1. PRODUCT AND COMPANY IDENTIFICATION

Product name: Desloratadine / Pseudoephedrine Formulation

Manufacturer or supplier’s details
Company: MSD
Address: JL Raya Pandaan KM. 48
Pandaan, Jawa Timur - Indonesia
Telephone: 908-740-4000
Emergency telephone number: 1-908-423-6000
E-mail address: EHSDATASTEWARD@msd.com
Telefax: 908-735-1496

Recommended use of the chemical and restrictions on use
Recommended use: Pharmaceutical

2. HAZARDS IDENTIFICATION

GHS Classification
Specific target organ toxicity - repeated exposure (Oral): Category 1 (Central nervous system)
Specific target organ toxicity - repeated exposure (Inhalation): Category 1 (Cardio-vascular system)

GHS label elements
Hazard pictograms:
Signal word: Danger
Hazard statements: H372 Causes damage to organs (Central nervous system) through prolonged or repeated exposure if swallowed.
H372 Causes damage to organs (Cardio-vascular system) through prolonged or repeated exposure if inhaled.
Precautionary statements:
**Prevention:**
P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
**Response:**
P314 Get medical advice/ attention if you feel unwell.
Disposal:
P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards which do not result in classification
None known.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

**Substance / Mixture**: Mixture

**Components**

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cellulose</td>
<td>9004-34-6</td>
<td>&gt;= 30 - &lt; 60</td>
</tr>
<tr>
<td>Bis[(S-(R*,R*)]-{(β-hydroxy-α-methylphenethyl)methylammonium] sulphate</td>
<td>7460-12-0</td>
<td>&gt;= 10 - &lt; 30</td>
</tr>
<tr>
<td>Disodium EDTA, dihydrate</td>
<td>6381-92-6</td>
<td>&lt; 10</td>
</tr>
<tr>
<td>Citric acid</td>
<td>77-92-9</td>
<td>&lt; 10</td>
</tr>
<tr>
<td>Desloratadine</td>
<td>100643-71-8</td>
<td>&gt;= 0.25 - &lt; 1</td>
</tr>
</tbody>
</table>

### 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 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. Get medical attention. Rinse mouth thoroughly with water.

**Most important symptoms and effects, both acute and delayed**: Causes damage to organs through prolonged or repeated exposure if swallowed. Causes damage to organs through prolonged or repeated exposure if inhaled.

**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 : None known.  

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

Hazardous combustion products : Carbon oxides  
Nitrogen oxides (NOx)  
Metal oxides  

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.  

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

6. ACCIDENTAL RELEASE MEASURES  

Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.  
Follow safe handling advice (see section 7) and personal protective equipment recommendations (see section 8).  

Environmental precautions : Avoid release to the environment.  
Prevent further leakage or spillage if safe to do so.  
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 : Sweep up or vacuum up spillage and collect in suitable container for disposal.  
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  

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 breathe dust, fume, gas, mist, vapours or spray.  
Do not swallow.  
Avoid contact with eyes.  
Avoid prolonged or repeated contact with skin.  
Wash skin thoroughly after handling.  
Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment.  
Do not eat, drink or smoke when using this product.
Take care to prevent spills, waste and minimize release to the environment.

Conditions for safe storage:
- Keep in properly labelled containers.
- Store in accordance with the particular national regulations.

Materials to avoid:
- Do not store with the following product types:
  - Strong oxidizing agents

### 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>Cellulose</td>
<td>9004-34-6</td>
<td>TWA</td>
<td>10 mg/m³</td>
<td>ACGIH</td>
</tr>
<tr>
<td>Bis([S-(R*,R*)]-[β-hydroxy-α-methylphenethyl)methylammonium] sulphate</td>
<td>7460-12-0</td>
<td>TWA</td>
<td>50 µg/m³ (OEB 3)</td>
<td>Internal</td>
</tr>
<tr>
<td>Wipe limit</td>
<td></td>
<td></td>
<td>500 µg/100 cm²</td>
<td>Internal</td>
</tr>
<tr>
<td>Desloratadine</td>
<td>100643-71-8</td>
<td>TWA</td>
<td>20 µg/m³ (OEB 3)</td>
<td>Internal</td>
</tr>
<tr>
<td>Wipe limit</td>
<td></td>
<td></td>
<td>200 µg/100 cm²</td>
<td>Internal</td>
</tr>
</tbody>
</table>

