SAFETY DATA SHEET

1. Identification

Product identifier
Magnesium Perchlorate

Other means of identification
SDS number 00370
Part Number 501-171, 501-171-HAZ
Synonyms ANHYDRONE

Recommended use
Professional, scientific research and development

Recommended restrictions
None known.

Manufacturer/Importer/Supplier/Distributor information

Supplier
Company name LECO Corporation
Address 3000 Lakeview Avenue
St. Joseph, MI 49085
United States
Telephone 269-983-5531
Website www.leco.com
E-mail info@leco.com
Emergency phone number Chemtrec: 800-424-9300
Chemtrec Int'l: 703-527-3887

2. Hazard(s) identification

Physical hazards
Oxidizing solids Category 2

Health hazards
Serious eye damage/eye irritation Category 2A
Specific target organ toxicity, single exposure Category 3 respiratory tract irritation

Environmental hazards
Not classified.

OSHA defined hazards
Not classified.

Label elements

Signal word Danger
Hazard statement May intensify fire; oxidizer. Causes serious eye irritation. May cause respiratory irritation.

Precautionary statement
Prevention
Keep away from heat. Keep/Store away from clothing/combustible materials. Avoid breathing dust. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves/eye protection/face protection.

Response
If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a poison center/doctor if you feel unwell. If eye irritation persists: Get medical advice/attention. In case of fire: Use appropriate media to extinguish.

Storage
Store in a well-ventilated place. Keep container tightly closed. Store locked up.

Disposal
Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Hazard(s) not otherwise classified (HNOC)
None known.

Supplemental information
None.
3. Composition/information on ingredients

Substances

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Common name and synonyms</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAGNESIUM PERCHLORATE</td>
<td>ANHYDRONE</td>
<td>10034-81-8</td>
<td>90 - 100</td>
</tr>
</tbody>
</table>

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

Inhalation: If dust from the material is inhaled, remove the affected person immediately to fresh air. Call a POISON CENTER or doctor/physician if you feel unwell.

Skin contact: Wash off immediately with plenty of water. Get medical attention if irritation develops and persists.

Eye contact: Do not rub eyes. Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.

Ingestion: Call a physician or poison control center immediately. Have victim rinse mouth thoroughly with water.

Most important symptoms/effects, acute and delayed: Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Upper respiratory tract irritation.

Indication of immediate medical attention and special treatment needed: Provide general supportive measures and treat symptomatically.

General information: Contact with combustible material may cause fire. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Wash contaminated clothing before reuse.

5. Fire-fighting measures


Unsuitable extinguishing media: None known.

Specific hazards arising from the chemical: Greatly increases the burning rate of combustible materials. Containers may explode when heated. During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters: Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions: In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk. In the event of fire, cool tanks with water spray.

Specific methods: Cool containers exposed to flames with water until well after the fire is out.

General fire hazards: May intensify fire; oxidizer. Contact with combustible material may cause fire.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures: Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Keep away from clothing and other combustible materials. Wear appropriate protective equipment and clothing during clean-up. Avoid inhalation of dust from the spilled material. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation.

Methods and materials for containment and cleaning up: Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material. Ventilate the contaminated area. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Shovel the material into waste container. If sweeping of a contaminated area is necessary use a dust suppressant agent which does not react with the product. Collect dust using a vacuum cleaner equipped with HEPA filter. Minimize dust generation and accumulation. Wear appropriate protective equipment and clothing during clean-up.

Environmental precautions: Avoid discharge into drains, water courses or onto the ground.
7. Handling and storage
Precautions for safe handling
Keep away from heat. Provide appropriate exhaust ventilation at places where dust is formed. Minimize dust generation and accumulation. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Keep away from clothing and other combustible materials. Take any precaution to avoid mixing with combustibles. Avoid breathing dust. Avoid contact with eyes. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities
Store locked up. Do not store near combustible materials. Keep away from heat. Store in a cool, dry place out of direct sunlight. Store in original tightly closed container. Store in a well-ventilated place. Do not store around flammable or combustible materials. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits
No exposure limits noted for ingredient(s).

Biological limit values
No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls
Ventilation should be sufficient to effectively remove and prevent buildup of any dusts or fumes that may be generated during handling or thermal processing. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection
Wear safety glasses with side shields (or goggles). Use tight fitting goggles if dust is generated.

Skin protection

Hand protection
Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier. Frequent change is advisable.

Other
Wear suitable protective clothing.

Respiratory protection
Respirator must be worn if exposed to dust. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits.

Thermal hazards
Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations
Keep from contact with clothing and other combustible materials. Remove and wash contaminated clothing promptly. Do not breathe dust. Avoid contact with eyes. Wash hands before breaks and immediately after handling the product. Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Appearance
Granular.

Physical state
Solid.

Form
Granules and Powder.

Color
White

Odor
Odorless.

Odor threshold
Not available.

pH
Not available.

Melting point/freezing point
482 °F (250 °C)

Initial boiling point and boiling range
Not available.

Flash point
Not available.

Evaporation rate
Not available.

Flammability (solid, gas)
Not available.

Upper/lower flammability or explosive limits

Flammability limit - lower (%)
Not available.

Flammability limit - upper (%)
Not available.

Explosive limit - lower (%)
Not available.

Explosive limit - upper (%)
Not available.

Vapor pressure
Not available.

