MATERIAL SAFETY DATA SHEET

Product name: FR-20/200
Product id: 8815T1
Revision date: 25/12/2012
Supersedes: 10/01/2010

Revision: 5

1. Identification of the substance & the company

Chemical name: Magnesium hydroxide
Chemical family: Alkaline earth hydroxide
Type of product and use: A high thermal stability flame retardant and a smoke suppressant.
Supplier: ICL-IP America Inc
622 Emerson Road - Suite 500
St Louis, Missouri 63141, USA
Tel:(314)983-7884   Fax:(314)983-7607

Emergency Telephone: Chemtrec (800)424-9300
Medical: PROSAR 1-888-875-1685 (24HRS)

2. Hazards identification

Emergency Overview: White free flowing powder, odourless
May cause irritation to eyes and respiratory tract.

Potential Health Effects:
- Eye Contact: May cause mild irritation to the eyes.
- Skin contact: Not irritant
- Inhalation: May cause irritation to mucous membranes and upper respiratory tract. Symptoms include sore throat, coughing, shortness of breath and nasal irritation.
- Ingestion: May cause abdominal pain and/or diarrhea. Acts as a laxative.

3. Composition / information on ingredients

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS No.</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnesium hydroxide</td>
<td>1309-42-8</td>
<td>98</td>
</tr>
<tr>
<td>Stearic acid</td>
<td>57-11-4</td>
<td>2</td>
</tr>
</tbody>
</table>
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4. First-aid measures

Eye contact
Holding the eyelids apart, flush eyes promptly with copious flowing water for at least 20 minutes. Get medical attention if irritation persists.

Skin contact
Remove contaminated clothing. Wash skin thoroughly with mild soap and plenty of water for at least 15 minutes. Wash clothing before re-use. Get medical attention if irritation occurs.

Inhalation
In case of dust inhalation or breathing fumes released from heated material, remove person to fresh air. Keep him quiet and warm. Apply artificial respiration if necessary and get medical attention immediately.

Ingestion
If swallowed, wash mouth thoroughly with plenty of water. Get medical attention immediately.

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NOTE: Never give an unconscious person anything to drink
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Notes to the physician
Material with low toxicity
Treat symptomatically and supportively.

5. Fire - fighting measures

Suitable extinguishing media
Material is not combustible. Use extinguishing media appropriate to surrounding fire conditions.

Fire fighting procedure
Cool containers with water spray. In closed stores, provide fire-fighters with self-contained breathing apparatus in positive pressure mode.

Unusual fire and explosion hazards
Will decompose above 385°C forming magnesium oxide and water. This reaction does not create fire or explosion hazards.

6. Accidental release measures

Personal precautions
Wear respirator, chemical safety goggles, rubber gloves and boots.

Methods for cleaning up
Sweep up, place in a bag and hold for waste disposal or possible re-use. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.
7. Handling and storage

Handling
Keep containers tightly closed. Avoid bodily contact.

Storage
Store in a dry, cool, well-ventilated area away from incompatible materials (see "materials to avoid").

8. Exposure controls / personal protection

Exposure Limits:

<table>
<thead>
<tr>
<th>Components</th>
<th>ACGIH-TLV Data</th>
<th>OSHA (PEL) Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnesium hydroxide</td>
<td>Not determined</td>
<td>Not determined</td>
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<tr>
<td>(1309-42-8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stearic acid</td>
<td>10 mg/m³</td>
<td>Not determined</td>
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<tr>
<td>(57-11-4)</td>
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</tbody>
</table>

Ventilation requirements
Ventilation must be sufficient to maintain TLV-TWA below 3 mg/m³, respirable particles, and 10 mg/m³, inhalable particles (ACGIH recommendation for Particles (Insoluble or poorly soluble) Not Otherwise Specified (PNOS)).

