SAFETY DATA SHEET
according to GB/T 16483 and GB/T 17519

Deltamethrin (2.5%) Formulation

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Deltamethrin (2.5%) Formulation

Manufacturer or supplier’s details
Company : MSD
Address : No. 485 Jing Tai Road
          Pu Tuo District - Shanghai - China 200331
Telephone : 908-740-4000
Emergency telephone number : 86-571-87268110
E-mail address : EHSDATASTEWARD@msd.com

Recommended use of the chemical and restrictions on use
Recommended use : Veterinary product

2. HAZARDS IDENTIFICATION

Emergency Overview
Appearance : liquid
Colour : yellow
Odour : No data available

Flammable liquid and vapour. May be harmful if swallowed. May be fatal if swallowed and enters airways. Causes skin irritation. May cause an allergic skin reaction. Causes serious eye damage. May cause drowsiness or dizziness. May cause genetic defects. May cause cancer. Suspected of damaging fertility or the unborn child. May cause damage to organs through prolonged or repeated exposure. Very toxic to aquatic life with long lasting effects.

GHS Classification
Flammable liquids : Category 3
Acute toxicity (Oral) : Category 5
Skin corrosion/irritation : Category 2
Serious eye damage/eye irritation : Category 1
Skin sensitisation : Category 1
Germ cell mutagenicity : Category 1B
Carcinogenicity : Category 1B
Reproductive toxicity : Category 2
Specific target organ toxicity - : Category 3
Deltamethrin (2.5%) Formulation

Version: 2.0  
Revision Date: 2020/03/23  
SDS Number: 2656110-00006  
Date of last issue: 2019/09/13  
Date of first issue: 2018/03/29

single exposure

Specific target organ toxicity - repeated exposure: Category 2

Aspiration hazard: Category 1

Short-term (acute) aquatic hazard: Category 1

Long-term (chronic) aquatic hazard: Category 1

GHS label elements

Hazard pictograms:

Signal word: Danger

Hazard statements:

H226 Flammable liquid and vapour.
H303 May be harmful if swallowed.
H304 May be fatal if swallowed and enters airways.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H336 May cause drowsiness or dizziness.
H340 May cause genetic defects.
H350 May cause cancer.
H361 Suspected of damaging fertility or the unborn child.
H373 May cause damage to organs through prolonged or repeated exposure.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements:

Prevention:
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P210 Keep away from heat/ sparks/ open flames/ hot surfaces.
No smoking.
P233 Keep container tightly closed.
P241 Use explosion-proof electrical/ ventilating/ lighting equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P260 Do not breathe mist or vapours.
P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P272 Contaminated work clothing should not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protec-
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Response:
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.
P312 Call a POISON CENTER/ doctor if you feel unwell.
P331 Do NOT induce vomiting.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P362 + P364 Take off contaminated clothing and wash it before reuse.
P391 Collect spillage.

Storage:
P403 + P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.

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

Physical and chemical hazards
Flammable liquid and vapour.

Health hazards
May be harmful if swallowed. Causes skin irritation. Causes serious eye damage. May cause an allergic skin reaction. May cause genetic defects. May cause cancer. Suspected of damaging fertility or the unborn child. May cause drowsiness or dizziness. May cause damage to organs through prolonged or repeated exposure. May be fatal if swallowed and enters airways.

Environmental hazards
Very toxic to aquatic life. Very toxic to aquatic life with long lasting effects.

Other hazards which do not result in classification
Vapours may form explosive mixture with air.

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Substance / Mixture</th>
<th>Components</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Chemical name</td>
</tr>
<tr>
<td></td>
<td>Solvent naphtha (petroleum), light aromatic</td>
</tr>
<tr>
<td></td>
<td>Benzenesulfonic acid, C10-13-alkyl derivs.,</td>
</tr>
<tr>
<td></td>
<td>calcium salts</td>
</tr>
<tr>
<td></td>
<td>4-Nonylphenol, branched, ethoxylated</td>
</tr>
</tbody>
</table>
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4. 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.

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 immediately.

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.

Most important symptoms and effects, both acute and delayed: May be harmful if swallowed. May be fatal if swallowed and enters airways. Causes skin irritation. May cause an allergic skin reaction. Causes serious eye damage. May cause drowsiness or dizziness. May cause genetic defects. May cause cancer. Suspected of damaging fertility or the unborn child. May cause damage to organs through prolonged or repeated exposure.

