SAFETY DATA SHEET

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

1.1 Product identifiers

<table>
<thead>
<tr>
<th>Product name</th>
<th>Magnesium chloride hexahydrate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Number</td>
<td>M2670</td>
</tr>
<tr>
<td>Brand</td>
<td>Sigma-Aldrich</td>
</tr>
<tr>
<td>CAS-No.</td>
<td>7791-18-6</td>
</tr>
</tbody>
</table>

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses: Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

| Company                        | Sigma-Aldrich Inc.             |
|                               | 3050 SPRUCE ST                 |
|                               | ST. LOUIS MO 63103             |
|                               | UNITED STATES                  |
| Telephone                     | +1 314 771-5765                |
| Fax                           | +1 800 325-5052                |

1.4 Emergency telephone

Emergency Phone #: 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Not a hazardous substance or mixture.

2.2 GHS Label elements, including precautionary statements

No hazard pictogram, no signal word, no hazard statement(s), no precautionary statement(s) required

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3: Composition/information on ingredients

3.1 Substances

<table>
<thead>
<tr>
<th>Formula</th>
<th>Cl₂Mg · 6H₂O</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sigma-Aldrich - M2670</td>
<td></td>
</tr>
</tbody>
</table>
Molecular weight : 203.30 g/mol
CAS-No. : 7791-18-6
EC-No. : 232-094-6

No components need to be disclosed according to the applicable regulations.

SECTION 4: First aid measures

4.1 Description of first-aid measures

If inhaled
After inhalation: fresh air.

In case of skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower.

In case of eye contact
After eye contact: rinse out with plenty of water. Remove contact lenses.

If swallowed
After swallowing: make victim drink water (two glasses at most). Consult doctor if feeling unwell.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture
Hydrogen chloride gas
Magnesium oxide
Not combustible.
Ambient fire may liberate hazardous vapours.

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

5.4 Further information
Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.
SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Advice for non-emergency personnel: Avoid inhalation of dusts. Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

6.2 Environmental precautions
Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up
Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up dry. Dispose of properly. Clean up affected area. Avoid generation of dusts.

6.4 Reference to other sections
For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Storage conditions
Tightly closed. Dry.
Moisture sensitive. Hygroscopic.

Storage class
Storage class (TRGS 510): 13: Non Combustible Solids

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters
Ingredients with workplace control parameters
Contains no substances with occupational exposure limit values.

8.2 Exposure controls
Appropriate engineering controls
Change contaminated clothing. Wash hands after working with substance.

Personal protective equipment
Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses
**Skin protection**
This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

**Full contact**
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested: KCL 741 Dermatril® L

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

**Splash contact**
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested: KCL 741 Dermatril® L

**Respiratory protection**
required when dusts are generated.
Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

**Control of environmental exposure**
Do not let product enter drains.

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**SECTION 9: Physical and chemical properties**

**9.1 Information on basic physical and chemical properties**

a) **Appearance**
Form: solid

b) **Odor**
No data available

c) **Odor Threshold**
No data available

d) **pH**
No data available

e) **Melting point/freezing point**
Melting point: 116.7 °C (242.1 °F)

f) **Initial boiling point and boiling range**
No data available

g) **Flash point**
() Not applicable

h) **Evaporation rate**
No data available

i) **Flammability (solid, gas)**
The product is not flammable.
9.2 **Other safety information**
No data available

SECTION 10: Stability and reactivity

10.1 **Reactivity**
No data available

10.2 **Chemical stability**
The product is chemically stable under standard ambient conditions (room temperature).

10.3 **Possibility of hazardous reactions**
no information available

10.4 **Conditions to avoid**
Exposure to moisture may affect product quality.
no information available

10.5 **Incompatible materials**
no information available

10.6 **Hazardous decomposition products**
In the event of fire: see section 5
SECTION 11: Toxicological information

11.1 Information on toxicological effects

**Acute toxicity**
LD50 Oral - Rat - female - > 5,000 mg/kg
(OECD Test Guideline 423)
Remarks: (anhydrous substance)
The value is given in analogy to the following substances: magnesium chloride
Inhalation: No data available
Symptoms: slight mucosal irritations
Acute toxicity estimate Dermal - 2,500 mg/kg
(Calculation method)
LD50 Dermal - Rat - male and female - > 2,000 mg/kg
(OECD Test Guideline 402)
Remarks: (anhydrous substance)
The value is given in analogy to the following substances: magnesium chloride
No data available

**Skin corrosion/irritation**
Skin - In vitro study
Result: No skin irritation - 15 min
Remarks: (anhydrous substance)
The value is given in analogy to the following substances: magnesium chloride