Personal protective equipment:
- Respiratory protection: Dust respirator
- Hand protection: Protective gloves
- Eye protection: Chemical safety goggles
- Skin and body protection: Body covering clothes and boots

Hygiene measures
Wash hands thoroughly after handling and before eating or smoking. Do not eat, smoke or drink where material is handled, processed or stored. Safety shower and eye bath should be provided.
9. Physical and chemical properties

Appearance: White free flowing powder, odourless
Melting point/range: 350°C (decomposes)
Flash point: None
Flammable/Explosion limits: Not available
Auto-ignition temperature: Not applicable
Evaporation rate (ether=1): Not applicable under standard conditions
Solubility:
- Solubility in water: Practically insoluble
- Solubility in other solvents: Soluble in ammonium salts and dilute acids
Bulk density: 0.7-0.85 g/ml
Specific gravity: 2.36
Decomposition temperature: 385°C

10. Stability and reactivity

Stability: Stable under normal conditions
Materials to avoid: Strong acids and anhydrides.
Conditions to avoid: Heating above decomposition temperature
Hazardous decomposition products: None
Hazardous polymerization: Will not occur

11. Toxicological information

Note: The toxicological data refer to the main ingredient

Acute toxicity:
- Rat oral LD50: >5000 mg/kg
- Eye irritation (rabbit): Mild irritant
- Dermal irritation (rabbit): Not irritant

Chronic toxicity: No information available

Mutagenicity: Not mutagenic by the Ames Test

Carcinogenicity: Not classified by IARC
Not included in NTP 12th Report on Carcinogens

Reproductive toxicity: No information available
## 12. Ecological information

<table>
<thead>
<tr>
<th>Information on ecological effects</th>
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</thead>
<tbody>
<tr>
<td>Aquatic toxicity</td>
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</table>

## 13. Disposal considerations

| Waste disposal | Observe all federal, state and local environmental regulations when disposing of this material |

## 14. Transportation information

<table>
<thead>
<tr>
<th>DOT</th>
<th>Not regulated</th>
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<tbody>
<tr>
<td>IMDG</td>
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</tr>
<tr>
<td>ICAO/IATA</td>
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## 15. Regulatory information

<table>
<thead>
<tr>
<th>USA</th>
<th>Reported in the EPA TSCA Inventory.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>Listed in DSL</td>
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<tr>
<td>-WHMIS hazard class</td>
<td>Non-controlled</td>
</tr>
<tr>
<td>EU</td>
<td>Listed</td>
</tr>
<tr>
<td>Japan</td>
<td>Listed in METI</td>
</tr>
<tr>
<td>Australia</td>
<td>Listed in AICS</td>
</tr>
<tr>
<td>New Zealand Inventory</td>
<td>Listed in NZIoC</td>
</tr>
<tr>
<td>CHINA - China inventory</td>
<td>Listed in IECSC</td>
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<tr>
<td>Korea</td>
<td>Listed in ECL</td>
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Philippines
Listed in PICCS

16. Other information

GHS
Product is not subject to classification according to GHS. No label elements required.

This data sheet contains changes from the previous version in section(s)
Product name, 2, 4, 9

Health, Safety & Environment Policy
We will strive to ensure that our operations and products meet the needs of the present global community without compromising the ability of future generations to meet their needs. We accept that the success of our business is dependent on the supply of products and services that will benefit society whilst ensuring human safety and protection of the environment and natural resources. Within the framework of our commitment to the Responsible Care program, we will provide a healthy and safe work environment for employees and will responsibly manage our products at all stages of their life cycle in order to protect human health and the environment whilst maintaining high production standards of operation.

TO MEET THIS COMMITMENT WE WILL: Comply with or exceed applicable national and international regulatory requirements and other requirements to which we subscribe. Communicate openly and actively encourage dialogue with employees, customers and community concerning our products and operations. Implement documented management systems consistent with and for promotion of the Responsible Care ethics. Develop and supply products that can be manufactured, transported, used and disposed of safely whilst best meeting the needs of our customers. Regularly assess, continually improve and responsibly manage health, safety and environmental risks associated with products and processes throughout their life cycles. Share knowledge and expertise with others and seek to learn from and incorporate improved practices into our own operations. Educate and train employees, contractors and customers to improve their HSE performance. Communicate up-to-date information to enable our workers, customers and other interested parties to handle our products in a safe and environmentally responsible manner. Endeavor to work with customers, suppliers, distributors and contractors to foster the safe use, transport and disposal of our chemicals. Support Product Stewardship programs in cooperation with customers, distributors and transporters.

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In an event of discrepancy between the contents of this MSDS and the English version of it, the English version shall prevail.
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End of safety data sheet