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).

Notes to physician: Treat symptomatically and supportively.

5. FIREFIGHTING MEASURES

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

Unsuitable extinguishing media: High volume water jet

Specific hazards during firefighting: Do not use a solid water stream as it may scatter and spread fire.
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6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Remove all sources of ignition. Use personal protective equipment. Follow safe handling advice and personal protective equipment recommendations.

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.

Methods and materials for containment and 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.

7. HANDLING AND STORAGE

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

Local/Total ventilation: If sufficient ventilation is unavailable, use with local exhaust ventilation. If advised by assessment of the local exposure potential, use only in an area equipped with explosion-proof exhaust ventilation.

Advice on safe handling: Do not get on skin or clothing. Do not breathe vapours or spray mist. Do not swallow. Do not get in eyes. 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 and sources of ignition. Take precautionary measures against static discharges. Take care to prevent spills, waste and minimize release to the environment.

Avoidance of contact: Oxidizing agents

Storage:

Materials to avoid: Do not store with the following product types: Self-reactive substances and mixtures Organic peroxides Oxidizing agents Flammable gases Pyrophoric liquids Pyrophoric solids Self-heating substances and mixtures Poisonous gases Explosives

Packaging material: Unsuitable material: None known.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters / Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solvent naphtha (petroleum), light aromatic</td>
<td>64742-95-6</td>
<td>TWA</td>
<td>200 mg/m³ (total hydrocarbon vapor)</td>
<td>ACGIH</td>
</tr>
<tr>
<td>Deltamethrin (ISO)</td>
<td>52918-63-5</td>
<td>PC-TWA</td>
<td>0.03 mg/m³</td>
<td>GBZ 2.1-2007</td>
</tr>
</tbody>
</table>
Deltamethrin (2.5%) Formulation

Engineering measures: Use appropriate engineering controls and manufacturing technologies to control airborne concentrations (e.g., dripless 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.

Personal protective equipment

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

Eye/face 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.

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.

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.

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.

9. PHYSICAL AND CHEMICAL PROPERTIES
## Deltamethrin (2.5%) Formulation

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Appearance</strong></td>
<td>liquid</td>
</tr>
<tr>
<td><strong>Colour</strong></td>
<td>yellow</td>
</tr>
<tr>
<td><strong>Odour</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Odour Threshold</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>pH</strong></td>
<td>4 - 5</td>
</tr>
<tr>
<td><strong>Melting point/freezing point</strong></td>
<td>&lt; -5 °C</td>
</tr>
<tr>
<td><strong>Initial boiling point and boiling range</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Flash point</strong></td>
<td>40 °C</td>
</tr>
<tr>
<td><strong>Evaporation rate</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Flammability (solid, gas)</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Flammability (liquids)</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Upper explosion limit / Upper flammability limit</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Lower explosion limit / Lower flammability limit</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Vapour pressure</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Relative vapour density</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Relative density</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Density</strong></td>
<td>0.917 - 0.919 g/cm³</td>
</tr>
<tr>
<td><strong>Solubility(ies)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Water solubility</strong></td>
<td>partly miscible</td>
</tr>
<tr>
<td><strong>Partition coefficient: n-octanol/water</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Auto-ignition temperature</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Decomposition temperature</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Viscosity</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Viscosity, kinematic</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Explosive properties</strong></td>
<td>Not explosive</td>
</tr>
<tr>
<td><strong>Oxidizing properties</strong></td>
<td>The substance or mixture is not classified as oxidizing.</td>
</tr>
</tbody>
</table>
Deltamethrin (2.5%) Formulation

Molecular weight : No data available
Particle size : Not applicable

10. STABILITY AND REACTIVITY

Reactivity : Not classified as a reactivity hazard.
Chemical stability : Stable under normal conditions.
Possibility of hazardous reactions
Vapours may form explosive mixture with air.
Can react with strong oxidizing agents.

Conditions to avoid : Heat, flames and sparks.
Incompatible materials : Oxidizing agents
Hazardous decomposition products : No hazardous decomposition products are known.

11. TOXICOLOGICAL INFORMATION

Exposure routes : Inhalation
Skin contact
Ingestion
Eye contact

Acute toxicity
May be harmful if swallowed.

