SAFETY DATA SHEET

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier
Product Name: MagnaBrite™ 20% Liquid
Alternative names: Magnesium sulfate, water solution

1.2 Relevant identified uses of the substance or mixture and uses advised against
Identified use(s): Industrial use only in the paper, pulp and board industry.

1.3 Details of the supplier of the safety data sheet
Company Identification: PQ Corporation
P.O. Box 840
Valley Forge
PA 19482
USA
Telephone: +1 610-651-4200
E-Mail (competent person): sds.uk@pqcorp.com

1.4 Emergency telephone number
Emergency Phone No.: +1 800-424-9300

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
GHS Classification: Not classified as dangerous for supply/use.
EC Classification: Not classified as dangerous for supply/use.

Hazards summary: May cause mild eye irritation

2.2 Label elements
Hazard pictogram(s): Not applicable
Signal word(s): Not applicable
Hazard statement(s): Not applicable
Precautionary statement(s): Not applicable

2.3 Other hazards
Caution - spillages may be slippery.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Regulation (EC) No. 1272/2008 (CLP)

<table>
<thead>
<tr>
<th>Ingredient(s)</th>
<th>%W/W</th>
<th>CAS No.</th>
<th>EINECS No. / REACH Registration</th>
<th>Hazard symbol(s) and hazard statement(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric acid, magnesium salt; Magnesium sulfate</td>
<td>20</td>
<td>7487-88-9</td>
<td>231-298-2</td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>80</td>
<td>7732-18-5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SECTION 4: FIRST AID MEASURES

Revision: v1
Date of Issue: 04/2015
Date Previous Issue: 11/17/2006
4.1 Description of first aid measures
Eye Contact If substance has got into the eyes, immediately wash out with plenty of water for at least 15 minutes. If symptoms persist, obtain medical attention.
Skin Contact If irritation (redness, rash, blistering) develops, get medical attention.
Inhalation Remove patient from exposure, keep warm and at rest. If symptoms develop, obtain medical attention.
Ingestion Do not induce vomiting. Wash out mouth with water. If large amount swallowed or symptoms develop obtain medical attention.

4.2 Most important symptoms and effects, both acute and delayed
May cause mild eye irritation

SECTION 5: FIRE-FIGHTING MEASURES

5.1 Extinguishing media
Suitable Extinguishing Media Compatible with all standard fire fighting techniques.
Unsuitable extinguishing Media Not applicable.

5.2 Special hazards arising from the substance or mixture
Non-combustible.

5.3 Advice for fire-fighters
Goggles. A self contained breathing apparatus and suitable protective clothing should be worn in fire conditions.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Goggles.
An approved dust mask should be worn if dust is generated during handling.
See Also Section 8.

6.2 Environmental precautions
Sinks and mixes with water.

6.3 Methods and materials for containment and cleaning up
Caution - spillages may be slippery. Contain spillages.
Dampening with water can reduce dust. Sweep or preferably vacuum up and collect in suitable containers for recovery or disposal. Observe Local Regulations.

6.4 Reference to other sections
Not applicable.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid generation of dust.
See Also Section 8.
Wear protective equipment to comply with good occupational hygiene practice.
Do not eat, drink or smoke at the work place.

7.2 Conditions for safe storage, including any incompatibilities
Keep container tightly closed and dry. Protect from extremes of temperature and humidity. Recommended storage temperature 50%-120°F.

7.3 Specific end use(s)
Not applicable.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

8.2 Exposure controls
8.2.1 Appropriate engineering controls

Engineering methods to prevent or control exposure are preferred. Methods include process or personnel enclosure, mechanical ventilation (dilution and local exhaust), and control of process conditions.

8.2.2 Personal Protection

Respiratory protection
Wear suitable respiratory protective equipment if working in confined spaces with inadequate ventilation or where there is any risk of the exposure limits being exceeded.

Eye/face protection
Safety spectacles. Goggles.

Skin protection
Wear suitable protective clothing and gloves. If abrasion or irritation occurs.

