1. PRODUCT AND COMPANY IDENTIFICATION

Product name: Calcium / Magnesium Chloride / Phosphorylethanolamine Formulation

Manufacturer or supplier's details
Company: MSD
Address: Briahnager - Off Pune Nagar Road
Wagholi - Pune - India 412 207
Telephone: +1-908-740-4000
Emergency telephone number: +1-908-423-6000
E-mail address: EHSDATASTEWARD@msd.com

Recommended use of the chemical and restrictions on use
Recommended use: Veterinary product

2. HAZARDS IDENTIFICATION

Manufacture, Storage and Import of Hazardous Chemicals Rules 1989

Classification
Not classified as hazardous according to criteria laid down in Part I of Schedule-1.

GHS Classification
Reproductive toxicity: Category 1B

GHS label elements
Hazard pictograms:

Signal word: Danger
Hazard statements: H360FD May damage fertility. May damage the unborn child.
Precautionary statements:
Prevention:
P203 Obtain, read and follow all safety instructions before use.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
P318 IF exposed or concerned, get medical advice.
Storage:
SAFETY DATA SHEET

Calcium / Magnesium Chloride / Phosphorylethanolamine Formulation

Version 3.0  Revision Date: 09.11.2020  SDS Number: 5389019-00004  Date of last issue: 10.10.2020
Date of first issue: 28.01.2020

P405 Store locked up.

Disposal:
P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards which do not result in classification
None known.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

<table>
<thead>
<tr>
<th>Components</th>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Boric acid</td>
<td>10043-35-3</td>
<td>&gt;= 5.5 - &lt; 10</td>
</tr>
<tr>
<td></td>
<td>Magnesium chloride</td>
<td>7786-30-3</td>
<td>&gt;= 5 - &lt; 10</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

General advice : In the case of accident or if you feel unwell, seek medical advice immediately.
When symptoms persist or in all cases of doubt seek medical advice.

If inhaled : If inhaled, remove to fresh air.
Get medical attention.

In case of skin contact : In case of contact, immediately flush skin with soap and plenty of water.
Remove contaminated clothing and shoes.
Get medical attention.
Wash clothing before reuse.
Thoroughly clean shoes before reuse.

In case of eye contact : Flush eyes with water as a precaution.
Get medical attention if irritation develops and persists.

If swallowed : If swallowed, DO NOT induce vomiting.
Get medical attention.
Rinse mouth thoroughly with water.

Most important symptoms and effects, both acute and delayed : May damage fertility. May damage the unborn child.

Protection of first-aiders : First Aid responders should pay attention to self-protection, and use the recommended personal protective equipment when the potential for exposure exists (see section 8).

Notes to physician : Treat symptomatically and supportively.

5. FIREFIGHTING MEASURES

Suitable extinguishing media : Water spray
Alcohol-resistant foam
Carbon dioxide (CO2)
Dry chemical

Unsuitable extinguishing : None known.
media
Specific hazards during firefighting: Exposure to combustion products may be a hazard to health.
Hazardous combustion products:
- Carbon oxides
- Metal oxides
- Chlorine compounds
- Boron oxides
Specific extinguishing methods:
- Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Use water spray to cool unopened containers.
- Remove undamaged containers from fire area if it is safe to do so.
- Evacuate area.
Special protective equipment for firefighters:
- In the event of fire, wear self-contained breathing apparatus.
- Use personal protective equipment.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:
- Use personal protective equipment.
- Follow safe handling advice (see section 7) and personal protective equipment recommendations (see section 8).
Environmental precautions:
- Avoid release to the environment.
- Prevent further leakage or spillage if safe to do so.
- Prevent spreading over a wide area (e.g. by containment or oil barriers).
- Retain and dispose of contaminated wash water.
- Local authorities should be advised if significant spillages cannot be contained.
Methods and materials for containment and cleaning up:
- Soak up with inert absorbent material.
- For large spills, provide dyking or other appropriate containment to keep material from spreading.
- If dyked material can be pumped, store recovered material in appropriate container.
- Clean up remaining materials from spill with suitable absorbent.
- Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable.
- Sections 13 and 15 of this SDS provide information regarding certain local or national requirements.

