

Material Safety Data Sheet

Trimagnesium Phosphate

Section 1 - Product Identification

Synonyms : Phosphoric acid, Magnesium salt (2:3)
Tertiary Magnesium Phosphate
Bobierrite

Molecular Weight : 265.855 g/mol

Chemical Formula : $Mg_3(PO_4)_2$

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Recommended use of the chemical and restrictions on use

The product is used in:

- Food Additive
- Food Contacts
- Personal Care

Section 2 – Composition/Information on Ingredients

The product contains greater than 98 percent (%) di-magnesium phosphate trihydrate $MgHPO_4 \cdot 3H_2O$

| Chemical Name | CAS No | Purity, % |
|------------------------------|-----------|-----------|
| Magnesium Phosphate Tribasic | 7782-75-4 | min. 98 |

Section 3 – Hazards Identification

3.1 Classification of the substance according to GHS

Not identified

3.2 Other hazards

Swallowed

Accidental ingestion of the material may be damaging to the health of the individual. ! As absorption of phosphates from the bowel is poor, poisoning this way is less likely. Effects can include vomiting, tiredness, fever, diarrhea, low blood pressure, slow pulse, cyanosis, spasms of the wrist, coma and severe body spasms. ! Magnesium salts are generally absorbed so slowly that oral administration causes few toxic effects, as the dose is readily expelled via the bowel. If evacuation fails, mucosal irritation and absorption may result. This can result in nervous system depression, heart effects, loss of reflexes and death due to paralysis of breathing. These usually do not occur unless the bowel or kidneys are damaged.

Eye

This material can cause eye irritation and damage in some persons

Skin

This material can cause inflammation of the skin on contact in some persons. The material may accentuate any pre-existing dermatitis condition. Skin contact is not thought to have harmful health effects, however the material may still produce health damage following entry through wounds, lesions or abrasions. Open cuts, abraded or

irritated skin should not be exposed to this material. Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

Inhaled

The material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage.

Chronic Health Effects

Long-term exposure to respiratory irritants may result in disease of the airways involving difficult breathing and related systemic problems. Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems. Long term exposure to high dust concentrations may cause changes in lung function i.e. pneumoconiosis; caused by particles less than 0.5 micron penetrating and remaining in the lung. Prime symptom is breathlessness; lung shadows show on X-ray. Sodium phosphate dibasic can cause stones in the kidney, loss of mineral from the bones and loss of thyroid gland function.

Section 4 – First-Aid Measures

4.1. Description of first aid measures

Skin contact

Immediately remove all contaminated clothing, including footwear. Flush skin and hair with running water (and soap if available). Seek medical attention in event of irritation.

Eye contact

Wash out immediately with fresh running water. Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.

Ingestion

If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. Observe the patient carefully. Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious. Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink. Seek medical advice.

Note to physicians

Magnesium is present in the blood, as a normal constituent, at concentrations between 1.6 to 2.2 meq/l. Some 30% is plasma bound. At serum magnesium levels of 3-4 meq/l, signs of CNS depression, loss of reflexes, muscular tone and power, and bradycardia occur. Cardiac arrest (sometimes fatal) and/or respiratory paralysis can occur at plasma levels of 10-15 meq/l. For acute or short term repeated exposures to magnesium; Symptomatic hypermagnesemia appears rarely in the absence of intestinal or renal disease. Elevated magnesium levels may cause hypocalcemia because of decreased parathyroid hormone activity and decreased end-organ responsiveness. Patients with severe hypermagnesemia may develop sudden respiratory arrest and must be watched closely for apnea. Use fluids, then vasopressors for hypotension. Frequently hypotension responds to calcium administration. Induce emesis or administer lavage if patient presents within 4 hours of ingestion. Use sodium cathartics, with caution, in presence of cardiac or renal failure. Activated charcoal is not useful. Calcium is an antagonist of magnesium action and is an effective antidote when serum levels exceed 5MEq/L and the patient exhibits symptoms. The adult dose of calcium gluconate is 10 ml of a 10% solution over several minutes. [Ellenhorn and Barceloux: Medical Toxicology].

4.2. Most important symptoms and effects, both acute and delayed

na

4.3. Indication of any immediate medical attention and special treatment needed

none

Section 5 – Fire Fighting Measures

5.1. Suitable Extinguishing media

Water spray or fog. Foam. Dry chemical powder. BCF (where regulations permit). Carbon dioxide.