8.2.3 Environmental Exposure Controls

Not applicable.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Liquid Clear</td>
</tr>
<tr>
<td>Odour</td>
<td>Odourless</td>
</tr>
<tr>
<td>Odour Threshold (ppm)</td>
<td>8.5</td>
</tr>
<tr>
<td>pH (Value)</td>
<td>8.5</td>
</tr>
<tr>
<td>Freezing Point (°C)</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Melting Point (°C)</td>
<td>&gt; 1000</td>
</tr>
<tr>
<td>Boiling Point (°C)</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Flash Point (°C) [Closed cup]</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Explosive Limit Ranges</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Vapour Pressure (mm Hg)</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Vapour Density (Air=1)</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Density (g/ml)</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Solubility (Water)</td>
<td>Miscible</td>
</tr>
<tr>
<td>Partition Coefficient</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Auto Ignition Point (°C)</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Decomposition Temperature (°C)</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Viscosity (mPa. s)</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Oxidising Properties</td>
<td>Not applicable.</td>
</tr>
</tbody>
</table>

9.2 Other information

Not available.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity
Stable under normal temperature conditions and recommended use.

10.2 Chemical stability
Stable.

10.3 Possibility of hazardous reactions
None known.

10.4 Conditions to avoid
Not available.

10.5 Incompatible materials
Metal hydrides and other water reactive materials.

10.6 Hazardous decomposition product(s)
At very high temperatures, magnesium oxide, sulfur dioxide, and sulfur trioxide may be generated.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

Ingestion
RTECS reports Oral TDLo= 428 mg/kg in man 351 mg/kg in women

Inhalation
No data.
Skin Contact Not classified.
Eye Contact Liquid or mist may cause discomfort and mild irritation.
Skin corrosion/irritation Not classified
Sensitisation Not classified
Mutagenicity Not classified
Carcinogenicity Components are not listed by IARC, NTP or OSHA as carcinogens.
Reproductive toxicity Not classified
STOT - single exposure Not classified
STOT - repeated exposure Not classified
Other information Not available.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity Not available.
12.2 Persistence and degradability Not available.
12.3 Bioaccumulative potential Sinks in water
12.4 Mobility in soil Not classified as PBT or vPvB.
12.5 Results of PBT and vPvB assessment Not available.
12.6 Other adverse effects Not available.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods Disposal should be in accordance with local, state or national legislation. Not a hazardous waste under RCRA Sec.3001. This material is not classified as hazardous waste under EC Directive 2008/98/EC (and amendments). This material is not classified as hazardous waste under the Hazardous Waste (England and Wales) Regulations SI 2005 No. 894.

SECTION 14: TRANSPORT INFORMATION

14.1 UN number Not classified as hazardous under DOT or US Transport Recommendations.
14.2 Proper Shipping Name Not applicable
14.3 Transport hazard class(es) Not applicable
14.4 Packing group Not applicable
14.5 Environmental hazards Not applicable
14.6 Special precautions for user No special packaging requirements.

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
TSCA Inventory Status: Reported/Included.
AICS Inventory Status: Reported/Included.
DSL/NDSL Inventory Status: Reported/Included.
Magnesium sulfate is an FDA GRAS substance pursuant to 21CFR 184.1443
HMIS:
Health Hazard: 0
Fire Hazard: 0
Reactivity: 0

15.2 Chemical Safety Assessment
SECTION 16: OTHER INFORMATION

This SDS was last reviewed: 04/2015
The following sections contain revisions or new statements: New Issue

EC Classification No. 67/548/EEC  Not classified as dangerous for supply/use.
Hazard Symbol
Risk Phrases
Safety Phrases  Handle in accordance with good industrial hygiene and safety practices.
  Avoid inhalation of dusts.

GHS Classification  Not classified as dangerous for supply/use.
Signal word(s)  Not applicable
Hazard pictogram(s)
Hazard statement(s)  Not applicable
Precautionary statement(s)  Not applicable

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