7. HANDLING AND STORAGE

Technical measures:
- See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.
Local/Total ventilation:
- If sufficient ventilation is unavailable, use with local exhaust ventilation.
Advice on safe handling:
- Do not get on skin or clothing.
- Do not breathe vapours or spray mist.
- Do not swallow.
Avoid contact with eyes.
Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment.
Keep container tightly closed.
Take care to prevent spills, waste and minimize release to the environment.

Conditions for safe storage:
- Keep in properly labelled containers.
- Store locked up.
- Keep tightly closed.
- Store in accordance with the particular national regulations.

Materials to avoid:
- Do not store with the following product types:
  - Strong oxidizing agents

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters / Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boric acid</td>
<td>10043-35-3</td>
<td>TWA (Inhalable particulate matter)</td>
<td>2 mg/m³ (Borate)</td>
<td>ACGIH</td>
</tr>
<tr>
<td>Magnesium chloride</td>
<td>7786-30-3</td>
<td>TWA (Inhalable particulate matter)</td>
<td>6 mg/m³ (Borate)</td>
<td>ACGIH</td>
</tr>
</tbody>
</table>

Engineering measures:
- Use appropriate engineering controls and manufacturing technologies to control airborne concentrations (e.g., drip-less quick connections).
- All engineering controls should be implemented by facility design and operated in accordance with GMP principles to protect products, workers, and the environment.
- Laboratory operations do not require special containment.

Personal protective equipment

Respiratory protection:
- If adequate local exhaust ventilation is not available or exposure assessment demonstrates exposures outside the recommended guidelines, use respiratory protection.
  - Filter type: Particulates type
  - Material: Chemical-resistant gloves

Eye protection:
- Wear safety glasses with side shields or goggles.
- If the work environment or activity involves dusty conditions, mists or aerosols, wear the appropriate goggles.
- Wear a faceshield or other full face protection if there is a potential for direct contact to the face with dusts, mists, or aerosols.
Skin and body protection:
- Work uniform or laboratory coat.

Hygiene measures:
- If exposure to chemical is likely during typical use, provide eye flushing systems and safety showers close to the working place.
- When using do not eat, drink or smoke.
- Wash contaminated clothing before re-use.
- The effective operation of a facility should include review of engineering controls, proper personal protective equipment, appropriate degowning and decontamination procedures, industrial hygiene monitoring, medical surveillance and the use of administrative controls.

9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance: liquid
- Colour: Colorless to pale yellow
- Odour: No data available
- Odour Threshold: No data available
- pH: 3.4 - 4.5
- Melting point/freezing point: No data available
- Initial boiling point and boiling range: No data available
- Flash point: No data available
- Evaporation rate: No data available
- Flammability (solid, gas): Not applicable
- Flammability (liquids): No data available
- Upper explosion limit / Upper flammability limit: No data available
- Lower explosion limit / Lower flammability limit: No data available
- Vapour pressure: No data available
- Relative vapour density: No data available
- Relative density: No data available
- Density: No data available
- Solubility(ies):
  - Water solubility: No data available
SAFETY DATA SHEET

Calcium / Magnesium Chloride / Phosphorylethanolamine Formulation

Partition coefficient: n-octanol/water: Not applicable
Auto-ignition temperature: No data available
Decomposition temperature: No data available
Viscosity
Viscosity, kinematic: No data available
Explosive properties: Not explosive
Oxidizing properties: The substance or mixture is not classified as oxidizing.
Molecular weight: No data available
Particle size: Not applicable

10. STABILITY AND REACTIVITY

Reactivity: Not classified as a reactivity hazard.
Chemical stability: Stable under normal conditions.
Possibility of hazardous reactions: Can react with strong oxidizing agents.
Conditions to avoid: None known.
Incompatible materials: Oxidizing agents
Hazardous decomposition products: No hazardous decomposition products are known.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure: Inhalation
Skin contact
Ingestion
Eye contact

Acute toxicity
Not classified based on available information.

Product:
Acute oral toxicity: Acute toxicity estimate: > 5,000 mg/kg
Method: Calculation method

Components:

Boric acid:
Acute oral toxicity: LD50 (Rat): 3,450 mg/kg
Acute inhalation toxicity: LC50 (Rat): > 2.03 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403
Assessment: The substance or mixture has no acute inhala-
Acute dermal toxicity: LD50 (Rabbit): > 2,000 mg/kg
Assessment: The substance or mixture has no acute dermal toxicity

Magnesium chloride:
Acute oral toxicity: LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 423
Assessment: The substance or mixture has no acute oral toxicity
Remarks: Based on data from similar materials

Acute dermal toxicity: LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 402
Assessment: The substance or mixture has no acute dermal toxicity
Remarks: Based on data from similar materials

Skin corrosion/irritation
Not classified based on available information.

