1. PRODUCT AND COMPANY IDENTIFICATION

Product name: Amiloride / Hydrochlorothiazide Formulation

Manufacturer or supplier’s details
Company: MSD
Address: 199 Wenhai North Road
          HEDA, Hangzhou - Zhejiang Province - CHINA 310018
Telephone: +1-908-740-4000
Emergency telephone number: 86-571-87268110
E-mail address: EHSDATASTEWARD@msd.com

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

2. HAZARDS IDENTIFICATION

Emergency Overview
Appearance: powder
Colour: pale red-brown
Odour: odourless
Harmful if swallowed. Causes damage to organs through prolonged or repeated exposure.

GHS Classification
Acute toxicity (Oral): Category 4
Specific target organ toxicity - repeated exposure: Category 1

GHS label elements
Hazard pictograms:
Signal word: Danger
Hazard statements: H302 Harmful if swallowed.
                  H372 Causes damage to organs through prolonged or repeated exposure.
Precautionary statements:
Prevention:
P260 Do not breathe dust.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
Response:
P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. Rinse mouth.
P314 Get medical advice/ attention if you feel unwell.

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

Physical and chemical hazards
Not classified based on available information.

Health hazards
Harmful if swallowed. Causes damage to organs through prolonged or repeated exposure.

Environmental hazards
Not classified based on available information.

Other hazards which do not result in classification
Dust contact with the eyes can lead to mechanical irritation.
Contact with dust can cause mechanical irritation or drying of the skin.
May form explosive dust-air mixture during processing, handling or other means.

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>Hydrochlorothiazide</td>
</tr>
<tr>
<td></td>
<td>Starch</td>
</tr>
<tr>
<td></td>
<td>Amiloride</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 if symptoms occur.

In case of skin contact: In case of contact, immediately flush skin with soap and plenty of water. Get medical attention if symptoms occur.

In case of eye contact: If in eyes, rinse well with water. Get medical attention if irritation develops and persists.

If swallowed: If swallowed, DO NOT induce vomiting unless directed to do so by medical personnel. Get medical attention. Rinse mouth thoroughly with water. Never give anything by mouth to an unconscious person.

Most important symptoms: Harmful if swallowed.
# Amiloride / Hydrochlorothiazide Formulation

<table>
<thead>
<tr>
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<th>SDS Number:</th>
<th>Date of last issue:</th>
<th>Date of first issue:</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1</td>
<td>2020/10/01</td>
<td>42680-00014</td>
<td>2020/03/23</td>
<td>2015/01/05</td>
</tr>
</tbody>
</table>

- and effects, both acute and delayed
  - Causes damage to organs through prolonged or repeated exposure.
  - Contact with dust can cause mechanical irritation or drying of the skin.
  - Dust contact with the eyes can lead to mechanical irritation.
- 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

<table>
<thead>
<tr>
<th>Suitable extinguishing media</th>
<th>Unsuitable extinguishing media</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water spray</td>
<td>None known.</td>
</tr>
<tr>
<td>Alcohol-resistant foam</td>
<td></td>
</tr>
<tr>
<td>Carbon dioxide (CO2)</td>
<td></td>
</tr>
<tr>
<td>Dry chemical</td>
<td></td>
</tr>
</tbody>
</table>

- Specific hazards during firefighting
  - Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.
  - Exposure to combustion products may be a hazard to health.

<table>
<thead>
<tr>
<th>Hazardous combustion products</th>
<th>Specific extinguishing methods</th>
<th>Special protective equipment for firefighters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon oxides</td>
<td>Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.</td>
<td>In the event of fire, wear self-contained breathing apparatus.</td>
</tr>
<tr>
<td>Nitrogen oxides (NOx)</td>
<td>Use water spray to cool unopened containers.</td>
<td>Use personal protective equipment.</td>
</tr>
<tr>
<td>Chlorine compounds</td>
<td>Remove undamaged containers from fire area if it is safe to do so.</td>
<td></td>
</tr>
<tr>
<td>Sulphur oxides</td>
<td>Evacuate area.</td>
<td></td>
</tr>
<tr>
<td>Metal oxides</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oxides of phosphorus</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## 6. ACCIDENTAL RELEASE MEASURES

<table>
<thead>
<tr>
<th>Personal precautions, protective equipment and emergency procedures</th>
<th>Environmental precautions</th>
<th>Methods and materials for containment and cleaning up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use personal protective equipment.</td>
<td>Avoid release to the environment.</td>
<td>Sweep up or vacuum up spillage and collect in suitable container for disposal.</td>
</tr>
<tr>
<td>Follow safe handling advice (see section 7) and personal protective equipment recommendations (see section 8).</td>
<td>Prevent further leakage or spillage if safe to do so.</td>
<td>Avoid dispersal of dust in the air (i.e., clearing dust surfaces</td>
</tr>
</tbody>
</table>
7. HANDLING AND STORAGE

