1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product identifier
Product Name Magnesium Chloride (from Titanium Production)

Other means of identification
Product Code SAC026
UN/ID No. 2813
Synonyms Magnesium Chloride (from Titanium Production): Kroll reduction salt from Titanium production (Product #106-A)

Recommended use of the chemical and restrictions on use
Recommended Use Chemical intermediate.
Uses advised against

Details of the supplier of the safety data sheet
Manufacturer Address ATI, 1000 Six PPG Place, Pittsburgh, PA 15222 USA
Emergency telephone number Chemtrec: 1-800-424-9300

2. HAZARDS IDENTIFICATION

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

Substances or mixtures which, in contact with water, emit flammable gases Category 3

Label elements

Emergency Overview

Warning

Hazard statements
In contact with water releases flammable gases

Appearance Flakes, Chunks, Powder  Physical state Solid  Odor Odorless

Precautionary Statements - Prevention
Wear protective gloves/protective clothing/eye protection
Protect from moisture
Do not breathe resulting gases
Precautionary Statements - Response
In case of fire: Use salt (NaCl) or class D dry powder for extinction

Precautionary Statements - Storage
Store in a dry place

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

Hazards not otherwise classified (HNOC)
Not applicable

Other Information
.

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS No.</th>
<th>Weight-%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnesium Chloride</td>
<td>7786-30-3</td>
<td>&gt;99</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>0-1</td>
</tr>
<tr>
<td>Magnesium</td>
<td>7439-95-4</td>
<td>0-0.1</td>
</tr>
<tr>
<td>Titanium</td>
<td>7440-32-6</td>
<td>0-0.1</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

First aid measures

Eye contact
In case of contact with eyes, rinse immediately. If eye irritation persists: Get medical advice/attention.

Skin Contact
Wash off immediately with soap and plenty of water.

Inhalation
If fumes from reactions are inhaled, move to fresh air immediately. Call a physician or poison control center immediately.

Ingestion
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

Most important symptoms and effects, both acute and delayed

Symptoms
None anticipated.

Indication of any immediate medical attention and special treatment needed

Note to physicians
Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
Non-combustible.

Unsuitable extinguishing media
If a fire occurs in the area, avoid water contact with the product to prevent evolution of hazardous gases.

Specific hazards arising from the chemical
Non-combustible.
Hazardous combustion products: Not applicable.

**Explosion data**
- Sensitivity to Mechanical Impact: None.
- Sensitivity to Static Discharge: None.

**Protective equipment and precautions for firefighters**
Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear.

### 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions, protective equipment and emergency procedures**

**Personal precautions**
Use personal protective equipment as required.

**For emergency responders**

**Environmental precautions**
Collect spillage to prevent release to the environment.

**Methods and material for containment and cleaning up**

**Methods for containment**
Prevent further leakage or spillage if safe to do so.

**Methods for cleaning up**
Sweep or shovel material into dry containers. Avoid creating uncontrolled dust. Wash the spill location thoroughly with water - remaining magnesium chloride residue would cause the floor to become slippery.

### 7. HANDLING AND STORAGE

**Precautions for safe handling**

**Advice on safe handling**
Handle in accordance with good industrial hygiene and safety practice.

**Conditions for safe storage, including any incompatibilities**

**Storage Conditions**
Magnesium chloride solutions in uncoated steel tanks may activate the metal surface so that when the tanks are drained the surfaces rust quickly consuming available oxygen. Use safe tank entry procedures with good ventilation and oxygen level monitoring.

**Incompatible materials**
Unintentional contact with water.

### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Control parameters**

**Exposure Guidelines**

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnesium Chloride</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7786-30-3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7732-18-5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Titanium</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7440-32-6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Magnesium</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7439-95-4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Appropriate engineering controls**
Engineering Controls  Avoid generation of uncontrolled particles.

Individual protection measures, such as personal protective equipment

- **Eye/face protection**: When airborne particles may be present, appropriate eye protection is recommended. For example, tight-fitting goggles, foam-lined safety glasses or other protective equipment that shield the eyes from particles.