Components:
Boric acid:
Species: Rabbit
Result: No skin irritation

Magnesium chloride:
Species: reconstructed human epidermis (RhE)
Remarks: Based on data from similar materials

Result: No skin irritation

Serious eye damage/eye irritation
Not classified based on available information.

Components:
Boric acid:
Species: Rabbit
Result: No eye irritation

Magnesium chloride:
Species: Rabbit
Method: OECD Test Guideline 405
Result: No eye irritation
Remarks: Based on data from similar materials
Respiratory or skin sensitisation

Skin sensitisation
Not classified based on available information.

Respiratory sensitisation
Not classified based on available information.

Components:

<table>
<thead>
<tr>
<th>Boric acid:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Type</td>
</tr>
<tr>
<td>Exposure routes</td>
</tr>
<tr>
<td>Species</td>
</tr>
<tr>
<td>Method</td>
</tr>
<tr>
<td>Result</td>
</tr>
</tbody>
</table>

| Magnesium chloride:
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Type</td>
</tr>
<tr>
<td>Exposure routes</td>
</tr>
<tr>
<td>Species</td>
</tr>
<tr>
<td>Method</td>
</tr>
<tr>
<td>Result</td>
</tr>
<tr>
<td>Remarks</td>
</tr>
</tbody>
</table>

Germ cell mutagenicity
Not classified based on available information.

Components:

<table>
<thead>
<tr>
<th>Boric acid:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Genotoxicity in vitro</td>
</tr>
<tr>
<td>Test Type: Bacterial reverse mutation assay (AMES)</td>
</tr>
<tr>
<td>Result: negative</td>
</tr>
<tr>
<td>Test Type: In vitro mammalian cell gene mutation test</td>
</tr>
<tr>
<td>Result: equivocal</td>
</tr>
<tr>
<td>Test Type: Chromosome aberration test in vitro</td>
</tr>
<tr>
<td>Result: negative</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Magnesium chloride:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Genotoxicity in vitro</td>
</tr>
<tr>
<td>Test Type: In vitro mammalian cell gene mutation test</td>
</tr>
<tr>
<td>Result: negative</td>
</tr>
<tr>
<td>Test Type: Chromosome aberration test in vitro</td>
</tr>
<tr>
<td>Method: OECD Test Guideline 473</td>
</tr>
</tbody>
</table>
Result: negative
Remarks: Based on data from similar materials

Test Type: Bacterial reverse mutation assay (AMES)
Result: negative

Carcinogenicity
Not classified based on available information.

Components:

**Boric acid:**

- **Species:** Mouse
- **Application Route:** Ingestion
- **Exposure time:** 103 weeks
- **Result:** negative

**Magnesium chloride:**

- **Species:** Mouse
- **Application Route:** Ingestion
- **Exposure time:** 18 Months
- **Result:** negative
- **Remarks:** Based on data from similar materials

Reproductive toxicity
May damage fertility. May damage the unborn child.

Components:

**Boric acid:**

- **Effects on fertility:** Test Type: Three-generation reproduction toxicity study
  Species: Rat
  Application Route: Ingestion
  Result: positive

- **Effects on foetal development:** Test Type: Embryo-foetal development
  Species: Rabbit
  Application Route: Ingestion
  Result: positive

- **Reproductive toxicity - Assessment:** Clear evidence of adverse effects on sexual function and fertility, based on animal experiments. Clear evidence of adverse effects on development, based on animal experiments.

