>
</tbody>
</table>
For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice : 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.

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.
Get medical attention.
Wash clothing before reuse.
Thoroughly clean shoes before reuse.

In case of eye contact:
In case of contact, immediately flush eyes with plenty of water for at least 15 minutes.
If easy to do, remove contact lens, if worn.
Get medical attention.

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

4.2 Most important symptoms and effects, both acute and delayed
Risks:
Harmful if swallowed.
May be fatal if swallowed and enters airways.
Toxic in contact with skin.
Causes skin irritation.
Causes serious eye irritation.
May damage the unborn child.
May cause damage to organs.
May cause damage to organs through prolonged or repeated exposure.

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:
- Do not use a solid water stream as it may scatter and spread fire.
- Flash back possible over considerable distance.
- Vapours may form explosive mixtures with air.
- Exposure to combustion products may be a hazard to health.

Hazardous combustion products:
Carbon oxides

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

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 : Remove all sources of ignition.
Use personal protective equipment.
Follow safe handling advice (see section 7) and personal protective equipment recommendations (see section 8).

6.2 Environmental precautions

Environmental precautions : Avoid release to the environment.
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 : Non-sparking tools should be used.
Soak up with inert absorbent material.
Suppress (knock down) gases/vapours/mists with a water spray jet.
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: If sufficient ventilation is unavailable, use with local exhaust ventilation. Use explosion-proof electrical, ventilating and lighting equipment.

Advice on safe handling: Do not get on skin or clothing. Do not breathe mist or vapours. Do not swallow. Do not get in eyes. Wash skin thoroughly after handling. Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment. Non-sparking tools should be used. Keep container tightly closed. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take precautionary measures against static discharges. Do not eat, drink or smoke when using this product. 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. The effective operation of a facility should include review of engineering controls, proper personal protective equipment, appropriate degowning and decontamination procedures, industrial hygiene monitoring, medical surveillance and the use of administrative controls.

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. Keep in a cool, well-ventilated place. Store in accordance with the particular national regulations. Keep away from heat and sources of ignition.

Advice on common storage: Do not store with the following product types: Strong oxidizing agents Organic peroxides Flammable solids Pyrophoric liquids Pyrophoric solids Self-heating substances and mixtures Substances and mixtures, which in contact with water, emit flammable gases Explosives Gases

7.3 Specific end use(s)

Specific use(s): No data available
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>Xylene</td>
<td>1330-20-7</td>
<td>TWA OEL-RL</td>
<td>100 ppm</td>
<td>ZA OEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>435 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL OEL-RL</td>
<td>150 ppm</td>
<td>ZA OEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>650 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Toluene</td>
<td>108-88-3</td>
<td>TWA OEL-RL</td>
<td>50 ppm</td>
<td>ZA OEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>188 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL OEL-RL</td>
<td>150 ppm</td>
<td>ZA OEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>560 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