Product:
Acute oral toxicity : Acute toxicity estimate: 2,594 mg/kg
Method: Calculation method

Acute inhalation toxicity : Acute toxicity estimate: > 10 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: Calculation method

Components:

Solvent naphtha (petroleum), light aromatic:
Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 5.61 mg/l
Exposure time: 4 h
Test atmosphere: vapour

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg

Benzenesulfonic acid, C10-13-alkyl derivs., calcium salts:
Acute oral toxicity : LD50 (Rat): 4,445 mg/kg

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg
Method: OECD Test Guideline 402
### Deltamethrin (2.5%) Formulation

<table>
<thead>
<tr>
<th>Version</th>
<th>Revision Date</th>
<th>SDS Number</th>
<th>Date of last issue</th>
<th>Date of first issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0</td>
<td>2020/03/23</td>
<td>2656110-00006</td>
<td>2019/09/13</td>
<td>2018/03/29</td>
</tr>
</tbody>
</table>

Remarks: Based on data from similar materials

### 4-Nonylphenol, branched, ethoxylated:

- **Acute oral toxicity**: LD50 (Rat): > 2,000 mg/kg

### Deltamethrin (ISO):

- **Acute oral toxicity**: LD50 (Rat): 66.7 mg/kg
  - LD50 (Rat): 9 - 139 mg/kg
  - LD50 (Mouse): 19 - 34 mg/kg
- **Acute inhalation toxicity**: LC50 (Rat): 0.8 mg/l
  - Exposure time: 2 h
  - Test atmosphere: dust/mist
- **Acute dermal toxicity**: LD50 (Rabbit): 2,000 mg/kg
  - LD50 (Rat): > 800 mg/kg
- **Acute toxicity (other routes of administration)**: LD50 (Rat): 2.5 mg/kg
  - Application Route: Intravenous
  - LD50 (Mouse): 10 mg/kg
  - Application Route: Intraperitoneal

### 2,6-Di-tert-butyl-p-cresol:

- **Acute oral toxicity**: LD50 (Rat): > 6,000 mg/kg
  - Method: OECD Test Guideline 401
- **Acute dermal toxicity**: LD50 (Rat): > 2,000 mg/kg
  - Method: OECD Test Guideline 402
  - Assessment: The substance or mixture has no acute dermal toxicity

Skin corrosion/irritation
Causes skin irritation.

### Components:

#### Solvent naphtha (petroleum), light aromatic:
- **Species**: Rabbit
- **Method**: OECD Test Guideline 404
- **Result**: Skin irritation

#### Benzenesulfonic acid, C10-13-alkyl derivs., calcium salts:
- **Species**: Rabbit
- **Method**: OECD Test Guideline 404
- **Result**: Skin irritation
Deltamethrin (2.5%) Formulation

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**4-Nonylphenol, branched, ethoxylated:**
- **Species:** Rabbit
- **Method:** OECD Test Guideline 404
- **Result:** No skin irritation
- **Remarks:** Based on data from similar materials

**Deltamethrin (ISO):**
- **Species:** Rabbit
- **Result:** No skin irritation

**2,6-Di-tert-butyl-p-cresol:**
- **Species:** Rabbit
- **Method:** OECD Test Guideline 404
- **Result:** No skin irritation
- **Remarks:** Based on data from similar materials

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

**Components:**

**Solvent naphtha (petroleum), light aromatic:**
- **Species:** Rabbit
- **Method:** OECD Test Guideline 405
- **Result:** No eye irritation

**Benzenesulfonic acid, C10-13-alkyl derivs., calcium salts:**
- **Species:** Rabbit
- **Method:** OECD Test Guideline 405
- **Result:** Irreversible effects on the eye

**4-Nonylphenol, branched, ethoxylated:**
- **Species:** Rabbit
- **Method:** OECD Test Guideline 405
- **Result:** No eye irritation
- **Remarks:** Based on data from similar materials

**Deltamethrin (ISO):**
- **Species:** Rabbit
- **Result:** Moderate eye irritation

**2,6-Di-tert-butyl-p-cresol:**
- **Species:** Rabbit
- **Method:** OECD Test Guideline 405
- **Result:** No eye irritation
- **Remarks:** Based on data from similar materials
Respiratory or skin sensitisation

Skin sensitisation
May cause an allergic skin reaction.

Respiratory sensitisation
Not classified based on available information.

