1. Identification

Product Name: Magnesium chloride hexahydrate

Cat No.: M35-12; M35-212; M35-500; M35SAM-1; M35SAM-2; M35SAM-3

Synonyms: Magnesium dichloride hexahydrate

Recommended Use: Laboratory chemicals.

Uses advised against: No Information available

Details of the supplier of the safety data sheet:

Company: Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number:
CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

2. Hazard(s) identification

Classification:
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Specific target organ toxicity - (repeated exposure)
Target Organs - Kidney.

Category 2

Label Elements:

Signal Word: Warning

Hazard Statements:
May cause damage to organs through prolonged or repeated exposure

Precautionary Statements:
Prevention
Do not breathe dust/fume/gas/mist/vapors/spray
Response
Get medical attention/advice if you feel unwell

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

Hazards not otherwise classified (HNOC)
None identified

### 3. Composition / information on ingredients

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnesium chloride, hexahydrate</td>
<td>7791-18-6</td>
<td>&gt;95</td>
</tr>
<tr>
<td>Magnesium chloride</td>
<td>7786-30-3</td>
<td>-</td>
</tr>
</tbody>
</table>

### 4. First-aid measures

**Eye Contact**
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention if symptoms occur.

**Skin Contact**
Wash off immediately with plenty of water for at least 15 minutes. If symptoms arise, call a physician.

**Inhalation**
Move to fresh air. If breathing is irregular or stopped, administer artificial respiration. Get medical attention if symptoms occur.

**Ingestion**
Do not induce vomiting. Get medical attention if symptoms occur.

**Most important symptoms/effects**
No information available.

**Notes to Physician**
Treat symptomatically

### 5. Fire-fighting measures

**Suitable Extinguishing Media**
Substance is nonflammable; use agent most appropriate to extinguish surrounding fire.

**Unsuitable Extinguishing Media**
No information available

**Flash Point**
No information available

**Method**
No information available

**Autoignition Temperature**
No data available

**Explosion Limits**
No data available

**Sensitivity to Mechanical Impact**
No data available

**Sensitivity to Static Discharge**
No data available

**Specific Hazards Arising from the Chemical**
Thermal decomposition can lead to release of irritating gases and vapors.

**Hazardous Combustion Products**
Hydrogen chloride gas Chlorine Magnesium oxides

**Protective Equipment and Precautions for Firefighters**
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

**NFPA**

<table>
<thead>
<tr>
<th>Health</th>
<th>Flammability</th>
<th>Instability</th>
<th>Physical hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>1</td>
<td>N/A</td>
</tr>
</tbody>
</table>
6. Accidental release measures

Personal Precautions
Use personal protective equipment. Ensure adequate ventilation. Avoid dust formation. Avoid contact with skin, eyes and clothing.

Environmental Precautions
No special environmental precautions required. See Section 12 for additional ecological information.

Methods for Containment and Clean Up
Avoid dust formation. Sweep up or vacuum up spillage and collect in suitable container for disposal.

7. Handling and storage

Handling
Ensure adequate ventilation. Avoid dust formation. Do not breathe dust. Do not get in eyes, on skin, or on clothing.

Storage
Keep containers tightly closed in a cool, well-ventilated place.

8. Exposure controls / personal protection

Exposure Guidelines
This product does not contain any known or suspected reproductive hazards

Engineering Measures
None under normal use conditions.

Personal Protective Equipment

Eye/face Protection
Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection
Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection
No protective equipment is needed under normal use conditions.

Hygiene Measures
Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical State</td>
<td>Powder Solid</td>
</tr>
<tr>
<td>Appearance</td>
<td>White</td>
</tr>
<tr>
<td>Odor</td>
<td>Odorless</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>No information available</td>
</tr>
<tr>
<td>pH</td>
<td>5-6.5  5% aq. solution</td>
</tr>
<tr>
<td>Melting Point/Range</td>
<td>117 °C / 242.6 °F</td>
</tr>
<tr>
<td>Boiling Point/Range</td>
<td>No information available</td>
</tr>
<tr>
<td>Flash Point</td>
<td>No information available</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flammability (solid,gas)</td>
<td>No information available</td>
</tr>
<tr>
<td>Flammability or explosive limits</td>
<td>No data available</td>
</tr>
<tr>
<td>Upper</td>
<td>No data available</td>
</tr>
<tr>
<td>Lower</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>No information available</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>No information available</td>
</tr>
<tr>
<td>Solubility</td>
<td>Soluble in water</td>
</tr>
<tr>
<td>Partition coefficient; n-octanol/water</td>
<td>No data available</td>
</tr>
<tr>
<td>Autoignition Temperature</td>
<td>&gt; 106°C</td>
</tr>
<tr>
<td>Decomposition Temperature</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Molecular Formula</td>
<td>Cl2 Mg . 6 H2 O</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>203.31</td>
</tr>
</tbody>
</table>
10. Stability and reactivity

Reactive Hazard
None known, based on information available

Stability
Stable under normal conditions.