### Biological occupational exposure limits

<table>
<thead>
<tr>
<th>Substance name</th>
<th>CAS-No.</th>
<th>Control parameters</th>
<th>Sampling time</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xylene</td>
<td>1330-20-7</td>
<td>Methylhippuric acid: 1.5 g/g creatinine (Urine)</td>
<td>End of shift</td>
<td>ZA BEI</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Methylhippuric acid: 2 mg/l (Urine)</td>
<td>Last 4 hours of shift</td>
<td>ZA BEI</td>
</tr>
<tr>
<td>Toluene</td>
<td>108-88-3</td>
<td>Hippuric acid: 2.5 g/g creatinine (Urine)</td>
<td>End of shift</td>
<td>ZA BEI</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Toluene: 1 mg/l (venous blood)</td>
<td>End of shift</td>
<td>ZA BEI</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o-Cresol: 1 mg/g Creatinine (Urine)</td>
<td>End of shift</td>
<td>ZA BEI</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>Substance</td>
<td>Exposure</td>
<td>Long-term systemic effects</td>
<td>Acute systemic effects</td>
<td>Chronic systemic effects</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>-------------------</td>
<td>---------------------------------</td>
<td>-----------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>Xylene</td>
<td>Workers Inhalation</td>
<td>Long-term systemic effects</td>
<td>221 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Acute systemic effects</td>
<td>442 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Long-term local effects</td>
<td>221 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Acute local effects</td>
<td>442 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Workers Skin contact</td>
<td>Long-term systemic effects</td>
<td>212 mg/kg bw/day</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Acute systemic effects</td>
<td>260 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Consumers Inhalation</td>
<td>Long-term systemic effects</td>
<td>65,3 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Acute systemic effects</td>
<td>260 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Consumers Skin contact</td>
<td>Long-term systemic effects</td>
<td>125 mg/kg bw/day</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Consumers Ingestion</td>
<td>Long-term systemic effects</td>
<td>12,5 mg/kg bw/day</td>
<td></td>
</tr>
<tr>
<td>Glycerides, mixed decanoyl and octanoyl</td>
<td>Workers Inhalation</td>
<td>Long-term systemic effects</td>
<td>177,79 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Acute systemic effects</td>
<td>25,21 mg/kg bw/day</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Consumers Inhalation</td>
<td>Long-term systemic effects</td>
<td>43,84 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Consumers Skin contact</td>
<td>Long-term systemic effects</td>
<td>12,61 mg/kg bw/day</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Consumers Ingestion</td>
<td>Long-term systemic effects</td>
<td>12,61 mg/kg bw/day</td>
<td></td>
</tr>
<tr>
<td>Toluene</td>
<td>Workers Inhalation</td>
<td>Long-term systemic effects</td>
<td>5 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Acute systemic effects</td>
<td>384 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Short-term exposure</td>
<td>5 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Long-term local effects</td>
<td>5 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Consumers Inhalation</td>
<td>Long-term systemic effects</td>
<td>226 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Acute systemic effects</td>
<td>226 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Consumers Skin contact</td>
<td>Long-term systemic effects</td>
<td>226 mg/kg bw/day</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Consumers Inhalation</td>
<td>Long-term systemic effects</td>
<td>56,5 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Consumers Ingestion</td>
<td>Long-term systemic effects</td>
<td>8,13 mg/kg</td>
<td></td>
</tr>
</tbody>
</table>
SAFETY DATA SHEET

Flumethrin (1%) Formulation

<table>
<thead>
<tr>
<th>Substance name</th>
<th>Environmental Compartment</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xylene</td>
<td>Fresh water</td>
<td>0.327 mg/l</td>
</tr>
<tr>
<td></td>
<td>Intermittent use/release</td>
<td>0.327 mg/l</td>
</tr>
<tr>
<td></td>
<td>Marine water</td>
<td>0.327 mg/l</td>
</tr>
<tr>
<td></td>
<td>Sewage treatment plant</td>
<td>6.58 mg/l</td>
</tr>
<tr>
<td></td>
<td>Fresh water sediment</td>
<td>12.46 mg/kg dry weight (d.w.)</td>
</tr>
<tr>
<td></td>
<td>Marine sediment</td>
<td>12.46 mg/kg dry weight (d.w.)</td>
</tr>
<tr>
<td></td>
<td>Soil</td>
<td>2.31 mg/kg dry weight (d.w.)</td>
</tr>
<tr>
<td>Glycerides, mixed decanoyl and octanoyl</td>
<td>Oral (Secondary Poisoning)</td>
<td>0.03 mg/kg food</td>
</tr>
<tr>
<td>Toluene</td>
<td>Fresh water</td>
<td>0.68 mg/l</td>
</tr>
<tr>
<td></td>
<td>Marine water</td>
<td>0.68 mg/l</td>
</tr>
<tr>
<td></td>
<td>Intermittent use/release</td>
<td>0.68 mg/l</td>
</tr>
<tr>
<td></td>
<td>Sewage treatment plant</td>
<td>13.61 mg/l</td>
</tr>
<tr>
<td></td>
<td>Fresh water sediment</td>
<td>16.39 mg/kg dry weight (d.w.)</td>
</tr>
<tr>
<td></td>
<td>Marine sediment</td>
<td>16.39 mg/kg dry weight (d.w.)</td>
</tr>
<tr>
<td></td>
<td>Soil</td>
<td>2.89 mg/kg dry weight (d.w.)</td>
</tr>
</tbody>
</table>

8.2 Exposure controls

Engineering measures
Use appropriate engineering controls and manufacturing technologies to control airborne concentrations (e.g., drip-less quick connections).
All engineering controls should be implemented by facility design and operated in accordance with GMP principles to protect products, workers, and the environment.
Containment technologies suitable for controlling compounds are required to control at source and to prevent migration of the compound to uncontrolled areas (e.g., open-face containment devices).
Minimize open handling.
Use explosion-proof electrical, ventilating and lighting equipment.