Handling
Technical measures: Static electricity may accumulate and ignite suspended dust causing an explosion. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres.
Local/Total ventilation: Use only with adequate ventilation.
Advice on safe handling: Do not breathe dust. 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. Minimize dust generation and accumulation. Keep container closed when not in use. Keep away from heat and sources of ignition. 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.
Avoidance of contact: Oxidizing agents

Storage
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
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>Hydrochlorothiazide</td>
<td>58-93-5</td>
<td>TWA</td>
<td>100 µg/m3 (OEB 2)</td>
<td>Internal</td>
</tr>
</tbody>
</table>
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9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>powder</td>
</tr>
<tr>
<td>Colour</td>
<td>pale red-brown</td>
</tr>
<tr>
<td>Odour</td>
<td>odourless</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>No data available</td>
</tr>
</tbody>
</table>
Amiloride / Hydrochlorothiazide Formulation

Evaporation rate : No data available

Flammability (solid, gas) : May form explosive dust-air mixture during processing, handling or other means.

Flammability (liquids) : No data available

Upper explosion limit / Upper flammability limit : No data available

Lower explosion limit / Lower flammability limit : No data available

Vapour pressure : No data available

Relative vapour density : No data available

Relative density : No data available

Density : No data available

Solubility(ies)

Water solubility : No data available

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

Auto-ignition temperature : No data available

Decomposition temperature : No data available

Viscosity

Viscosity, dynamic : No data available

Viscosity, kinematic : No data available

Explosive properties : Not explosive

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

Molecular weight : 302.10 g/mol

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

May form explosive dust-air mixture during processing, handling or other means.

Can react with strong oxidizing agents.

Conditions to avoid : Heat, flames and sparks.
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Avoid dust formation.

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
Harmful if swallowed.

Product:
Acute oral toxicity: Acute toxicity estimate: 1,785 mg/kg
Method: Calculation method

Components:

Hydrochlorothiazide:
Acute oral toxicity: LD50 (Rat): > 2,750 mg/kg
                  LD50 (Mouse): > 2,830 mg/kg
Acute toxicity (other routes of administration): LD50 (Rat): 990 mg/kg
                  Application Route: Intravenous
                  LD50 (Mouse): 590 mg/kg
                  Application Route: Intravenous

Starch:
Acute oral toxicity: LD50 (Rat): > 5,000 mg/kg
Acute dermal toxicity: LD50 (Rabbit): > 2,000 mg/kg

Amiloride:
Acute oral toxicity: LD50 (Mouse): 56 mg/kg
                  LD50 (Rat): > 150 mg/kg

Skin corrosion/irritation
Not classified based on available information.

Components:

Hydrochlorothiazide:
Species: Rabbit
Result: No skin irritation

Amiloride:
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Species: Rabbit
Result: Mild skin irritation
Remarks: Slight irritation

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

Components:

Hydrochlorothiazide:
Species: Rabbit
Result: Mild eye irritation

Starch:
Species: Rabbit
Result: No eye irritation

Amiloride:
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:

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

Germ cell mutagenicity
Not classified based on available information.

Components:

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

Test Type: Chromosomal aberration
Test system: Chinese hamster ovary cells
Result: negative

Test Type: sister chromatid exchange assay
Test system: Chinese hamster ovary cells
### Genotoxicity in vitro

- **Test Type**: in vitro assay
- **Test system**: mouse lymphoma cells
- **Result**: positive

### Genotoxicity in vivo

- **Test Type**: Chromosomal aberration
  - **Species**: Chinese hamster
  - **Cell type**: Bone marrow
  - **Result**: negative

- **Test Type**: in vivo assay
  - **Species**: Mouse
  - **Cell type**: Bone marrow
  - **Result**: negative

### Germ cell mutagenicity - Assessment

- **Result**: Weight of evidence does not support classification as a germ cell mutagen.

### Starch

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

### Amiloride

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

### Carcinogenicity

Not classified based on available information.

### Components:

#### Hydrochlorothiazide

- **Species**: Mouse, female
- **Application Route**: Oral
- **Exposure time**: 2 Years
- **Result**: negative

- **Species**: Mouse, male
  - **Application Route**: Oral
  - **Exposure time**: 2 Years
  - **Result**: equivocal

- **Species**: Rat, male and female
  - **Application Route**: Oral
  - **Exposure time**: 2 Years
  - **Result**: negative

#### Amiloride

- **Species**: Rat
  - **Application Route**: Oral
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Exposure time: 92 weeks
Result: negative
Species: Mouse
Application Route: Oral
Exposure time: 104 weeks
Result: negative
Exposure time: 92 weeks
Result: negative
Species: Mouse
Application Route: Oral
Exposure time: 104 weeks
Result: negative

Reproductive toxicity
Not classified based on available information.