5.2. Specific hazards arising from the chemical

Non combustible. Not considered to be a significant fire risk, however containers may burn. Decomposition may produce toxic fumes of: phosphorus oxides (POx), metal oxides.

5.3. Special protective actions for fire-fighters

Alert Emergency Responders and tell them location and nature of hazard. Wear breathing apparatus plus protective gloves for fire only. Prevent, by any means available, spillage from entering drains or water course. Use fire fighting procedures suitable for surrounding area. Do not approach containers suspected to be hot. Cool fire exposed containers with water spray from a protected location. If safe to do so, remove containers from path of fire. Equipment should be thoroughly decontaminated after use

Section 6 – Accidental Release Measures

6.1. Personal precautions, protective equipment and emergency procedures

Do not breathe dust.

6.2. Environmental precautions

Contain Spillage

6.3. Methods and material for containment and cleaning up

Land spill)

Remove all ignition sources. Clean up all spills immediately. Avoid contact with skin and eyes. Control personal contact by using protective equipment. Use dry clean up procedures and avoid generating dust. Place in a suitable, labelled container for waste disposal.

Spillage into water

Place in appropriate containers for disposal.

Section 7 – Handling and Storage

7.1. Precautions for safe Handling

Avoid all personal contact, including inhalation. Wear protective clothing when risk of exposure occurs. Use in a well-ventilated area. Prevent concentration in hollows and sumps. DO NOT enter confined spaces until atmosphere has been checked. DO NOT allow material to contact humans, exposed food or food utensils. Avoid contact with incompatible materials. When handling, DO NOT eat, drink or smoke. Keep containers securely sealed when not in use. Avoid physical damage to containers. Always wash hands with soap and water after handling. Work clothes should be laundered separately. Launder contaminated clothing before re-use. Use good occupational work practice. Observe manufacturer's storing and handling recommendations. Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

7.2. Conditions for safe storage, including any incompatibilities

Glass container. Polyethylene or polypropylene container. Check all containers are clearly labelled and free from leaks

Section 8 – Exposure Controls/Personal Protection

8.1. Control parameters

National Limit Values

Occupational Exposure Limit Values

8.2. Appropriate engineering controls

Local exhaust ventilation is usually required. If risk of overexposure exists, wear an approved respirator. Correct fit is essential to obtain adequate protection an approved self contained breathing apparatus (SCBA) may be required in some situations. Provide adequate ventilation in warehouse or closed storage area.

8.3. Individual protection measures, such as personal protective equipment (PPE)

Respiratory protection

Respirators may be necessary when engineering and administrative controls do not adequately prevent exposures. The decision to use respiratory protection should be based on professional judgment that takes into account toxicity information, exposure measurement data, and frequency and likelihood of the worker's exposure - ensure users are not subject to high thermal loads which may result in heat stress or distress due to personal protective equipment (powered, positive flow, full face apparatus may be an option).

Eyes and hands protection

Safety glasses with side shields. Chemical goggles. Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them. DO NOT wear contact lenses. Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include: such as: frequency and duration of contact, chemical resistance of glove material, glove thick

Section 9 – Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State: Crystalline powder

Color: white

Odor: None reported.

pH: Not available.

Vapor Pressure: Not available.

Viscosity: Not available.

Boiling Point: Not available.

Freezing/Melting Point: Not available.

Autoignition Temperature: Not applicable.

Flash Point: Not applicable

Explosion Limits, lower: Not available.

Explosion Limits, upper: Not available.

Decomposition Temperature: Not available.

Solubility in water: Immiscible

Specific Gravity/Density: 2.195g/cm³

Molecular Formula: Mg₃(PO₄)₂

Molecular Weight: 265.855

Section 10 – Stability and Reactivity

10.1. Conditions Contribute to Instability

Presence of incompatible materials. Product is considered stable. Hazardous polymerization will not occur.

10.2 Storage Incompatibility

Metals and their oxides or salts may react violently with chlorine trifluoride. Chlorine trifluoride is a hypergolic oxidizer. It ignites on contact (without external source of heat or ignition) with recognized fuels - contact with these materials, following an ambient or slightly elevated temperature, is often violent and may produce ignition. The state of subdivision may affect the results. Phosphates are incompatible with oxidizing and reducing agents. Phosphates are susceptible to formation of highly toxic and flammable phosphine gas in the presence of strong reducing agents such as hydrides. Partial oxidation of phosphates by oxidizing agents may result in the release of toxic phosphorus oxides. Avoid strong bases

Section 11 – Toxicological Information

11.1. Information on toxicological effect

Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates

related to the concentration of and duration of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production.