Personal protective equipment

Eye protection
- Wear safety glasses with side shields or goggles.
- If the work environment or activity involves dusty conditions, mists or aerosols, wear the appropriate goggles.
- Wear a faceshield or other full face protection if there is a potential for direct contact to the face with dusts, mists, or aerosols.

Hand protection

Material
- Chemical-resistant gloves

Remarks
- Consider double gloving. Take note that the product is flammable, which may impact the selection of hand protection.
Skin and body protection: Work uniform or laboratory coat. Additional body garments should be used based upon the task being performed (e.g., sleevelets, apron, gauntlets, disposable suits) to avoid exposed skin surfaces. Use appropriate degowning techniques to remove potentially contaminated clothing.

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

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Aqueous solution</td>
</tr>
<tr>
<td>Colour</td>
<td>light brown, yellow</td>
</tr>
<tr>
<td>Odour</td>
<td>No data available</td>
</tr>
<tr>
<td>Odour Threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>No data available</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>No data available</td>
</tr>
<tr>
<td>Initial boiling point and boiling</td>
<td>No data available</td>
</tr>
<tr>
<td>range</td>
<td></td>
</tr>
<tr>
<td>Flash point</td>
<td>54 °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 / Upper</td>
<td>No data available</td>
</tr>
<tr>
<td>flammability limit</td>
<td></td>
</tr>
<tr>
<td>Lower explosion limit / Lower</td>
<td>No data available</td>
</tr>
<tr>
<td>flammability limit</td>
<td></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>
<tr>
<td>Relative density</td>
<td>No data available</td>
</tr>
<tr>
<td>Density</td>
<td>0.820 - 0.900 g/cm³</td>
</tr>
<tr>
<td>Solubility(ies)</td>
<td></td>
</tr>
<tr>
<td>Water solubility</td>
<td>No data available</td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity</td>
<td></td>
</tr>
</tbody>
</table>
SAFETY DATA SHEET
Flumethrin (1%) Formulation

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 : Not applicable

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 : Flammable liquid and vapour. Vapours may form explosive mixture with air. Can react with strong oxidizing agents.

10.4 Conditions to avoid
Conditions to avoid : Heat, flames and sparks.

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 exposure : Inhalation
Skin contact
Ingestion
Eye contact

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

Product:
Acute oral toxicity : Acute toxicity estimate: 410.05 mg/kg
Method: Calculation method
Acute inhalation toxicity  :  Acute toxicity estimate: > 20 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Method: Calculation method

Acute dermal toxicity   :  Acute toxicity estimate: 393.03 mg/kg
Method: Calculation method

**Components:**

**Paraffin oil:**
Acute oral toxicity  :  LD50 (Rat): > 5.000 mg/kg

Acute dermal toxicity  :  LD50 (Rabbit): > 2.000 mg/kg
Assessment: The substance or mixture has no acute dermal toxicity

**Xylene:**
Acute oral toxicity  :  LD50 (Rat): 3.523 mg/kg

Acute inhalation toxicity  :  Acute toxicity estimate: 11 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Method: Expert judgement
Remarks: Based on harmonised classification in EU regulation 1272/2008, Annex VI

Acute dermal toxicity  :  Acute toxicity estimate: 1.100 mg/kg
Method: Expert judgement
Remarks: Based on harmonised classification in EU regulation 1272/2008, Annex VI

**Flumethrin:**
Acute oral toxicity  :  LD50 (Rat): > 20 mg/kg
LD50 (Mouse): > 20 mg/kg

Acute inhalation toxicity  :  LC50 (Rat): > 2.934 mg/l

Acute dermal toxicity  :  LD50 (Rat): > 5 mg/kg
Acute toxicity estimate: 5.0005 mg/kg
Method: Calculation method

**Toluene:**
Acute oral toxicity  :  LD50 (Rat): > 5.000 mg/kg

Acute inhalation toxicity  :  LC50 (Rat): 28.1 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Acute dermal toxicity: LD50 (Rabbit): > 5.000 mg/kg

Skin corrosion/irritation
Causes skin irritation.