**Engineering measures**: 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.

<table>
<thead>
<tr>
<th>Filter type</th>
<th>Hand protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
<td>Chemical-resistant gloves</td>
</tr>
<tr>
<td>Remarks</td>
<td>Consider double gloving.</td>
</tr>
<tr>
<td>Eye protection</td>
<td>Wear safety glasses with side shields or goggles.</td>
</tr>
<tr>
<td></td>
<td>If the work environment or activity involves dusty conditions, mists or aerosols, wear the appropriate goggles.</td>
</tr>
<tr>
<td></td>
<td>Wear a faceshield or other full face protection if there is a potential for direct contact to the face with dusts, mists, or aerosols.</td>
</tr>
</tbody>
</table>

**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.

**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

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>solid</td>
</tr>
<tr>
<td>Colour</td>
<td>white, blue</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 range</td>
<td>No data available</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not classified as a flammability hazard</td>
</tr>
<tr>
<td>Flammability (liquids)</td>
<td>No data available</td>
</tr>
<tr>
<td>Upper explosion limit / Upper flammability limit</td>
<td>No data available</td>
</tr>
<tr>
<td>Lower explosion limit / Lower flammability limit</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Relative vapour density</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Relative density</td>
<td>No data available</td>
</tr>
<tr>
<td>Density</td>
<td>No data available</td>
</tr>
<tr>
<td>Solubility(ies)</td>
<td>Water solubility</td>
</tr>
<tr>
<td></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>
</tbody>
</table>
Decomposition temperature : No data available
Viscosity
  Viscosity, kinematic : Not applicable
Explosive properties : Not explosive
Oxidizing properties : The substance or mixture is not classified as oxidizing.
Particle size : No data available

10. STABILITY AND REACTIVITY

Reactivity : Not classified as a reactivity hazard.
Chemical stability : Stable under normal conditions.
Possibility of hazardous reactions : Can react with strong oxidizing agents.
Conditions to avoid : None known.
Incompatible materials : Oxidizing agents
Hazardous decomposition products : No hazardous decomposition products are known.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of 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:

Cellulose:
  Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 5.8 mg/l
  Exposure time: 4 h
  Test atmosphere: dust/mist

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

Bis[[S-(R*,R*)]-β-hydroxy-α-methylphenethyl)methylammonium] sulphate:
Acute oral toxicity: LD50 (Rat): 660 mg/kg
LD50 (Mouse): 371 mg/kg

Acute inhalation toxicity: LC50 (Rat): > 2.37 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

Acute dermal toxicity: LD50 (Rat): > 2,000 mg/kg
Remarks: Information given is based on data obtained from similar substances.

Disodium EDTA, dihydrate:
Acute oral toxicity: LD50 (Rat): 2,800 mg/kg
Remarks: Based on data from similar materials

Acute inhalation toxicity: LC50 (Rat): > 1 mg/l
Exposure time: 6 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 412
Remarks: Based on data from similar materials

Citric acid:
Acute oral toxicity: LD50 (Mouse): 5,400 mg/kg

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

Desloratadine:
Acute oral toxicity: LD50 (Rat): > 549 mg/kg
LD50 (Mouse): 353 mg/kg
LD50 (Monkey): > 250 mg/kg
Symptoms: Vomiting
Remarks: No mortality observed at this dose.

Skin corrosion/irritation
Not classified based on available information.

Components:

Bis[[S-(R*,R*)]-β-hydroxy-α-methylphenethyl)methylammonium] sulphate:
Species: Rabbit
Result: No skin irritation

Disodium EDTA, dihydrate:
Species: Rabbit
Result: No skin irritation
Remarks: Based on data from similar materials
SAFETY DATA SHEET

Desloratadine / Pseudoephedrine Formulation

Version: 3.0
Revision Date: 2020/10/10
SDS Number: 2095101-00008
Date of last issue: 2019/09/13
Date of first issue: 2017/10/23

Citric acid:
Species: Rabbit
Method: OECD Test Guideline 404
Result: No skin irritation

Desloratadine:
Species: Rabbit
Result: No skin irritation

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

Components:
Bis[[S-(R*,R*)]-{β-hydroxy-α-methylphenethyl}methylammonium] sulphate:
Species: Rabbit
Result: No eye irritation