**Magnesium chloride:**

- **Effects on fertility:** Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test
  Species: Rat
  Application Route: Ingestion
  Method: OECD Test Guideline 422
  Result: negative
10. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

Boric acid:
- Toxicity to fish: LC50 (Pimephales promelas (fathead minnow)): 74 mg/l
  Exposure time: 96 h
- Toxicity to daphnia and other aquatic invertebrates: EC50 (Ceriodaphnia dubia (water flea)): 102 mg/l
  Exposure time: 48 h
- Toxicity to algae/aquatic plants: EC50 (Pseudokirchneriella subcapitata (green algae)): 52.4 mg/l
  Exposure time: 72 h
<table>
<thead>
<tr>
<th><strong>Calcium / Magnesium Chloride / Phosphorylethanolamine Formulation</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Method</strong>: OECD Test Guideline 201</td>
</tr>
<tr>
<td><strong>NOEC</strong> <em>(Pseudokirchneriella subcapitata (green algae))</em>: 17.5 mg/l</td>
</tr>
<tr>
<td><strong>Exposure time</strong>: 72 h</td>
</tr>
<tr>
<td><strong>Method</strong>: OECD Test Guideline 201</td>
</tr>
</tbody>
</table>

**Toxicity to microorganisms**

| Method: OECD Test Guideline 209 |
| **EC10**: 35.4 mg/l |
| **Exposure time**: 3 h |

**Toxicity to fish (Chronic toxicity)**

| Species: Danio rerio (zebra fish) |
| **NOEC**: 6.4 mg/l |
| **Exposure time**: 34 d |
| **Method**: OECD Test Guideline 210 |

**Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)**

| Species: Daphnia magna (Water flea) |
| **NOEC**: 10.8 mg/l |
| **Exposure time**: 21 d |

**Magnesium chloride:**

**Toxicity to fish**

| LC50 *(Pimephales promelas (fathead minnow))*: 2,119.3 mg/l |
| **Exposure time**: 96 h |

**Toxicity to daphnia and other aquatic invertebrates**

| EC50 *(Daphnia magna (Water flea))*: 548.4 mg/l |
| **Exposure time**: 48 h |

**Toxicity to algae/aquatic plants**

| ErC50 *(Desmodesmus subspicatus (green algae))*: > 100 mg/l |
| **Exposure time**: 72 h |
| **Method**: OECD Test Guideline 201 |

**NOEC** *(Desmodesmus subspicatus (green algae))*: > 100 mg/l |
| **Exposure time**: 72 h |
| **Method**: OECD Test Guideline 201 |

**Toxicity to microorganisms**

| NOEC: > 900 mg/l |
| **Exposure time**: 3 h |
| **Method**: OECD Test Guideline 209 |

**Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)**

| EC10: 321 mg/l |
| **Exposure time**: 21 d |
| **Species**: Daphnia magna (Water flea) |

**Persistence and degradability**

No data available

**Bioaccumulative potential**

**Components:**

**Boric acid:**
Bioaccumulation
Species: Cyprinus carpio (Carp)
Bioconcentration factor (BCF): \( \leq 3.2 \)
Method: OECD Test Guideline 305

Partition coefficient: \( n \)-octanol/water
\( \log \text{Pow} : -1.09 \)

Mobility in soil
No data available

Other adverse effects
No data available

13. DISPOSAL CONSIDERATIONS

Disposal methods
- Waste from residues: Dispose of in accordance with local regulations.
- Contaminated packaging: Empty containers should be taken to an approved waste handling site for recycling or disposal. If not otherwise specified: Dispose of as unused product.

14. TRANSPORT INFORMATION

International Regulations
- UNRTDG: Not regulated as a dangerous good
- IATA-DGR: Not regulated as a dangerous good
- IMDG-Code: Not regulated as a dangerous good

Transport in bulk according to IMO instruments
Not applicable for product as supplied.

15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

The components of this product are reported in the following inventories:
- AICS: not determined
- DSL: not determined
- IECSC: not determined
SAFETY DATA SHEET

Calcium / Magnesium Chloride / Phosphoryl ethanolamine Formulation

Version 3.0  Revision Date: 09.11.2020  SDS Number: 5389019-00004  Date of last issue: 10.10.2020

Date of first issue: 28.01.2020

16. OTHER INFORMATION

Further information

Items where changes have been made to the previous version are highlighted in the body of this document by two vertical lines.

Date format: dd.mm.yyyy

Full text of other abbreviations
ACGIH / TWA: USA. ACGIH Threshold Limit Values (TLV)
ACGIH / STEL: 8-hour, time-weighted average
ACGIH: Short-term exposure limit

All - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IDSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50% of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

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 is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only
to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user’s end product, if applicable.