Components:
Paraffin oil:
Species: Rabbit
Result: No skin irritation

Xylene:
Species: Rabbit
Result: Skin irritation

Flumethrin:
Result: No skin irritation

Toluene:
Species: Rabbit
Result: Skin irritation

Serious eye damage/eye irritation
Causes serious eye irritation.

Components:
Paraffin oil:
Species: Rabbit
Result: No eye irritation

Xylene:
Species: Rabbit
Result: Irritation to eyes, reversing within 21 days

Flumethrin:
Result: Mild eye irritation

Toluene:
Species: Rabbit
Method: OECD Test Guideline 405
Result: No eye irritation

Respiratory or skin sensitisation
Skin sensitisation
Not classified based on available information.
Respiratory sensitisation
Not classified based on available information.

Components:

Xylene:
Test Type: Local lymph node assay (LLNA)
Exposure routes: Skin contact
Species: Mouse
Result: negative

Toluene:
Test Type: Maximisation Test
Exposure routes: Skin contact
Species: Guinea pig
Result: negative

Germ cell mutagenicity
Not classified based on available information.

Components:

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

Test Type: Chromosome aberration test in vitro
Result: negative

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

Test Type: In vitro sister chromatid exchange assay in mammalian cells
Result: negative

Genotoxicity in vivo: Test Type: Rodent dominant lethal test (germ cell) (in vivo)
Species: Mouse
Application Route: Skin contact
Result: negative

Flumethrin:
Genotoxicity in vitro: Test Type: Microbial mutagenesis assay (Ames test)
Test system: Salmonella typhimurium
Result: equivocal

Test Type: Chromosomal aberration
Test system: Chinese hamster ovary cells
Result: positive
Remarks: Not classified due to inconclusive data.

Test Type: Chromosomal aberration
Test system: Human lymphocytes
Result: negative

Test Type: in vitro micronucleus test
Test system: Mouse
Result: negative

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

**Toluene:**

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

Test Type: Bacterial reverse mutation assay (AMES)
Result: negative

Genotoxicity in vivo: Test Type: Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis)
Species: Rat
Application Route: Intraperitoneal injection
Result: negative

Test Type: Rodent dominant lethal test (germ cell) (in vivo)
Species: Mouse
Application Route: inhalation (vapour)
Method: OECD Test Guideline 478
Result: negative

**Carcinogenicity**

Not classified based on available information.

**Components:**

**Xylene:**
Species: Rat
Application Route: Ingestion
Exposure time: 103 weeks
Result: negative

**Flumethrin:**
Species: Rat
Application Route: Oral
Exposure time: 2 Years
NOAEL: 0.5 mg/kg body weight
Result: negative

Carcinogenicity - Assessment: Weight of evidence does not support classification as a carcinogen

**Toluene:**
Species: Rat
Application Route: inhalation (vapour)  
Exposure time: 103 weeks  
Result: negative  

Species: Mouse  
Application Route: Skin contact  
Exposure time: 24 Months  
Result: negative  

Reproductive toxicity  
May damage the unborn child.

Components:

Xylene:  
Effects on fertility: Test Type: One-generation reproduction toxicity study  
Species: Rat  
Application Route: inhalation (vapour)  
Result: negative

Effects on foetal development: Test Type: Embryo-foetal development  
Species: Rat  
Application Route: inhalation (vapour)  
Result: negative

Flumethrin:  
Effects on foetal development: Test Type: Development  
Species: Rat  
Application Route: Oral  
Developmental Toxicity: NOAEL: 0,36 mg/kg body weight  
Result: Maternal toxicity observed., Reduced offspring weight gain, foetal abnormalities

Test Type: Development  
Species: Rat  
Application Route: Oral  
Developmental Toxicity: NOAEL: 0,5 mg/kg body weight  
Result: Maternal toxicity observed., Skeletal malformations, Reduced foetal weight

Test Type: Development  
Species: Rabbit  
Application Route: Oral  
Developmental Toxicity: NOAEL: 1,7 mg/kg body weight  
Result: No teratogenic potential

Reproductive toxicity - Assessment: May damage the unborn child.