Disodium EDTA, dihydrate:
Species: Rabbit
Result: No eye irritation
Remarks: Based on data from similar materials

Citric acid:
Species: Rabbit
Result: Irritation to eyes, reversing within 21 days
Method: OECD Test Guideline 405

Desloratadine:
Species: Rabbit
Remarks: Severe eye irritation

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

Components:
Bis[[S-(R*,R*)]-{β-hydroxy-α-methylphenethyl}methylammonium] sulphate:
Remarks: No data available

Disodium EDTA, dihydrate:
Test Type: Maximisation Test
Exposure routes: Skin contact
Species: Guinea pig
**SAFETY DATA SHEET**

**Desloratadine / Pseudoephedrine 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>3.0</td>
<td>2020/10/10</td>
<td>2095101-00008</td>
<td>2019/09/13</td>
<td>2017/10/23</td>
</tr>
</tbody>
</table>

**Result**

- **Remarks**: Based on data from similar materials

**Desloratadine**

- **Test Type**: Maximisation Test
- **Exposure routes**: Dermal
- **Species**: Guinea pig
- **Result**: negative

**Germ cell mutagenicity**

Not classified based on available information.

**Components**

**Cellulose**

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

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

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

**Bis[[S-(R*,R*)]-β-hydroxy-α-methylphenethyl)methylammonium] sulphate**

- **Genotoxicity in vitro**: Test Type: Bacterial reverse mutation assay (AMES)
  - Result: negative
  - Remarks: Information given is based on data obtained from similar substances.

  Test Type: Chromosomal aberration
  - Result: negative
  - Remarks: Information given is based on data obtained from similar substances.

- **Genotoxicity in vivo**: Test Type: Micronucleus test
  - Species: Rat
  - Application Route: Oral
  - Result: negative
  - Remarks: Based on data from similar materials

**Disodium EDTA, dihydrate**

- **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: Ingestion  
Method: OECD Test Guideline 474  
Result: negative  
Remarks: Based on data from similar materials

**Citric acid:**

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

Test Type: in vitro micronucleus test  
Result: positive  

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

**Desloratadine:**

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

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

Genotoxicity in vivo: Test Type: Micronucleus test  
Species: Mouse  
Cell type: Bone marrow  
Application Route: Oral  
Result: negative

**Carcinogenicity**

Not classified based on available information.

**Components:**

**Cellulose:**

Species: Rat  
Application Route: Ingestion  
Exposure time: 72 weeks  
Result: negative

**Bis[(S-(R*,R*)]-β-hydroxy-α-methylphenethyl)methylammonium] sulphate:**

Species: Rat  
Application Route: Oral  
Exposure time: 2 Years  
Result: negative  
Remarks: Based on data from similar materials
### Disodium EDTA, dihydrate:

<table>
<thead>
<tr>
<th>Species</th>
<th>Mouse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Route</td>
<td>Oral</td>
</tr>
<tr>
<td>Exposure time</td>
<td>2 Years</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>

### Desloratadine:

<table>
<thead>
<tr>
<th>Species</th>
<th>Mouse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Route</td>
<td>Oral</td>
</tr>
<tr>
<td>Exposure time</td>
<td>2 Years</td>
</tr>
<tr>
<td>Result</td>
<td>negative</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Species</th>
<th>Rat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Route</td>
<td>Oral</td>
</tr>
<tr>
<td>LOAEL</td>
<td>10 mg/kg body weight</td>
</tr>
<tr>
<td>Result</td>
<td>equivocal</td>
</tr>
<tr>
<td>Target Organs</td>
<td>Liver</td>
</tr>
<tr>
<td>Remarks</td>
<td>Based on data from similar materials</td>
</tr>
</tbody>
</table>

The mechanism or mode of action may not be relevant in humans.

### Reproductive toxicity

Not classified based on available information.

### Components:

#### Cellulose:

- **Effects on fertility**: Test Type: One-generation reproduction toxicity study  
  Species: Rat  
  Application Route: Ingestion  
  Result: negative

#### Bis[[S-(R*,R*)]-ß-hydroxy-α-methylphenethyl)methylammonium] sulphate:

- **Effects on fertility**: Test Type: Fertility  
  Species: Rat  
  Application Route: Oral  
  Fertility: LOAEL: 80 mg/kg body weight  
  Symptoms: male reproductive effects
Effects on foetal development:

**Test Type**: Embryo-foetal development  
**Species**: Rabbit  
**Application Route**: Oral  
**Result**: No teratogenic effects

**Test Type**: Embryo-foetal development  
**Application Route**: Oral  
**Developmental Toxicity**: LOAEL: 27 mg/kg body weight  
**Result**: No embryotoxic effects have been observed in animal tests.  
**Remarks**: Maternal toxicity observed.

