1 Identification of substance:

Product details:
Product name: Calcium hydride
Stock number: 19106

Manufacturer/Supplier:
Alfa Aesar, A Johnson Matthey Company
Johnson Matthey Catalog Company, Inc.
30 Bond Street
Ward Hill, MA 01835-8099
Emergency Phone: (978) 521-6300
CHEMTREC: (800) 424-9300
Web Site: www.alfa.com

Information Department: Health, Safety and Environmental Department
Emergency information:
During normal hours the Health, Safety and Environmental Department. After normal hours call CHEMTREC at (800) 424-9300.

2 Hazards identification

Hazard description:
F Highly flammable
Information pertaining to particular dangers for man and environment
R 15 Contact with water liberates extremely flammable gases.

Classification system
HMIS ratings (scale 0-4)
(Hazardous Materials Identification System)

<table>
<thead>
<tr>
<th>HEALTH</th>
<th>FIRE</th>
<th>REACTIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

Health (acute effects) = 1
Flammability = 3
Reactivity = 3

GHS label elements

Danger

2.12/1 - In contact with water releases flammable gases which may ignite spontaneously.

Prevention:
Handle under inert gas. Protect from moisture.
Keep container tightly closed.
Wear protective gloves/protective clothing/eye protection/face protection.

Response:
In case of fire: Use for extinction: CO2, powder or water spray.

Storage:
Store in a dry place. Store in a closed container.

Disposal:
Dispose of contents/container in accordance with local/regional/national/international regulations.

3 Composition/Data on components:

Chemical characterization:
Description: (CAS#)
calcium hydride (CAS# 7789-78-8)
Identification number(s):
EINECS Number: 232-189-2
Index number: 001-004-00-5

4 First aid measures

After inhalation
Supply fresh air. If required, provide artificial respiration. Keep patient warm.
Seek immediate medical advice.

After skin contact
Immediately wash with water and soap and rinse thoroughly.
Seek immediate medical advice.
5 Fire fighting measures

Suitable extinguishing agents
In case of fire, use sand, carbon dioxide or powdered extinguishing agent. Never use water.

For safety reasons unsuitable extinguishing agents: Water

Special hazards caused by the material, its products of combustion or resulting gases:
In case of fire, the following can be released:
Calcium oxide

Protective equipment:
Wear self-contained respirator.
Wear fully protective impervious suit.

6 Accidental release measures

Person-related safety precautions:
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation
Keep away from ignition sources

Measures for environmental protection:
Do not allow material to be released to the environment without proper governmental permits.

Measures for cleaning/collection:
Ensure adequate ventilation.
Do not flush with water or aqueous cleansing agents
Keep away from ignition sources.

Additional information:
See Section 7 for information on safe handling
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

Handling
Information for safe handling:
Handle under dry protective gas.
Keep container tightly sealed.
Store in cool, dry place in tightly closed containers.
Ensure good ventilation at the workplace.

Information about protection against explosions and fires: Keep ignition sources away.

Storage
Requirements to be met by storerooms and receptacles: No special requirements.

Information about storage in one common storage facility:
Store away from water/moisture.
Store away from oxidizing agents.
Do not store together with acids.

Further information about storage conditions:
Store under dry inert gas.
This product is moisture sensitive.
Keep container tightly sealed.
Store in cool, dry conditions in well sealed containers.
Protect from humidity and water.

8 Exposure controls and personal protection

Additional information about design of technical systems:
Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

Components with limit values that require monitoring at the workplace: Not required.

Additional information: No data

Personal protective equipment

General protective and hygienic measures
The usual precautionary measures for handling chemicals should be followed.
Keep away from foodstuffs, beverages and feed.
Remove all soiled and contaminated clothing immediately.
Wash hands before breaks and at the end of work.