Components:

**Solvent naphtha (petroleum), light aromatic:**

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Buehler Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure routes</td>
<td>Skin contact</td>
</tr>
<tr>
<td>Species</td>
<td>Guinea pig</td>
</tr>
<tr>
<td>Result</td>
<td>negative</td>
</tr>
</tbody>
</table>

**Benzenesulfonic acid, C10-13-alkyl derivs., calcium salts:**

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Magnusson-Kligman-Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure routes</td>
<td>Skin contact</td>
</tr>
<tr>
<td>Species</td>
<td>Guinea pig</td>
</tr>
<tr>
<td>Method</td>
<td>OECD Test Guideline 406</td>
</tr>
<tr>
<td>Remarks</td>
<td>Based on data from similar materials</td>
</tr>
</tbody>
</table>

**4-Nonylphenol, branched, ethoxylated:**

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Maximisation Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure routes</td>
<td>Skin contact</td>
</tr>
<tr>
<td>Species</td>
<td>Guinea pig</td>
</tr>
<tr>
<td>Result</td>
<td>negative</td>
</tr>
<tr>
<td>Remarks</td>
<td>Based on data from similar materials</td>
</tr>
</tbody>
</table>

**Deltamethrin (ISO):**

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Maximisation Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure routes</td>
<td>Dermal</td>
</tr>
<tr>
<td>Species</td>
<td>Guinea pig</td>
</tr>
<tr>
<td>Result</td>
<td>negative</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Human repeat insult patch test (HRIPT)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dermal</td>
</tr>
<tr>
<td></td>
<td>Humans</td>
</tr>
<tr>
<td></td>
<td>positive</td>
</tr>
</tbody>
</table>

**2,6-Di-tert-butyl-p-cresol:**

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Human repeat insult patch test (HRIPT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure routes</td>
<td>Skin contact</td>
</tr>
<tr>
<td>Species</td>
<td>Humans</td>
</tr>
<tr>
<td>Result</td>
<td>negative</td>
</tr>
</tbody>
</table>

Germ cell mutagenicity
May cause genetic defects.
Components:

**Solvent naphtha (petroleum), light aromatic:**
- **Genotoxicity in vitro:** Test Type: Bacterial reverse mutation assay (AMES)  
  Result: negative
  Test Type: In vitro mammalian cell gene mutation test  
  Result: positive
- **Genotoxicity in vivo:** Test Type: Sister chromatid exchange analysis in spermatagonia  
  Species: Mouse  
  Application Route: Intraperitoneal injection  
  Result: positive
- **Germ cell mutagenicity - Assessment:** Positive result(s) from in vivo heritable germ cell mutagenicity tests in mammals

**Benzenesulfonic acid, C10-13-alkyl derivs., calcium salts:**
- **Genotoxicity in vitro:** Test Type: Bacterial reverse mutation assay (AMES)  
  Result: negative  
  Remarks: Based on data from similar materials

**4-Nonylphenol, branched, ethoxylated:**
- **Genotoxicity in vitro:** Test Type: Bacterial reverse mutation assay (AMES)  
  Method: OECD Test Guideline 471  
  Result: negative  
  Remarks: Based on data from similar materials
  Test Type: Chromosome aberration test in vitro  
  Method: OECD Test Guideline 473  
  Result: negative  
  Remarks: Based on data from similar materials
  Test Type: In vitro mammalian cell gene mutation test  
  Method: OECD Test Guideline 476  
  Result: negative  
  Remarks: Based on data from similar materials

**Deltamethrin (ISO):**
- **Genotoxicity in vitro:** Test Type: Bacterial reverse mutation assay (AMES)  
  Result: negative
  Test Type: DNA Repair  
  Test system: Escherichia coli  
  Result: negative
  Test Type: Chromosomal aberration  
  Test system: Chinese hamster ovary cells  
  Result: negative
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Genotoxicity in vivo:
- Test Type: Micronucleus test
  - Species: Mouse
  - Application Route: Oral
  - Result: negative
- Test Type: dominant lethal test
  - Species: Mouse
  - Application Route: Oral
  - Result: negative
- Test Type: sister chromatid exchange assay
  - Species: Mouse
  - Cell type: Bone marrow
  - Application Route: Oral
  - Result: negative

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

2,6-Di-tert-butyl-p-cresol:
- Genotoxicity in vitro:
  - 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: Ingestion
    - Result: negative

Carcinogenicity
May cause cancer.