Toluene:  
Effects on fertility: Test Type: Two-generation reproduction toxicity study  
Species: Rat  
Application Route: inhalation (vapour)  
Method: OECD Test Guideline 416
Result: negative

Effects on foetal development: Test Type: Embryo-foetal development
Species: Rat
Application Route: inhalation (vapour)
Result: positive

Reproductive toxicity - Assessment: Some evidence of adverse effects on development, based on animal experiments.

STOT - single exposure
May cause damage to organs.

Components:

Xylene:
Assessment: May cause respiratory irritation.

Flumethrin:
Exposure routes: Oral
Assessment: Causes damage to organs.

Toluene:
Assessment: May cause drowsiness or dizziness.

STOT - repeated exposure
May cause damage to organs through prolonged or repeated exposure.

Components:

Xylene:
Exposure routes: inhalation (vapour)
Target Organs: Auditory system
Assessment: Shown to produce significant health effects in animals at concentrations of >0.2 to 1 mg/l/6h/d.

Flumethrin:
Exposure routes: Oral
Assessment: Causes damage to organs through prolonged or repeated exposure.

Toluene:
Exposure routes: Inhalation
Target Organs: Central nervous system
Assessment: May cause damage to organs through prolonged or repeated exposure.
**Repeated dose toxicity**

**Components:**

**Paraffin oil:**
- **Species:** Rat, female
- **LOAEL:** 161 mg/kg
- **Application Route:** Ingestion
- **Exposure time:** 90 Days

**Xylene:**
- **Species:** Rat
- **LOAEL:** > 0.2 - 1 mg/l
- **Application Route:** Inhalation (vapour)
- **Exposure time:** 13 Weeks
- **Remarks:** Based on data from similar materials

**Flumethrin:**
- **Species:** Rat
- **NOAEL:** 0.7 mg/kg
- **Application Route:** Oral
- **Exposure time:** 13 Weeks
- **Target Organs:** Digestive system, Skin
- **Symptoms:** Decrease in appetite, Skin disorders

- **Species:** Dog
- **NOAEL:** 0.88 mg/kg
- **Application Route:** Oral
- **Exposure time:** 13 Weeks
- **Target Organs:** Digestive system, Hair, Skin
- **Symptoms:** Decrease in appetite, Skin disorders

**Toluene:**
- **Species:** Rat
- **LOAEL:** 1.875 mg/l
- **Application Route:** Inhalation (vapour)
- **Exposure time:** 6 Months

**Aspiration toxicity**
May be fatal if swallowed and enters airways.
Components:

Paraffin oil:
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.

Xylene:
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.

Toluene:
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.

Experience with human exposure

Components:

Toluene:
Inhalation: Target Organs: Central nervous system
Symptoms: Neurological disorders

SECTION 12: Ecological information

12.1 Toxicity

Components:

Paraffin oil:
Toxicity to fish: LL50 (Scophthalmus maximus (turbot)): > 100 mg/l
Exposure time: 96 h
Test substance: Water Accommodated Fraction
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates: EL50 (Acartia tonsa): > 100 mg/l
Exposure time: 48 h
Test substance: Water Accommodated Fraction
Remarks: Based on data from similar materials

Toxicity to algae/aquatic plants: EL50 (Skeletonema costatum (marine diatom)): > 100 mg/l
Exposure time: 72 h
Test substance: Water Accommodated Fraction
Remarks: Based on data from similar materials

NOELR (Skeletonema costatum (marine diatom)): > 1 mg/l
Exposure time: 72 h
Test substance: Water Accommodated Fraction
Remarks: Based on data from similar materials

Xylene:
Toxicity to fish: LC50 (Oncorhynchus mykiss (rainbow trout)): 13.5 mg/l
Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates: EC50 (Daphnia magna (Water flea)): > 1 - 10 mg/l
Exposure time: 24 h
Method: OECD Test Guideline 202
Remarks: Based on data from similar materials

Toxicity to algae/aquatic plants: EC50 (Skeletonema costatum (marine diatom)): 10 mg/l
Exposure time: 72 h