Breathing equipment: Use suitable respirator when high concentrations are present.
Product name: Calcium hydride

9 Physical and chemical properties:

<table>
<thead>
<tr>
<th>General Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form: Solid</td>
</tr>
<tr>
<td>Color: Light grey</td>
</tr>
<tr>
<td>Odor: Odorless</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Change in condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melting point/Melting range: 600°C (1112°F) (dec)</td>
</tr>
<tr>
<td>Boiling point/Boiling range: Not determined</td>
</tr>
<tr>
<td>Sublimation temperature / start: Not determined</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flammability (solid, gaseous):</th>
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</thead>
<tbody>
<tr>
<td>Contact with water liberates extremely flammable gases.</td>
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</table>

<table>
<thead>
<tr>
<th>Ignition temperature:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not determined</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Deformation temperature:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not determined</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Explosion limits:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower: Not determined</td>
</tr>
<tr>
<td>Upper: Not determined</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vapor pressure:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not determined</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Density at 20°C (68°F):</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.9 g/cm³</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Solubility in / Miscibility with</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water: Contact with water releases flammable gases</td>
</tr>
</tbody>
</table>

10 Stability and reactivity

Thermal decomposition / conditions to be avoided:
Decomposition will not occur if used and stored according to specifications.

Materials to be avoided:
Water/moisture
Oxidizing agents
Acids

Dangerous reactions: Contact with water releases flammable gases

Dangerous products of decomposition: Calcium oxide

11 Toxicological information

Acute toxicity:
Primary irritant effect:
on the skin: May cause irritation
on the eye: May cause irritation
Sensitization: No sensitizing effects known.
Subacute to chronic toxicity:
The toxicity of calcium compounds is generally due to the anion.
Additional toxicological information:
To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

12 Ecological information:

Additional ecological information:
General notes:
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
13 Disposal considerations

Product:
Recommendation: Consult state, local or national regulations to ensure proper disposal.

Uncleaned packagings:
Recommendation: Disposal must be made according to official regulations.

14 Transport information

DOT regulations:

| Hazard class: | 4.3 |
| Identification number: | UN1404 |
| Packing group: | I |
| Proper shipping name (technical name): | CALCIUM HYDRIDE |

Land transport ADR/RID (cross-border)

| ADR/RID class: | 4.3 (W2) Substances which, in contact with water, emit flammable gases |
| Danger code (Kemler): | - |
| UN-Number: | 1404 |
| Packaging group: | I |
| Description of goods: | 1404 CALCIUM HYDRIDE |

Maritime transport IMDG:

| IMDG Class: | 4.3 |
| UN Number: | 1404 |
| Label: | 4.3 |
| Packaging group: | I |
| EMS Number: | F-G,S-O |
| Marine pollutant: | No |
| Proper shipping name: | CALCIUM HYDRIDE |

Air transport ICAO-TI and IATA-DGR:

| ICAO/IATA Class: | 4.3 |
| UN/ID Number: | 1404 |
| Label: | 4.3 |
| Packaging group: | I |
| Proper shipping name: | CALCIUM HYDRIDE |

15 Regulations

Product related hazard informations:
Hazard symbols:
F Highly flammable
Risk phrases:
15 Contact with water liberates extremely flammable gases.

Safety phrases:
7/8 Keep container tightly closed and dry.
24/25 Avoid contact with skin and eyes.
43 In case of fire, use sand, carbon dioxide or powdered extinguishing agent. Never use water.

National regulations
All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.
All components of this product are listed on the Canadian Domestic Substances List (DSL).

Information about limitation of use: For use only by technically qualified individuals.

16 Other information:
Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Department issuing MSDS: Health, Safety and Environmental Department.
Contact: Zachariah Holt
Abbreviations and acronyms:
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
IMDG: International Maritime Code for Dangerous Goods
DCT: US Department of Transportation
IATA: International Air Transport Association
IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)
ICAO: International Civil Aviation Organization
ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
HMIS: Hazardous Materials Identification System (USA)