Components:

Solvent naphtha (petroleum), light aromatic:
- Species: Mouse
- Application Route: Skin contact
- Exposure time: 2 Years
- Result: positive

Carcinogenicity - Assessment:
Sufficient evidence of carcinogenicity in animal experiments

Deltamethrin (ISO):
- Species: Mouse, male and female
**Deltamethrin (2.5%) Formulation**

**Application Route**: oral (feed)

**Exposure time**: 104 weeks

**NOAEL**: 8 mg/kg body weight

**LOAEL**: 4 mg/kg body weight

**Result**: positive

**Target Organs**: Lymph nodes

**Species**: Rat, male and female

**Application Route**: oral (feed)

**Exposure time**: 2 Years

**Result**: negative

**Species**: Dog, male and female

**Application Route**: oral (feed)

**Exposure time**: 2 Years

**NOAEL**: 1 mg/kg body weight

**Result**: negative

**2,6-Di-tert-butyl-p-cresol:**

**Species**: Rat

**Application Route**: Ingestion

**Exposure time**: 22 Months

**Result**: negative

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**Reproductive toxicity**

Suspected of damaging fertility or the unborn child.

**Components:**

**Solvent naphtha (petroleum), light aromatic:**

Effects on fertility: Test Type: Reproduction/Developmental toxicity screening test

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

**4-Nonylphenol, branched, ethoxylated:**

Reproductive toxicity - Assessment:

Some evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments.

**Deltamethrin (ISO):**

Effects on fertility:

Test Type: Three-generation reproduction toxicity study

Species: Rat

Application Route: oral (feed)

Early Embryonic Development: NOAEL: 50 mg/kg body weight
Deltamethrin (2.5%) Formulation

Symptoms: No effects on fertility, Embryo-foetal toxicity
Remarks: Significant toxicity observed in testing

Test Type: Two-generation reproduction toxicity study
Species: Rat
Application Route: Oral
Early Embryonic Development: LOAEL: 84 - 149 mg/kg body weight
Symptoms: No effects on fertility, Embryo-foetal toxicity

Test Type: Fertility
Species: Rat, male
Application Route: Oral
Fertility: LOAEL: 1 mg/kg body weight
Symptoms: Effects on fertility
Target Organs: Testes

Effects on foetal development:

Test Type: Development
Species: Mouse
Application Route: oral (gavage)
Developmental Toxicity: LOAEL: 1 mg/kg body weight
Result: Skeletal malformations
Remarks: Maternal toxicity observed.

Test Type: Development
Species: Rat, female
Developmental Toxicity: NOAEL: 10 mg/kg body weight
Symptoms: No effects on foetal development

Test Type: Development
Species: Rabbit, female
Application Route: oral (gavage)
Developmental Toxicity: NOAEL: 16 mg/kg body weight
Symptoms: No effects on foetal development

Reproductive toxicity - Assessment:

Some evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments.

2,6-Di-tert-butyl-p-cresol:

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
May cause drowsiness or dizziness.
Deltamethrin (2.5%) Formulation

Components:

**Solvent naphtha (petroleum), light aromatic:**
- Assessment: May cause drowsiness or dizziness.

**Deltamethrin (ISO):**
- Assessment: May cause respiratory irritation.

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

Components:

**Deltamethrin (ISO):**
- Exposure routes: Ingestion
- Target Organs: Central nervous system, Immune system
- Assessment: Causes damage to organs through prolonged or repeated exposure.

**Exposure routes:** inhalation (dust/mist/fume)
- Target Organs: Central nervous system
- Assessment: Causes damage to organs through prolonged or repeated exposure.

**2,6-Di-tert-butyl-p-cresol:**
- Assessment: No significant health effects observed in animals at concentrations of 100 mg/kg bw or less.

Repeated dose toxicity

Components:

**Solvent naphtha (petroleum), light aromatic:**
- Species: Rat
- LOAEL: 500 mg/kg
- Application Route: Ingestion
- Exposure time: 28 Days

**4-Nonylphenol, branched, ethoxylated:**
- Species: Rat
- LOAEL: 150 mg/kg
- Application Route: Ingestion
- Exposure time: 90 Days
- Method: OPPTS 870.3100
- Remarks: Based on data from similar materials

**Deltamethrin (ISO):**
- Species: Rat, male and female
- NOAEL: 1 mg/kg
- LOAEL: 2.5 mg/kg
Deltamethrin (2.5%) Formulation

Application Route: Oral
Exposure time: 13 Weeks
Target Organs: Nervous system
Symptoms: hyperexcitability