**Disodium EDTA, dihydrate**:

Effects on fertility:  
**Test Type**: Four-generation reproduction toxicity study  
**Species**: Rat  
**Application Route**: Ingestion  
**Result**: negative  
**Remarks**: Based on data from similar materials

Effects on foetal development:  
**Test Type**: Embryo-foetal development  
**Species**: Rat  
**Application Route**: Ingestion  
**Result**: negative  
**Remarks**: Based on data from similar materials

**Citric acid**:

Effects on foetal development:  
**Test Type**: One-generation reproduction toxicity study  
**Species**: Rat  
**Application Route**: Ingestion  
**Result**: negative

**Desloratadine**:

Effects on fertility:  
**Test Type**: Fertility  
**Species**: Rat, male  
**Application Route**: Oral  
**Fertility**: LOAEL: 12 mg/kg body weight  
**Symptoms**: Reduced fertility  
**Result**: positive  
**Remarks**: The mechanism or mode of action may not be relevant in humans.

**Test Type**: Fertility  
**Species**: Rat, female  
**Fertility**: NOAEL: 3 mg/kg body weight  
**Symptoms**: No effects on fertility  
**Result**: negative

Effects on foetal development:  
**Test Type**: Embryo-foetal development  
**Species**: Rabbit  
**Application Route**: Oral  
**Developmental Toxicity**: NOAEL: 30 mg/kg body weight  
**Result**: No teratogenic effects
Test Type: Embryo-foetal development  
Species: Rat  
Application Route: Oral  
Developmental Toxicity: LOAEL: 9 mg/kg body weight  
Symptoms: Preimplantation loss, Reduced body weight  
Result: Specific developmental abnormalities  
Remarks: The mechanism or mode of action may not be relev- 

tant in humans.

Test Type: Two-generation study  
Species: Rat  
Application Route: Oral  
Developmental Toxicity: LOAEL: 18 mg/kg body weight  
Result: No adverse effects

Reproductive toxicity - Assessment: Some evidence of adverse effects on sexual function and 
fertility, based on animal experiments., Some evidence of 
adverse effects on development, based on animal experi- 
ments.

STOT - single exposure  
Not classified based on available information.

STOT - repeated exposure  
Causes damage to organs (Central nervous system) through prolonged or repeated exposure if 
swallowed.  
Causes damage to organs (Cardio-vascular system) through prolonged or repeated exposure if 
inhaled.

Components:

Bis[[S-(R*,R*)]-β-hydroxy-α-methylphenethyl)methylammonium] sulphate:  
Exposure routes: Ingestion, Inhalation  
Target Organs: Central nervous system, Cardio-vascular system  
Assessment: Causes damage to organs through prolonged or repeated 
exposure.

Disodium EDTA, dihydrate:  
Exposure routes: inhalation (dust/mist/fume)  
Target Organs: Respiratory Tract  
Assessment: Shown to produce significant health effects in animals at con- 
centrations of >0.02 to 0.2 mg/l/6h/d.

Repeated dose toxicity

Components:

Cellulose:  
Species: Rat  
NOAEL: >= 9,000 mg/kg  
Application Route: Ingestion  
Exposure time: 90 Days
### Bis[[S-(R\(^*\),R\(^*\))]-(β-hydroxy-α-methylphenethyl)methylammonium] sulphate:

- **Remarks**: No data available

### Disodium EDTA, dihydrate:

- **Species**: Rat
- **NOAEL**: 500 mg/kg
- **Application Route**: Ingestion
- **Exposure time**: 13 Weeks
- **Remarks**: Based on data from similar materials

- **Species**: Rat
- **LOAEL**: 0.03 mg/l
- **Application Route**: Inhalation (dust/mist/fume)
- **Exposure time**: 4 Weeks
- **Remarks**: Based on data from similar materials

### Citric acid:

- **Species**: Rat
- **NOAEL**: 4,000 mg/kg
- **LOAEL**: 8,000 mg/kg
- **Application Route**: Ingestion
- **Exposure time**: 10 Days

### Desloratadine:

- **Species**: Rat
- **LOAEL**: 30 mg/kg
- **Application Route**: Oral
- **Exposure time**: 3 Months
- **Target Organs**: Kidney
- **Remarks**: Significant toxicity observed in testing. The mechanism or mode of action may not be relevant in humans.