Components:

Hydrochlorothiazide:

Effects on fertility:
  Test Type: Fertility
  Species: Rat, male and female
  Application Route: oral (feed)
  Fertility: NOAEL: 4 mg/kg body weight
  Result: Effects on fertility

  Test Type: Fertility
  Species: Mouse, male and female
  Application Route: oral (feed)
  Fertility: NOAEL: 100 mg/kg body weight
  Result: Effects on fertility

Effects on foetal development:
  Test Type: Development
  Species: Mouse
  Application Route: Oral
  Developmental Toxicity: NOAEL: 3,000 mg/kg body weight
  Result: No teratogenic effects

  Test Type: Development
  Species: Rat
  Application Route: Oral
  Developmental Toxicity: NOAEL: 1,000 mg/kg body weight
  Result: No teratogenic effects

Amiloride:

Effects on foetal development:
  Test Type: Embryo-foetal development
  Species: Rabbit
  Application Route: Oral
  Result: No effects on fertility and early embryonic development were detected.

  Test Type: Embryo-foetal development
  Species: Mouse
  Application Route: Oral
  Result: No effects on fertility and early embryonic development were detected.
Amiloride / Hydrochlorothiazide Formulation

STOT - single exposure
Not classified based on available information.

STOT - repeated exposure
Causes damage to organs through prolonged or repeated exposure.

Components:

Hydrochlorothiazide:
Target Organs: Kidney, Parathyroid gland
Assessment: Causes damage to organs through prolonged or repeated exposure.

Repeated dose toxicity

Components:

Hydrochlorothiazide:
Species: Rat, male and female
LOAEL: 10 mg/kg
Application Route: Oral
Exposure time: 2 yr
Target Organs: Kidney, Parathyroid gland

Species: Mouse, male and female
NOAEL: 300 - 550 mg/kg
Application Route: Oral
Exposure time: 2 yr
Remarks: No significant adverse effects were reported

Species: Dog
Application Route: Oral
Exposure time: 9 Months
Target Organs: Parathyroid gland

Starch:
Species: Rat
NOAEL: >= 2,000 mg/kg
Application Route: Skin contact
Exposure time: 28 Days
Method: OECD Test Guideline 410

Aspiration toxicity
Not classified based on available information.

Components:

Hydrochlorothiazide:
No aspiration toxicity classification
Experience with human exposure

**Components:**

**Hydrochlorothiazide:**
- **Eye contact:** Symptons: Eye irritation
- **Ingestion:** Symptoms: Dizziness, Headache, Fatigue, Nausea, Abdominal pain, hypotension, dry mouth, electrolyte imbalance, eye pain

**Amiloride:**
- **Ingestion:** Symptoms: hyperkalemia

12. ECOLOGICAL INFORMATION

**Ecotoxicity**

**Components:**

**Hydrochlorothiazide:**
- **Toxicity to fish:** LC50 (Pimephales promelas (fathead minnow)): > 500 mg/l
  - Exposure time: 96 h
- **Toxicity to daphnia and other aquatic invertebrates:** EC50 (Daphnia magna (Water flea)): > 500 mg/l
  - Exposure time: 48 h

**Amiloride:**
- **Toxicity to daphnia and other aquatic invertebrates:** EC50 (Daphnia magna (Water flea)): 56.3 mg/l
  - Exposure time: 48 h
  - Method: OECD Test Guideline 202

**Persistence and degradability**

**Components:**

**Hydrochlorothiazide:**
- **Stability in water:** Hydrolysis: 46.2 % (96 h)

**Bioaccumulative potential**
No data available

**Mobility in soil**
No data available

**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 han-
# Amiloride / Hydrochlorothiazide Formulation

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

Diluting 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.

### National Regulations

**GB 6944/12268**
Not regulated as a dangerous good

### Special precautions for user
Not applicable

## 15. REGULATORY INFORMATION

### National regulatory information

Law on the Prevention and Control of Occupational Diseases

### The components of this product are reported in the following inventories:

<table>
<thead>
<tr>
<th>Inventory</th>
<th>Determination</th>
</tr>
</thead>
<tbody>
<tr>
<td>AICS</td>
<td>not determined</td>
</tr>
<tr>
<td>DSL</td>
<td>not determined</td>
</tr>
<tr>
<td>IECSC</td>
<td>not determined</td>
</tr>
</tbody>
</table>

## 16. OTHER INFORMATION

### Further information


Date format: yyyy/mm/dd

### Full text of other abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full text</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
</tr>
<tr>
<td>ACGIH / TWA</td>
<td>8-hour, time-weighted average</td>
</tr>
</tbody>
</table>
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Date of first issue: 2015/01/05

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