Species: Rat
LOAEL: 3 mg/m³
Application Route: inhalation (dust/mist/fume)
Test atmosphere: dust/mist
Exposure time: 2 wk / 5 d/wk / 6 h/d
Symptoms: Local irritation, respiratory tract irritation

Species: Dog
NOAEL: 0.1 mg/kg
LOAEL: 1 mg/kg
Application Route: Oral
Exposure time: 13 Weeks
Target Organs: Nervous system
Symptoms: Dilatation of the pupil, Vomiting, Tremors, Diarrhoea, Salivation

Species: Rat
NOAEL: 14 mg/kg
LOAEL: 54 mg/kg
Application Route: Oral
Exposure time: 91 d
Target Organs: Nervous system

Species: Mouse
LOAEL: 6 mg/kg
Application Route: Oral
Exposure time: 12 Weeks
Target Organs: Immune system
Symptoms: immune system effects

2,6-Di-tert-butyl-p-cresol:
Species: Rat
NOAEL: 25 mg/kg
Application Route: Ingestion
Exposure time: 22 Months

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.
# SAFETY DATA SHEET

according to GB/T 16483 and GB/T 17519

## Deltamethrin (2.5%) Formulation

**Version** 2.0  
**Revision Date:** 2020/03/23  
**SDS Number:** 2656110-00006  
**Date of last issue:** 2019/09/13  
**Date of first issue:** 2018/03/29

### Components:

**Solvent naphtha (petroleum), light aromatic:**
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:**

**Deltamethrin (ISO):**

<table>
<thead>
<tr>
<th>Exposure Type</th>
<th>Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation</td>
<td>Respiratory tract irritation, Dizziness, Sweating, Headache, Nausea, Vomiting, anorexia, Fatigue, tingling, Palpitation, Blurred vision, muscle twitching</td>
</tr>
<tr>
<td>Skin contact</td>
<td>Skin irritation, Erythema, pruritis, Headache, Nausea, Vomiting, Dizziness, tingling, Sweating, muscle twitching, Blurred vision, Fatigue, anorexia, Allergic reactions</td>
</tr>
<tr>
<td>Ingestion</td>
<td>Symptoms: muscle pain, Small pupils</td>
</tr>
</tbody>
</table>

### 12. ECOLOGICAL INFORMATION

#### Ecotoxicity

**Components:**

**Solvent naphtha (petroleum), light aromatic:**

<table>
<thead>
<tr>
<th>Toxicity Type</th>
<th>LC50 (Pimephales promelas (fathead minnow))</th>
<th>Exposure time</th>
<th>Test substance</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicity to fish</td>
<td>8.2 mg/l</td>
<td>96 h</td>
<td>Water Accommodated Fraction</td>
<td>OECD Test Guideline 202</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Toxicity Type</th>
<th>EL50 (Daphnia magna (Water flea))</th>
<th>Exposure time</th>
<th>Test substance</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicity to daphnia and other</td>
<td>4.5 mg/l</td>
<td>48 h</td>
<td>Water Accommodated Fraction</td>
<td>OECD Test Guideline 202</td>
</tr>
<tr>
<td>aquatic invertebrates</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Toxicity Type</th>
<th>EL50 (Pseudokirchneriella subcapitata (microalgae))</th>
<th>Exposure time</th>
<th>Test substance</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicity to algae/aquatic plants</td>
<td>3.1 mg/l</td>
<td>96 h</td>
<td>Water Accommodated Fraction</td>
<td>OECD Test Guideline 201</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Toxicity Type</th>
<th>NOELR (Pseudokirchneriella subcapitata (microalgae))</th>
<th>Exposure time</th>
<th>Test substance</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic toxicity</td>
<td>0.5 mg/l</td>
<td>96 h</td>
<td>Water Accommodated Fraction</td>
<td>OECD Test Guideline 201</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Toxicity Type</th>
<th>NOELR (Daphnia magna (Water flea))</th>
<th>Exposure time</th>
<th>Test substance</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicity to daphnia and other</td>
<td>2.6 mg/l</td>
<td>21 d</td>
<td>Water Accommodated Fraction</td>
<td>OECD Test Guideline 211</td>
</tr>
<tr>
<td>aquatic invertebrates (Chronic toxicity)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Benzenesulfonic acid, C10-13-alkyl derivs., calcium salts:**

<table>
<thead>
<tr>
<th>Toxicity Type</th>
<th>LC50: &gt; 1 - &lt; 10 mg/l</th>
</tr>
</thead>
</table>
# Deltamethrin (2.5%) Formulation