- **Skin and body protection**: Wear protective gloves.

- **Respiratory protection**: When particulates/fumes/gases are generated and if exposure limits are exceeded or irritation is experienced, proper approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

**General Hygiene Considerations**  Handle in accordance with good industrial hygiene and safety practice.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

#### Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Values</th>
<th>Remarks • Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Solid</td>
<td></td>
</tr>
<tr>
<td>Appearance</td>
<td>Flakes, Chunks, Powder</td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td>Grey silver</td>
<td></td>
</tr>
<tr>
<td>Odor</td>
<td>Odorless</td>
<td></td>
</tr>
<tr>
<td>Odor threshold</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>-</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Melting point / freezing point</td>
<td>710 °C / 1310 °F</td>
<td></td>
</tr>
<tr>
<td>Boiling point / boiling range</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Flash point</td>
<td>-</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>-</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>-</td>
<td>Not flammable</td>
</tr>
<tr>
<td>Flammability Limit in Air</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Upper flammability limit:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Lower flammability limit:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>-</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Vapor density</td>
<td>-</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>2.3</td>
<td></td>
</tr>
<tr>
<td>Water solubility</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Solubility in other solvents</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Partition coefficient</td>
<td>-</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Autoignition temperature</td>
<td>-</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>-</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Kinematic viscosity</td>
<td>-</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Dynamic viscosity</td>
<td>-</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Softening point</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Molecular weight</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>VOC Content (%)</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Density</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Bulk density</td>
<td>100-110 lb/ft³</td>
<td></td>
</tr>
</tbody>
</table>

### 10. STABILITY AND REACTIVITY

**Reactivity**
Reacts with water

**Chemical stability**
Stable under normal conditions.

**Possibility of Hazardous Reactions**
Reacts with water.

- **Hazardous polymerization**
  Hazardous polymerization does not occur.

**Conditions to avoid**
Unintentional contact with water. When mixed with water, heat, steam, and possibly hydrogen and hydrogen sulfide gas may be generated. Do not mix magnesium chloride with water except in a well-ventilated area, under conditions where heat and any gas that may evolve can easily dissipate.

**Incompatible materials**
Unintentional contact with water.

**Hazardous Decomposition Products**
None while dry and cool. Magnesium chloride heated above 110°C in the presence of moisture will evolve hydrogen chloride fumes.

## 11. TOXICOLOGICAL INFORMATION

### Information on likely routes of exposure

**Product Information**

- **Inhalation**
  Product not classified.

- **Eye contact**
  Product not classified.

- **Skin Contact**
  Product not classified.

- **Ingestion**
  Product not classified.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Oral LD50</th>
<th>Dermal LD50</th>
<th>Inhalation LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnesium Chloride</td>
<td>5000 mg/kg bw</td>
<td>&gt;2000 mg/kg bw</td>
<td>-</td>
</tr>
<tr>
<td>7786-30-3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7732-18-5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Titanium</td>
<td>&gt; 5000 mg/kg bw</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7440-32-6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Magnesium</td>
<td>&gt;2000 mg/kg bw</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7439-95-4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Information on toxicological effects

- **Symptoms**
  None known.

- **Delayed and immediate effects as well as chronic effects from short and long-term exposure**
  
  - **Acute toxicity**
    Product not classified.
  
  - **Skin corrosion/irritation**
    Product not classified.
  
  - **Serious eye damage/eye irritation**
    Product not classified.
  
  - **Sensitization**
    Product not classified.
  
  - **Germ cell mutagenicity**
    Product not classified.
  
  - **Carcinogenicity**
    Product not classified.