Toxicity to microorganisms: NOEC : > 100 mg/l
Exposure time: 3 h
Method: OECD Test Guideline 209
Remarks: Based on data from similar materials

Toxicity to fish (Chronic toxicity): NOEC: > 0,1 - < 1 mg/l
Exposure time: 35 d
Species: Danio rerio (zebra fish)
Method: OECD Test Guideline 210
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity): EL10: > 1 - 10 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Method: OECD Test Guideline 211
Remarks: Based on data from similar materials

Flumethrin:
Toxicity to fish (Chronic toxicity): NOEC: 0,046 mg/l
Exposure time: 144 h
Species: Danio rerio (zebra fish)

M-Factor (Chronic aquatic toxicity): 1

Toluene:
Toxicity to fish: LC50 (Oncorhynchus kisutch (coho salmon)): 5,5 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates: EC50 (Ceriodaphnia dubia (water flea)): 3,78 mg/l
Exposure time: 48 h

Toxicity to algae/aquatic plants: NOEC (Skeletonema costatum (marine diatom)): 10 mg/l
Exposure time: 72 h

Toxicity to microorganisms: EC50 (Nitrosomonas sp.): 84 mg/l
Exposure time: 24 h

Toxicity to fish (Chronic toxicity): NOEC: 1,39 mg/l
Exposure time: 40 d
Species: Oncorhynchus kisutch (coho salmon)

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity): NOEC: 0,74 mg/l
Exposure time: 7 d
Species: Ceriodaphnia dubia (water flea)
12.2 Persistence and degradability

**Components:**

**Xylene:**
Biodegradability: Result: Readily biodegradable.
Biodegradation: >70%
Exposure time: 28 d
Method: OECD Test Guideline 301F
Remarks: Based on data from similar materials

**Toluene:**
Biodegradability: Result: Readily biodegradable.
Biodegradation: 80%
Exposure time: 20 d

12.3 Bioaccumulative potential

**Components:**

**Paraffin oil:**
Partition coefficient: n-octanol/water: log Pow: > 4
Remarks: Calculation

**Xylene:**
Partition coefficient: n-octanol/water: log Pow: 3.16
Remarks: Calculation

**Flumethrin:**
Partition coefficient: n-octanol/water: log Pow: 6.2

**Toluene:**
Bioaccumulation: Species: Leuciscus idus (Golden orfe)
Bioconcentration factor (BCF): 90
Partition coefficient: n-octanol/water: log Pow: 2.73

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:**
Endocrine disrupting potential: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

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. Empty containers retain residue and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury and/or death. If not otherwise specified: Dispose of as unused product.

SECTION 14: Transport information

14.1 UN number

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<thead>
<tr>
<th>Code</th>
<th>Number</th>
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<tbody>
<tr>
<td>ADN</td>
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<tr>
<td>ADR</td>
<td>UN 1992</td>
</tr>
<tr>
<td>RID</td>
<td>UN 1992</td>
</tr>
<tr>
<td>IMDG</td>
<td>UN 1992</td>
</tr>
<tr>
<td>IATA</td>
<td>UN 1992</td>
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</tbody>
</table>

14.2 UN proper shipping name

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<tr>
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<tr>
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<tr>
<td>RID</td>
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<tr>
<td>IMDG</td>
<td>FLAMMABLE LIQUID, TOXIC, N.O.S. (Xylene, Flumethrin)</td>
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<tr>
<td>IATA</td>
<td>Flammable liquid, toxic, n.o.s. (Xylene, Flumethrin)</td>
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14.3 Transport hazard class(es)

<table>
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<th>Class</th>
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<td>ADN</td>
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<tr>
<td>ADR</td>
<td>3</td>
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</tbody>
</table>
SAFETY DATA SHEET

Flumethrin (1%) Formulation

RID : 3
IMDG : 3
IATA : 3

14.4 Packing group

ADN
Packing group : III
Classification Code : FT1
Hazard Identification Number : 36
Labels : 3 (6.1)

ADR
Packing group : III
Classification Code : FT1
Hazard Identification Number : 36
Labels : 3 (6.1)
Tunnel restriction code : (D/E)