<table>
<thead>
<tr>
<th>Version</th>
<th>Revision Date</th>
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<th>Date of last issue</th>
<th>Date of first issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0</td>
<td>2020/03/23</td>
<td>2656110-00006</td>
<td>2019/09/13</td>
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</tr>
</tbody>
</table>

**Exposure time:** 96 h  
**Method:** OECD Test Guideline 203

**Toxicity to daphnia and other aquatic invertebrates:**  
EC50 (Daphnia magna (Water flea)): 2.9 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202  
Remarks: Based on data from similar materials

**Toxicity to algae/aquatic plants:**  
ErC50 (Pseudokirchneriella subcapitata (green algae)): 29 mg/l  
Exposure time: 96 h  
Remarks: Based on data from similar materials  
NOEC (Pseudokirchneriella subcapitata (green algae)): 0.5 mg/l  
Exposure time: 96 h  
Remarks: Based on data from similar materials

**Toxicity to fish (Chronic toxicity):**  
NOEC (Oncorhynchus mykiss (rainbow trout)): 0.23 mg/l  
Exposure time: 72 d  
Remarks: Based on data from similar materials

**Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity):**  
NOEC (Daphnia magna (Water flea)): 1.18 mg/l  
Exposure time: 21 d  
Remarks: Based on data from similar materials

**4-Nonylphenol, branched, ethoxylated:**

**Toxicity to fish:**  
LC50 (Oryzias latipes (Orange-red killifish)): 8.2 mg/l  
Exposure time: 96 h

**Deltamethrin (ISO):**

**Toxicity to fish:**  
LC50 (Cyprinodon variegatus (sheepshead minnow)): 0.00048 mg/l  
Exposure time: 96 h  
LC50 (Oncorhynchus mykiss (rainbow trout)): 0.00039 mg/l  
Exposure time: 96 h

**Toxicity to daphnia and other aquatic invertebrates:**  
EC50 (Mysidopsis bahia (opossum shrimp)): 0.0037 µg/l  
Exposure time: 48 h  
EC50 (Daphnia magna (Water flea)): 0.0035 mg/l  
Exposure time: 48 h  
LC50 (Gammarus fasciatus (freshwater shrimp)): 0.0003 µg/l  
Exposure time: 96 h

**Toxicity to algae/aquatic plants:**  
EC50 (Pseudokirchneriella subcapitata (green algae)): > 9.1 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201  
Remarks: No toxicity at the limit of solubility
Deltamethrin (2.5%) Formulation

M-Factor (Acute aquatic toxicity)  :  1,000,000
Toxicity to fish (Chronic toxicity)  :  NOEC (Pimephales promelas (fathead minnow)): 0.000022 mg/l
                                      Exposure time: 36 d
                                   NOEC (Pimephales promelas (fathead minnow)): 0.000017 mg/l
                                      Exposure time: 260 d
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)  :  NOEC (Daphnia magna (Water flea)): 0.0041 µg/l
                                          Exposure time: 21 d
M-Factor (Chronic aquatic toxicity)  :  1,000,000

2,6-Di-tert-butyl-p-cresol:
Toxicity to fish  :  LC50 (Danio rerio (zebra fish)): > 0.57 mg/l
                     Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates  :  EC50 (Daphnia magna (Water flea)): 0.48 mg/l
                                          Exposure time: 48 h
                                          Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants  :  ErC50 (Pseudokirchneriella subcapitata (green algae)): > 0.24 mg/l
                                          Exposure time: 72 h
                                          Method: OECD Test Guideline 201
                                   NOEC (Pseudokirchneriella subcapitata (green algae)): 0.24 mg/l
                                          Exposure time: 72 h
                                          Method: OECD Test Guideline 201
M-Factor (Acute aquatic toxicity)  :  1
Toxicity to fish (Chronic toxicity)  :  NOEC (Oryzias latipes (Japanese medaka)): 0.053 mg/l
                                          Exposure time: 30 d
                                          Method: OECD Test Guideline 210
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)  :  NOEC (Daphnia magna (Water flea)): 0.316 mg/l
                                          Exposure time: 21 d
M-Factor (Chronic aquatic toxicity)  :  1
Toxicity to microorganisms  :  EC50: > 10,000 mg/l
                                          Exposure time: 3 h
                                          Method: OECD Test Guideline 209
Persistence and degradability