- **Species**: Monkey
- **NOAEL**: 6 mg/kg
- **LOAEL**: 12 mg/kg
- **Application Route**: Oral
- **Exposure time**: 3 Months
- **Target Organs**: Central nervous system
- **Symptoms**: Gastrointestinal disturbance

- **Species**: Monkey
- **NOAEL**: 40 mg/kg
- **Application Route**: Oral
- **Exposure time**: 17 Months
- **Remarks**: No significant adverse effects were reported

- **Species**: Monkey
- **NOAEL**: 6 mg/kg
- **Application Route**: Oral
- **Exposure time**: 3 Months
- **Symptoms**: Gastrointestinal disturbance, Fatigue
Aspiration toxicity
Not classified based on available information.

Experience with human exposure

Components:

**Bis[[S-(R*,R*)]-β-hydroxy-α-methylphenethyl)methylammonium] sulphate:**
- Inhalation: Remarks: May cause irritation of respiratory tract.
- Eye contact: Remarks: May irritate eyes.
- Ingestion: Symptoms: central nervous system effects, tachycardia, Palpitation

**Desloratadine:**
- Inhalation: Remarks: May cause respiratory tract irritation.
- Eye contact: Symptoms: Eye irritation
- Ingestion: Symptoms: dry mouth, muscle pain, Fatigue, Drowsiness, sore throat, painful menstruation

12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

**Cellulose:**
- Toxicity to fish: \( LC_{50} \) (Oryzias latipes (Japanese medaka)): > 100 mg/l
  Exposure time: 48 h
  Remarks: Based on data from similar materials

**Disodium EDTA, dihydrate:**
- Toxicity to fish: \( LC_{50} \) (Lepomis macrochirus (Bluegill sunfish)): 159 mg/l
  Exposure time: 96 h
  Remarks: Based on data from similar materials

- Toxicity to daphnia and other aquatic invertebrates: \( EC_{50} \) (Daphnia magna (Water flea)): 140 mg/l
  Exposure time: 48 h
  Remarks: Based on data from similar materials

- Toxicity to algae/aquatic plants: \( EC_{50} \) (Desmodesmus subspicatus (green algae)): > 100 mg/l
  Exposure time: 72 h
  Remarks: Based on data from similar materials
  NOEC (Desmodesmus subspicatus (green algae)): 100 mg/l
  Exposure time: 72 h
  Remarks: Based on data from similar materials

- Toxicity to fish (Chronic toxicity): NOEC (Danio rerio (zebra fish)): 25.7 mg/l
  Exposure time: 35 d
  Method: OECD Test Guideline 210
  Remarks: Based on data from similar materials

- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity): NOEC (Daphnia magna (Water flea)): 25 mg/l
  Exposure time: 21 d
  Remarks: Based on data from similar materials
## Toxicity to microorganisms

**EC50**: < 500 mg/l  
Exposure time: 0.5 h  
Method: OECD Test Guideline 209  
Remarks: Based on data from similar materials

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Method</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiration inhibition</td>
<td>OECD Test Guideline 209</td>
<td></td>
</tr>
</tbody>
</table>

## Citric acid:

### Toxicity to fish

**LC50** (Pimephales promelas (fathead minnow)): > 100 mg/l  
Exposure time: 96 h

### Toxicity to daphnia and other aquatic invertebrates

**EC50** (Daphnia magna (Water flea)): 1,535 mg/l  
Exposure time: 24 h

### Toxicity to algae/aquatic plants

**EC50** (Pseudokirchneriella subcapitata (green algae)): 1.6 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201  
**NOEC** (Pseudokirchneriella subcapitata (green algae)): 0.36 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201