RID
Packing group : III
Classification Code : FT1
Hazard Identification Number : 36
Labels : 3 (6.1)

IMDG
Packing group : III
Labels : 3 (6.1)
EmS Code : F-E, S-D

IATA (Cargo)
Packing instruction (cargo aircraft) : 366
Packing instruction (LQ) : Y343
Packing group : III
Labels : Flammable Liquids, Toxic

IATA (Passenger)
Packing instruction (passenger aircraft) : 355
Packing instruction (LQ) : Y343
Packing group : III
Labels : Flammable Liquids, Toxic

14.5 Environmental hazards

ADN
Environmentally hazardous : no

ADR
Environmentally hazardous : no

RID
Environmentally hazardous : no

IMDG
Marine pollutant : no
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.

Full text of H-Statements
H225: Highly flammable liquid and vapour.
H226: Flammable liquid and vapour.
H300: Fatal if swallowed.
H304: May be fatal if swallowed and enters airways.
H310: Fatal in contact with skin.
H312: Harmful in contact with skin.
H315: Causes skin irritation.
H319: Causes serious eye irritation.
H332: Harmful if inhaled.
H335: May cause respiratory irritation.
H336: May cause drowsiness or dizziness.
H360D: May damage the unborn child.
H361d: Suspected of damaging the unborn child.
H370: Causes damage to organs if swallowed.
H372: Causes damage to organs through prolonged or repeated exposure if swallowed.
H373: May cause damage to organs through prolonged or repeated exposure.
H410: Very toxic to aquatic life with long lasting effects.
H412: Harmful to aquatic life with long lasting effects.
H413: May cause long lasting harmful effects to aquatic life.

Full text of other abbreviations
| Acute Tox. | Acute toxicity |
| Aquatic Chronic | Long-term (chronic) aquatic hazard |
| Asp. Tox. | Aspiration hazard |
| Eye Irrit. | Eye irritation |
| Flam. Liq. | Flammable liquids |
| Repr. | Reproductive toxicity |
| Skin Irrit. | Skin irritation |
| STOT RE | Specific target organ toxicity - repeated exposure |
| STOT SE | Specific target organ toxicity - single exposure |

**2000/39/EC**

**2006/15/EC**
Europe. Indicative occupational exposure limit values

**ZA BEI**
South Africa. Hazardous Chemicals Substances Regulations, Biological Exposure Indices.

**ZA OEL**
South Africa. Hazardous Chemical Substances Regulations, Occupational Exposure Limits

| 2000/39/EC / TWA | Limit Value - eight hours |
| 2000/39/EC / STEL | Short term exposure limit |
| 2006/15/EC / TWA | Limit Value - eight hours |
| 2006/15/EC / STEL | Short term exposure limit |
| ZA OEL / TWA OEL-RL | Long term occupational exposure limits - recommended limit |
| ZA OEL / STEL OEL-RL | Short term occupational exposure limits - recommended limit |

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; AIIC - Australian Inventory of Industrial Chemicals; 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 £% response; ELx - Loading rate associated with £% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with £% 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 Dangerous Substances; 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 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; TECI - Thailand Existing Chemicals 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

Sources of key data used to compile the Safety Data Sheet:
- Internal technical data
- Data from raw material SDSs
- OECD eChem Portal search results

Classification of the mixture:

<table>
<thead>
<tr>
<th>Classification</th>
<th>Code</th>
<th>Calculation method</th>
</tr>
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<tbody>
<tr>
<td>Flam. Liq. 3</td>
<td>H226</td>
<td>Based on product data or assessment</td>
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<tr>
<td>Acute Tox. 4</td>
<td>H302</td>
<td>Calculation method</td>
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<tr>
<td>Acute Tox. 3</td>
<td>H311</td>
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<td>Skin Irrit. 2</td>
<td>H315</td>
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<td>Eye Irrit. 2</td>
<td>H319</td>
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<td>Repr. 1B</td>
<td>H360D</td>
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<td>STOT SE 2</td>
<td>H371</td>
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<td>STOT RE 2</td>
<td>H373</td>
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<td>Asp. Tox. 1</td>
<td>H304</td>
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<tr>
<td>Aquatic Chronic 3</td>
<td>H412</td>
<td>Calculation method</td>
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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.

ZA / EN