**Components:**

**Solvent naphtha (petroleum), light aromatic:**
- Biodegradability: Result: Inherently biodegradable.
  - Biodegradation: 94 %
  - Exposure time: 25 d

**Benzenesulfonic acid, C10-13-alkyl derivs., calcium salts:**
- Biodegradability: Result: Readily biodegradable.
  - Biodegradation: 100 %
  - Exposure time: 28 d
  - Method: OECD Test Guideline 301B

**4-Nonylphenol, branched, ethoxylated:**
- Biodegradability: Result: Not readily biodegradable.

**Deltamethrin (ISO):**
- Stability in water: Hydrolysis: 0 %(30 d)

**2,6-Di-tert-butyl-p-cresol:**
- Biodegradability: Result: Not readily biodegradable.
  - Biodegradation: 4.5 %
  - Exposure time: 28 d
  - Method: OECD Test Guideline 301C

Bioaccumulative potential

**Components:**

**Benzenesulfonic acid, C10-13-alkyl derivs., calcium salts:**
- Partition coefficient: n-octanol/water: log Pow: 2.89

**4-Nonylphenol, branched, ethoxylated:**
- Bioaccumulation: Species: Fish
  - Bioconcentration factor (BCF): < 100
  - Remarks: Based on data from similar materials

**Deltamethrin (ISO):**
- Bioaccumulation: Species: Lepomis macrochirus (Bluegill sunfish)
  - Bioconcentration factor (BCF): 1,800
- Partition coefficient: n-octanol/water: log Pow: 4.6

**2,6-Di-tert-butyl-p-cresol:**
- Bioaccumulation: Species: Cyprinus carpio (Carp)
  - Bioconcentration factor (BCF): 330 - 1,800
Deltamethrin (2.5%) Formulation

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<thead>
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</tr>
</tbody>
</table>

Partition coefficient: n-octanol/water

Mobility in soil

Components:

Deltamethrin (ISO):

Distribution among environmental compartments

: log Koc: 7.2

Other adverse effects

No data available

13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : Dispose of in accordance with local regulations.
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.

14. TRANSPORT INFORMATION

International Regulations

UNRTDG

UN number : UN 3295
Proper shipping name : HYDROCARBONS, LIQUID, N.O.S.
Class : 3
Packing group : III
Labels : 3

IATA-DGR

UN/ID No. : UN 3295
Proper shipping name : Hydrocarbons, liquid, n.o.s.
Class : 3
Packing group : III
Labels : Flammable Liquids
Packing instruction (cargo aircraft) : 366
Packing instruction (passenger aircraft) : 355

IMDG-Code

UN number : UN 3295
Proper shipping name : HYDROCARBONS, LIQUID, N.O.S. (Deltamethrin (ISO), 2,6-Di-tert-butyl-p-cresol)
Class : 3
Packing group : III
Labels : 3
SAFETY DATA SHEET
according to GB/T 16483 and GB/T 17519

Deltamethrin (2.5%) Formulation

Version 2.0  Revision Date: 2020/03/23  SDS Number: 2656110-00006  Date of last issue: 2019/09/13

Date of first issue: 2018/03/29

EmS Code: F-E, S-D
Marine pollutant: yes

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable for product as supplied.

National Regulations

GB 6944/12268
UN number: UN 3295
Proper shipping name: HYDROCARBONS, LIQUID, N.O.S.
Class: 3
Packing group: III
Labels: 3

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.

15. REGULATORY INFORMATION

National regulatory information
Law on the Prevention and Control of Occupational Diseases

Regulations on Safety Management of Hazardous Chemicals
Catalogue of Hazardous Chemicals: Listed

Identification of Major Hazard Installations for Hazardous Chemicals (GB 18218)
No. / Code Chemical name / Category Threshold quantity
W5.4 Flammable liquids 5,000 t

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

16. OTHER INFORMATION

Further information

Items where changes have been made to the previous version are highlighted in the body of this document by two vertical lines.

Date format: yyyy/mm/dd

24 / 25
Deltamethrin (2.5%) Formulation

Full text of other abbreviations
ACGIH : USA, ACGIH Threshold Limit Values (TLV)

AICCS - Australian Inventory of Chemical Substances; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); 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; ERG - Emergency Response Guide; 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; 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; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; 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; SDAT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; 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; WHMIS - Workplace Hazardous Materials Information System

Disclaimer
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.

CN / EN