## Desloratadine:

### Toxicity to fish

**LC50** (Lepomis macrochirus (Bluegill sunfish)): 9.2 mg/l  
Exposure time: 96 h  
Method: FDA 4.11

### Toxicity to daphnia and other aquatic invertebrates

**EC50** (Daphnia magna (Water flea)): 9.6 mg/l  
Exposure time: 48 h  
Method: FDA 4.08

### Toxicity to algae/aquatic plants

**EC50** (Pseudokirchneriella subcapitata (green algae)): 1.6 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201  
**NOEC** (Pseudokirchneriella subcapitata (green algae)): 0.36 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201

### Toxicity to fish (Chronic toxicity)

**NOEC** (Pimephales promelas (fathead minnow)): 0.12 mg/l  
Exposure time: 32 d  
Method: OECD Test Guideline 210

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

**NOEC** (Daphnia magna (Water flea)): 0.48 mg/l  
Exposure time: 21 d  
Method: OECD Test Guideline 211

### Toxicity to microorganisms

**EC50** (Natural microorganism): 53.7 mg/l  
Exposure time: 3 h  
**Test Type**: Respiration inhibition  
Method: OECD Test Guideline 209  
**NOEC** (Natural microorganism): 12 mg/l  
Exposure time: 3 h  
**Test Type**: Respiration inhibition  
Method: OECD Test Guideline 209
Persistence and degradability

**Components:**

**Cellulose:**
- Biodegradability: Result: Readily biodegradable.

**Disodium EDTA, dihydrate:**
- Biodegradability: Result: Inherently biodegradable.
  - Biodegradation: 80 - 90 %
  - Exposure time: 28 d
  - Remarks: Based on data from similar materials

**Citric acid:**
- Biodegradability: Result: Readily biodegradable.
  - Biodegradation: 97 %
  - Exposure time: 28 d
  - Method: OECD Test Guideline 301B

**Desloratadine:**
- Biodegradability: Result: Not readily biodegradable.
  - Biodegradation: 67.4 %
  - Exposure time: 28 d
  - Method: OECD Test Guideline 314

Stability in water: Hydrolysis: < 10 % at 50 °C (5 d)
- Method: FDA 3.09

Bioaccumulative potential

**Components:**

**Bis[[S-(R*,R*)]-β-hydroxy-α-methylphenethyl)methylammonium] sulphate:**
- Partition coefficient: n-octanol/water: log Pow: 0.89

**Disodium EDTA, dihydrate:**
- Bioaccumulation: Species: Lepomis macrochirus (Bluegill sunfish)
  - Bioconcentration factor (BCF): 1.8
  - Remarks: Based on data from similar materials

- Partition coefficient: n-octanol/water: log Pow: -4.3

**Citric acid:**
- Partition coefficient: n-octanol/water: log Pow: -1.72

**Desloratadine:**
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1.8 20 92x688

Partition coefficient: n-octanol/water

Mobility in soil

Components:

Desloratadine:

Distribution among environmental compartments

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.
If not otherwise specified: Dispose of as unused product.

14. TRANSPORT INFORMATION

International Regulations

UNRTDG
Not regulated as a dangerous good

IATA-DGR
Not regulated as a dangerous good

IMDG-Code
Not regulated as a dangerous good

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

15. REGULATORY INFORMATION

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

Minister of Industry Regulation No. 23/M-IND/PER/4/2013 concerning the Revision of Minister of Industry Regulation No. 87/M-IND/PER/9/2009 concerning Globally Harmonized System of Classification and Labelling of Chemicals.

Regulation of the Minister of Health No. 472 of 1996 on the Safeguarding of Substances Hazardous to Health
Hazardous substances that must be registered: Not applicable

Government Regulation No. 74 of 2001 on the Management of Hazardous and Toxic Substances
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Version 3.0
Revision Date: 2020/10/10
SDS Number: 2095101-00008
Date of last issue: 2019/09/13
Date of first issue: 2017/10/23

Hazardous substances approved for use : Not applicable
Prohibited substances : Not applicable
Restricted substances : Not applicable

Regulation of the Minister of Trade No. 44 of 2009 on Procurement, Distribution and Supervision of Hazardous Materials
Type of Hazardous Materials Restricted to Import, Distribution and Supervision : Not applicable

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

Full text of other abbreviations
ACGIH : USA. ACGIH Threshold Limit Values (TLV)
ACGIH / TWA : 8-hour, time-weighted average

AIIC - Australian Inventory of Industrial Chemicals; 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; 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;
SAFETY DATA SHEET

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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.

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