**Serious eye damage/eye irritation**
Eyes - Rabbit
Result: No eye irritation - 72 h
(OECD Test Guideline 405)
Remarks: (anhydrous substance)
The value is given in analogy to the following substances: magnesium chloride

**Respiratory or skin sensitization**
Maximization Test - Guinea pig
Result: negative
(OECD Test Guideline 406)
Remarks: (anhydrous substance)
The value is given in analogy to the following substances: magnesium chloride

**Germ cell mutagenicity**
Test Type: Mutagenicity (mammal cell test): chromosome aberration.
Test system: Human lymphocytes
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative
Remarks: (anhydrous substance)
The value is given in analogy to the following substances: magnesium chloride
Test Type: In vitro mammalian cell gene mutation test
Test system: Mouse lymphoma test
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative
Remarks: (anhydrous substance)
The value is given in analogy to the following substances: magnesium chloride

**Carcinogenicity**

**IARC:** No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

**NTP:** No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

**OSHA:** No component of this product present at levels greater than or equal to 0.1% is on OSHA’s list of regulated carcinogens.

**Reproductive toxicity**
No data available

**Specific target organ toxicity - single exposure**
No data available

**Specific target organ toxicity - repeated exposure**
No data available

**Aspiration hazard**
No data available

### 11.2 Additional Information

Repeated dose toxicity - Rat - male and female - Oral - 54 d - NOAEL (No observed adverse effect level) - > 1,000 mg/kg

Remarks: Subacute toxicity (anhydrous substance)
The value is given in analogy to the following substances: magnesium chloride

**RTECS:** OM2975000

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

After uptake of large quantities:

Metal-fume fever after inhalation of large quantities.

Nausea
Vomiting
Diarrhea

Systemic effects:

drop in blood pressure
Cardiac irregularities
muscular weakness
paralysis symptoms
Tiredness

After absorption of large quantities:

cardiovascular disorders
However, when the product is handled appropriately, hazardous effects are unlikely to occur.

Handle in accordance with good industrial hygiene and safety practice.

Liver - Irregularities - Based on Human Evidence

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish

<table>
<thead>
<tr>
<th>Test</th>
<th>Substance</th>
<th>LC50</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Static</td>
<td>Pimephales promelas (fathead minnow)</td>
<td>2,119.3 mg/l - 96 h</td>
<td>(US-EPA)</td>
</tr>
</tbody>
</table>

Remarks: (anhydrous substance)
The value is given in analogy to the following substances: magnesium chloride

Toxicity to daphnia and other aquatic invertebrates

<table>
<thead>
<tr>
<th>Test</th>
<th>Substance</th>
<th>LC50</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Static</td>
<td>Daphnia magna (Water flea)</td>
<td>548.4 mg/l - 48 h</td>
<td>(ECHA)</td>
</tr>
</tbody>
</table>

(anhydrous substance)
The value is given in analogy to the following substances: magnesium chloride

Toxicity to algae

<table>
<thead>
<tr>
<th>Test</th>
<th>Substance</th>
<th>ErC50</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Static</td>
<td>Desmodesmus subspicatus (green algae)</td>
<td>&gt; 100 mg/l - 72 h</td>
<td>(OECD Test Guideline 201)</td>
</tr>
</tbody>
</table>

Toxicity to bacteria

<table>
<thead>
<tr>
<th>Test</th>
<th>Substance</th>
<th>EC50</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Static</td>
<td>activated sludge</td>
<td>&gt; 900 mg/l - 3 h</td>
<td>(OECD Test Guideline 209)</td>
</tr>
</tbody>
</table>

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)

<table>
<thead>
<tr>
<th>Test</th>
<th>Substance</th>
<th>EC10</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semi-static</td>
<td>Daphnia magna (Water flea)</td>
<td>321 mg/l - 21 d</td>
<td>(ECHA)</td>
</tr>
</tbody>
</table>

12.2 Persistence and degradability
The methods for determining the biological degradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Endocrine disrupting properties
No data available
12.7 Other adverse effects
Discharge into the environment must be avoided.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

SECTION 14: Transport information

DOT (US)
Not dangerous goods

IMDG
Not dangerous goods

IATA
Not dangerous goods

Further information
Not classified as dangerous in the meaning of transport regulations.

SECTION 15: Regulatory information

SARA 302 Components
This material does not contain any components with a section 302 EHS TPQ.

SARA 313 Components
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
Chronic Health Hazard

Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.
SECTION 16: Other information

Further information
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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