- **Reproductive toxicity**
  Product not classified.
12. ECOLOGICAL INFORMATION

Ecotoxicity

This product as shipped is not classified for aquatic toxicity.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Algae/aquatic plants</th>
<th>Fish</th>
<th>Toxicity to microorganisms</th>
<th>Crustacea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnesium Chloride 7786-30-3</td>
<td>The 72 h EC50 of magnesium chloride to Desmodesmus subspicatus was greater than 100 mg of MgCl2/L.</td>
<td>The 96 h LC50 of magnesium chloride to Pimephales promelas was 2119.3 mg of MgCl2/L.</td>
<td>The 3 h EC50 of magnesium chloride for activated sludge was greater than 900 mg of MgCl2/L.</td>
<td>The 48 h LC50 of magnesium chloride hexahydrate to Daphnia magna was 548.4 mg of MgCl2/L.</td>
</tr>
<tr>
<td>Water 7732-18-5</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Titanium 7440-32-6</td>
<td>The 72 h EC50 of titanium dioxide to Pseudokirchnerella subcapitata was 61 mg of TiO2/L.</td>
<td>The 96 h LC50 of titanium dioxide to Cyprinodon variegatus was greater than 10,000 mg of TiO2/L.</td>
<td>The 3 h EC50 of titanium dioxide for activated sludge were greater than 1000 mg/L.</td>
<td>The 48 h EC50 of titanium dioxide to Daphnia Magna was greater than 1000 mg of TiO2/L.</td>
</tr>
<tr>
<td>Magnesium 7439-95-4</td>
<td>The 72 h EC50 of magnesium chloride hexahydrate to Desmodesmus subspicatus was greater than 12 mg of Mg/L.</td>
<td>The 96 h LC50 of magnesium chloride to Pimephales promelas was 541 mg of Mg/L.</td>
<td>The 3 h EC50 of magnesium chloride hexahydrate for activated sludge was greater than 108 mg of Mg/L.</td>
<td>The 48 h LC50 of magnesium chloride to Ceriodaphnia dubia was 225 mg of Mg/L. The 48 h LC50 of magnesium chloride hexahydrate to Daphnia magna was 322 mg of Mg/L.</td>
</tr>
</tbody>
</table>

Other adverse effects

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal of wastes
Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated packaging
Disposal should be in accordance with applicable regional, national and local laws and regulations.

This product contains one or more substances that are listed with the State of California as a hazardous waste.

14. TRANSPORT INFORMATION

DOT
- UN/ID No.: Regulated
- Proper shipping name: Water Reactive Solid, n.o.s., (Magnesium Chloride)
- Hazard Class: 4.3
- Packing Group: III
- Special Provisions: IB8, IP4, T1, TP33
15. REGULATORY INFORMATION

International Inventories
TSCA : Complies
DSL/NDSL : Complies
EINECS/ELINCS : Complies
ENCS : Complies
IECSC : Complies
KECL : Complies
PICCS : Complies
AICS : Complies

Legend:
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

US Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

SARA 311/312 Hazard Categories
Acute health hazard : No
Chronic Health Hazard : No
Fire hazard : No
Sudden release of pressure hazard : No
Reactive Hazard : Yes

CWA (Clean Water Act)
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

CERCLA
This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

US State Regulations

California Proposition 65
This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>New Jersey</th>
<th>Massachusetts</th>
<th>Pennsylvania</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water 7732-18-5</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

Page 7 / 8
SAC026 Magnesium Chloride (from Titanium Production)  

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Titanium</td>
<td>X</td>
<td>7440-32-6</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Magnesium</td>
<td>X</td>
<td>7439-95-4</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

U.S. EPA Label Information  
EPA Pesticide Registration Number Not applicable

16. OTHER INFORMATION

<table>
<thead>
<tr>
<th>NFPA</th>
<th>Health hazards</th>
<th>Flammability</th>
<th>Instability</th>
<th>Physical and Chemical Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>1</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>HMIS</th>
<th>Health hazards</th>
<th>Flammability</th>
<th>Physical hazards</th>
<th>Personal protection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>X</td>
</tr>
</tbody>
</table>

Chronic Hazard Star Legend  
* = Chronic Health Hazard

Issue Date 08-Jul-2015  
Revision Date 30-Jan-2020  
Revision Note  
SDS sections updated: 2, 3, 4, 5, 6, 9, 10, 12, 14, 16

Note:  
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 Safety Data Sheet

Additional information available from:  
Safety data sheets and labels available at ATImetals.com