11.1.1. Substances

Acute toxicity⁽²⁾

Shall not be classified as acutely toxic.

Skin corrosion / irritation

Shall not be classified as corrosive/irritant to skin.

Serious eye damage/ irritation

Shall not be classified as seriously damaging to the eye or eye irritant.

Respiratory or skin sensitization

Shall not be classified as a respiratory or skin sensitiser.

Germcell mutagenicity

NA

Carcinogenicity

Magnesium hydrogen phosphate trihydrate, C.P. - Not listed by ACGIH, IARC, or NTP.

Reproductive toxicity

No information available.

STOT-single exposure

Shall not be classified as a specific target organ toxicant (single exposure).

STOT-repeated exposure

Shall not be classified as a specific target organ toxicant (repeated exposure).

Aspiration Hazard

Shall not be classified as presenting an aspiration hazard.

Section 12 – Ecological Information

12.1. Toxicity

12.2. Persistence and degradability

The methods for determining the biological degradability are not applicable to inorganic substances.

12.3. Bioaccumulative potential

Data are not available.

12.4. Mobility in soil

Data are not available.

12.5. Other adverse effects

Data are not available.

Section 13 – Disposal Considerations

13.1. Disposal methods

All waste must be handled in accordance with local, state and federal regulations.

Section 14 – Transport Information

Not regulated under IATA, IMDG, RID/ADR.

14.1. UN number : 3077

14.2. UN proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.

14.3. Transport of hazard classes : 9

14.4. Packing group : III

14.5. Environmental hazards : N.A.

14.6. Special precautions for user : N.A

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: N.A.

Section 15 – Regulatory Information

15.1. Safety, health and environmental regulations

Magnesium phosphate tribasic (CAS: 7757-87-1, 53408-95-0, 10233-87-1, 13446-23-6) is found on the following regulatory lists; "Canada Non-Domestic Substances List (NDSL)", "OECD Representative List of High Production Volume (HPV) Chemicals", "US Food Additive Database", "US Toxic Substances Control Act (TSCA) - Inventory"

Section 16 : Additional Information

16.1. Mainly changes made to the previous version of this Material Safety Data Sheet (MSDS):

- This MSDS complies with ISO 11014; the requirements of UN-GHS

| Revision No | Revision content |
|-------------|--|
| 05 | • This SDS is updated in accordance with the GHS (Rev.6) (2015)-Guidance on the Compilation of Safety data Sheets. |

16.2. List of abbreviation and acronyms used in this MSDS

SDS : Safety Data Sheets

Index N° : atomic number of the element most characteristic of the properties of the substance

CAS No : Chemical Abstracts Service number

EC No : EINECS Number : European Inventory of Existing Commercial Substances

Repr. Cat. 2 : Substance presumed human reproductive toxicant

Acute Oral Cat. 5 : Substance which is of relatively low acute oral toxicity.

GHS : Globally Harmonised System of Classification and Labelling

LD₅₀ : Median Lethal Dose

LC₅₀ : Lethal Concentration, 50%

N.A. : Not Applicable

OSHA : Occupational Safety & Health Administration

Cal OSHA : The State of California Division of Occupational Safety and Health (DOSH)

PEL : Permissible Exposure Limits

ACGIH : American Conference of Governmental Industrial Hygienists

TLV : Threshold Limit Value

Japanese MITI : Japanese Ministry of International Trade and Industry

EC₅₀ : Half maximal effective concentration

UN : United Nations

U.S. EPA TSCA Inventory: Inventory of the chemical substances manufactured or processed in the United States according to Toxic Substances Control Act compiled and published under the authority of the Environmental Protection Agency

Canadian DSL: Canadian Domestic Substances List

16.3. List of relevant hazard statements and precautionary statements used in this MSDS

Hazard Statement

H361 d: Suspected of damaging the unborn child

H319: Causes serious eye irritation

H303: May be harmful if swallowed

Precautionary Statements

Prevention

P201: Obtain special instructions before use.

P202: Do not handle until all safety precautions have been read and understood.

P281: Use personal protective equipment as required.

P264: Wash eyes thoroughly after handling.

P280: Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response

P308 + P313: If exposed or concerned: get medical advice/attention.

P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes.

Remove contact lenses, if present and easy to do. Continue rinsing.

P337+P313: If eye irritation persists: Get medical advice/attention.

Storage

P405: Store locked up.

Disposal

P501: Dispose of contents/container to in accordance with local regulations.

16.4. References

16.5. Disclaimer of Liability

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