Vapor density
Not available.
Relative density Not available.

Solubility(ies)
Solubility (water) very soluble with evolution of heat

Partition coefficient
(n-octanol/water) Not available.

Auto-ignition temperature Not available.

Decomposition temperature > 482 °F (> 250 °C)

Viscosity Not available.

Other information
Density 2.20 g/cm³ estimated
Explosive properties Not explosive.
Molecular formula Cl·H-O₄.₁/₂Mg
Molecular weight 223.2 g/mol
Oxidizing properties May intensify fire; oxidizer.
pH in aqueous solution 5 - 8 (5% solution) estimated

10. Stability and reactivity
Reactivity Greatly increases the burning rate of combustible materials.
Chemical stability Material is stable under normal conditions.
Possibility of hazardous reactions Hazardous polymerization does not occur.
Conditions to avoid Heat. Avoid spread of dust. Drying of this product on clothing or combustible materials may cause fire. Contact with incompatible materials.
Hazardous decomposition products Hydrogen chloride.

11. Toxicological information
Information on likely routes of exposure
Inhalation Inhalation of dusts may cause respiratory irritation.
Skin contact No adverse effects due to skin contact are expected.
Eye contact Causes serious eye irritation.
Ingestion Not available.

Symptoms related to the physical, chemical and toxicological characteristics Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Upper respiratory tract irritation.

Information on toxicological effects
Acute toxicity May cause respiratory irritation.

Product Species Test Results
Magnesium Perchlorate (CAS 10034-81-8)

<table>
<thead>
<tr>
<th>Product</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute</td>
<td>Mouse</td>
<td>1500 mg/kg</td>
</tr>
<tr>
<td>Other</td>
<td>Mouse</td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Mouse</td>
<td></td>
</tr>
</tbody>
</table>

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation Prolonged skin contact may cause temporary irritation.
Serious eye damage/eye irritation Causes serious eye irritation.

Respiratory or skin sensitization
Respiratory sensitization Not available.
Skin sensitization This product is not expected to cause skin sensitization.
Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity

This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Reproductive toxicity

This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure

May cause respiratory irritation.

Specific target organ toxicity - repeated exposure

Not available.

Aspiration hazard

Not available.

Further information

This product has no known adverse effect on human health.

12. Ecological information

Ecotoxicity

This material is not expected to be harmful to aquatic life.

Persistence and degradability

None known.

Bioaccumulative potential

No data available.

Mobility in soil

No data available.

Other adverse effects

No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions

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

Hazardous waste code

The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products

Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner.

Contaminated packaging

Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

UN number: UN1475
UN proper shipping name: Magnesium perchlorate
Transport hazard class(es):
- Class: 5.1
- Subsidiary risk: -
- Label(s): 5.1
- Packing group: II
- Special precautions for user: Read safety instructions, SDS and emergency procedures before handling.

IATA

UN number: UN1475
UN proper shipping name: Magnesium perchlorate
Transport hazard class(es):
- Class: 5.1
- Subsidiary risk: -
- Packing group: II
- ERG Code: 5L
- Special precautions for user: Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number: UN1475
UN proper shipping name: MAGNESIUM PERCHLORATE
Transport hazard class(es):
- Class: 5.1
- Subsidiary risk: -
- Packing group: II
- Special precautions for user: Read safety instructions, SDS and emergency procedures before handling.
15. Regulatory information

US federal regulations
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)
Not listed.

SARA 304 Emergency release notification
Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - Yes
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance
Not listed.

SARA 311/312 Hazardous chemical
Yes

SARA 313 (TRI reporting)
Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
Not regulated.

Safe Drinking Water Act (SDWA)
Monitoring

US state regulations

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)
Not listed.
US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))
MAGNESIUM PERCHLORATE (CAS 10034-81-8)

US. Massachusetts RTK - Substance List
MAGNESIUM PERCHLORATE (CAS 10034-81-8)

US. New Jersey Worker and Community Right-to-Know Act
Not listed.

US. Pennsylvania Worker and Community Right-to-Know Law
MAGNESIUM PERCHLORATE (CAS 10034-81-8)
Not regulated.

US. Rhode Island RTK
MAGNESIUM PERCHLORATE (CAS 10034-81-8)
Not regulated.

US. California Proposition 65
California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International Inventories

<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Australian Inventory of Chemical Substances (AICS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Domestic Substances List (DSL)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Non-Domestic Substances List (NDSL)</td>
<td>No</td>
</tr>
<tr>
<td>China</td>
<td>Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European Inventory of Existing Commercial Chemical Substances (EINECS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European List of Notified Chemical Substances (ELINCS)</td>
<td>No</td>
</tr>
<tr>
<td>Japan</td>
<td>Inventory of Existing and New Chemical Substances (ENCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Korea</td>
<td>Existing Chemicals List (ECL)</td>
<td>Yes</td>
</tr>
<tr>
<td>New Zealand</td>
<td>New Zealand Inventory</td>
<td>Yes</td>
</tr>
<tr>
<td>Philippines</td>
<td>Philippine Inventory of Chemicals and Chemical Substances (PICCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>United States &amp; Puerto Rico</td>
<td>Toxic Substances Control Act (TSCA) Inventory</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 06-20-2013
Revision date 07-13-2015
Version # 04

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. Supplier cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user’s responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use.