Conditions to Avoid
Avoid dust formation.

Incompatible Materials
Metals

Hazardous Decomposition Products
Hydrogen chloride gas, Chlorine, Magnesium oxides

Hazardous Polymerization
Hazardous polymerization does not occur.

Hazardous Reactions
None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information

Component Information

<table>
<thead>
<tr>
<th>Component</th>
<th>LD50 Oral</th>
<th>LD50 Dermal</th>
<th>LC50 Inhalation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnesium chloride, hexahydrate</td>
<td>LD50 = 8100 mg/kg (Rat)</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
<tr>
<td>Magnesium chloride</td>
<td>LD50 = 2800 mg/kg (Rat)</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

Toxicologically Synergistic Products
No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation
May cause eye, skin, and respiratory tract irritation

Sensitization
No information available

Carcinogenicity
The table below indicates whether each agency has listed any ingredient as a carcinogen.

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>IARC</th>
<th>NTP</th>
<th>ACGIH</th>
<th>OSHA</th>
<th>Mexico</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnesium chloride, hexahydrate</td>
<td>7791-18-6</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
<tr>
<td>Magnesium chloride</td>
<td>7786-30-3</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

Mutagenic Effects
No information available

Reproductive Effects
No information available.

Developmental Effects
No information available.

Teratogenicity
No information available.

STOT - single exposure
None known

STOT - repeated exposure
Kidney

Aspiration hazard
No information available

Symptoms / effects, both acute and delayed
No information available

Endocrine Disruptor Information
No information available

Other Adverse Effects
The toxicological properties have not been fully investigated.
12. Ecological information

Ecotoxicity
Contains no substances known to be hazardous to the environment or that are not degradable in waste water treatment plants.

<table>
<thead>
<tr>
<th>Component</th>
<th>Freshwater Algae</th>
<th>Freshwater Fish</th>
<th>Microtox</th>
<th>Water Flea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnesium chloride</td>
<td>EC50: 2200 mg/L/72h</td>
<td>Pimephales promelas: EC50: 2.12 g/L/96h</td>
<td>EC50 Pseudomonas putida: EC50: 26.14 g/L/h Photobacterium phosphoreum: EC50: 36.3 mg/L/30 min Photobacterium phosphoreum: EC50: 77.2 mg/L/24 h</td>
<td>EC50 : 1400 mg/L/24h</td>
</tr>
</tbody>
</table>

Persistence and Degradability
Soluble in water. Persistence is unlikely based on information available.

Bioaccumulation/ Accumulation
No information available.

Mobility
Will likely be mobile in the environment due to its water solubility.

13. Disposal considerations

Waste Disposal Methods
Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT                        Not regulated
TDG                        Not regulated
IATA                       Not regulated
IMDG/IMO                   Not regulated

15. Regulatory information

International Inventories

<table>
<thead>
<tr>
<th>Component</th>
<th>TSCA</th>
<th>DSL</th>
<th>NDSL</th>
<th>EINECS</th>
<th>ELINCS</th>
<th>NLP</th>
<th>PICCS</th>
<th>ENCS</th>
<th>AICS</th>
<th>IECSC</th>
<th>KECL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnesium chloride, hexahydrate</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Magnesium chloride</td>
<td>X</td>
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<td>-</td>
<td>232-094-6</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

Legend:
X - Listed
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b)                        Not applicable
SARA 313                          Not applicable
SARA 311/312 Hazard Categories
Acute Health Hazard: Yes
Chronic Health Hazard: Yes
Fire Hazard: No
Sudden Release of Pressure Hazard: No
Reactive Hazard: No

CWA (Clean Water Act): Not applicable
Clean Air Act: Not applicable
OSHA Occupational Safety and Health Administration: Not applicable
CERCLA: Not applicable
California Proposition 65: This product does not contain any Proposition 65 chemicals
U.S. State Right-to-Know Regulations: Not applicable

U.S. Department of Transportation
Reportable Quantity (RQ): N
DOT Marine Pollutant: N
DOT Severe Marine Pollutant: N

U.S. Department of Homeland Security
This product does not contain any DHS chemicals.

Other International Regulations
Mexico - Grade: No information available
Canada: This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR

WHMIS Hazard Class: Non-controlled

16. Other information
Prepared By: Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com
Creation Date: 09-Feb-2010
Revision Date: 21-Jan-2016
Print Date: 21-Jan-2016
Revision Summary: This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

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 given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS