

MAGNESIUM SULPHATE ANHYDROUS

PRODUCT NAME

MAGNESIUM SULPHATE ANHYDROUS

PRODUCT USE

Used in weighting cotton and silk; increasing the bleaching action of chlorinated lime; manufacture of mother-of-pearl and frosted papers; fire-proofing fabrics; dyeing and printing calicos; in fertilisers. Used in explosives, matches, mineral water, tanning leather and dietary supplements.

SYNONYMS

Mg-SO₄., "epsom salts", "magnesium sulfate", "magnesium sulphate ANHYDROUS", "nat. epsomite"

HAZARDS IDENTIFICATION

STATEMENT OF HAZARDOUS NATURE :

Not considered a dangerous substance according to directive 1999/45/EC and its amendments.

HAZARD RATINGS :

Flammability

Toxicity

Body Contact

Reactivity

Chronic

SCALE : Min/Nil=0 Low=1 Moderate=2 High=3 Extreme=4

RISK : None under normal operating conditions.

COMPOSITION / INFORMATION ON INGREDIENTS

NAME : Magnesium sulfate, anhydrous 10034-99-8 None >95 CAS RN INT HAZ %

FIRST AID MEASURES

SWALLOWED

- ⊙ If swallowed do NOT induce vomiting.
- ⊙ 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.

EYE :

- ⊙ If this product comes in contact with the eyes
- ⊙ 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.
- ⊙ If pain persists or recurs seek medical attention.
- ⊙ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN:

- ⊙ If skin or hair contact occurs
- ⊙ Flush skin and hair with running water and soap if available).
- ⊙ Seek medical attention in event of irritation.

INHALED :

- ⊙ If fumes or combustion products are inhaled remove from contaminated area.
- ⊙ Other measures are usually unnecessary.

NOTES TO PHYSICIAN

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 hypermagnesaemia appears rarely in the absence of intestinal or renal disease.
- ⊙ Elevated magnesium levels may cause hypocalcaemia 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 apnoea.
- ⊙ 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 5MEg/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].

FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

- ⊙ There is no restriction on the type of extinguisher which may be used.
- ⊙ Use extinguishing media suitable for surrounding area.

FIRE FIGHTING

- ⊙ Alert Fire Brigade 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 courses.
- ⊙ 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.

FIRE/EXPLOSION HAZARD

- ⊙ Non combustible.
- ⊙ Not considered a significant fire risk, however containers may burn.
Decomposition may produce toxic fumes of: sulfur oxides (SO_x), metal oxides.
- ⊙ May emit poisonous fumes.
- ⊙ May emit corrosive fumes.

FIRE INCOMPATIBILITY

None known.

PERSONAL PROTECTION

Glasses:

Chemical goggles.

Gloves:

Respirator:

Particulate

ACCIDENTAL RELEASE MEASURES

MINOR SPILLS

- ⊙ 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.

MAJOR SPILLS

Moderate hazard.

- ⊙ CAUTION: Advise personnel in area.
- ⊙ Alert Emergency Services and tell them location and nature of hazard.
- ⊙ Control personal contact by wearing protective clothing.
- ⊙ Prevent, by any means available, spillage from entering drains or water courses.
- ⊙ Recover product wherever possible.
- ⊙ IF DRY: Use dry clean up procedures and avoid generating dust. Collect residues and place in sealed plastic bags or other containers for disposal.
- ⊙ IF WET: Vacuum/shovel up and place in labelled containers for disposal.
- ⊙ ALWAYS: Wash area down with large amounts of water and prevent runoff into drains.
- ⊙ If contamination of drains or waterways occurs, advise Emergency Services.

HANDLING AND STORAGE

PROCEDURE FOR 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.

SUITABLE CONTAINER

- ⊙ Glass container is suitable for laboratory quantities.
- ⊙ Polyethylene or polypropylene container.
- ⊙ Check all containers are clearly labelled and free from leaks.

STORAGE INCOMPATIBILITY

- ⊙ Metals and their oxides or salts may react violently with chlorine trifluoride and bromine trifluoride.
- ⊙ These trifluorides are hypergolic oxidisers. They ignite on contact (without external source of heat or ignition) with recognised 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.

STORAGE REQUIREMENTS

- ⊙ Plastic bag
- ⊙ NOTE: Bags should be stacked, blocked, interlocked, and limited in height so that they are stable and secure against sliding or collapse.
- ⊙ Store in original containers.
- ⊙ Keep containers securely sealed.
- ⊙ Store in a cool, dry area protected from environmental extremes.
- ⊙ Store away from incompatible materials and foodstuff containers.
- ⊙ Protect containers against physical damage and check regularly for leaks.
- ⊙ Observe manufacturer's storing and handling recommendations

For major quantities:

- ⊙ Consider storage in bunded areas - ensure storage areas are isolated from sources of community water (including stormwater, ground water, lakes and streams).
- ⊙ Ensure that accidental discharge to air or water is the subject of a contingency disaster management plan; this may require consultation with local authorities.

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS



+ : May be stored together

O : May be stored together with specific precautions

X : Must not be stored together

EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

The following materials had no OELs on our records

- ⊙ Magnesium sulfate, ANHYDROUS: CAS:10034- 99- 8 CAS:7487- 88- 9

MATERIAL DATA

Not available. Refer to individual constituents.

INGREDIENT DATA

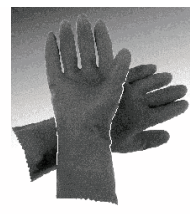
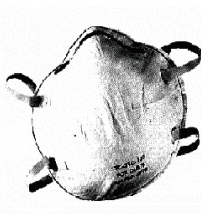
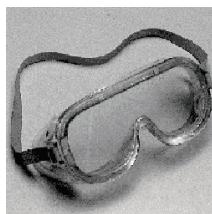
MAGNESIUM SULFATE, ANHYDROUS:

These "dusts" have little adverse effect on the lungs and do not produce toxic effects or organic disease. Although there is no dust which does not evoke some cellular response at sufficiently high concentrations, the cellular response caused by P.N.O.C.s has the following characteristics: the architecture of the air spaces remain intact, scar tissue (collagen) is not synthesised to any degree, tissue reaction is potentially reversible.

Extensive concentrations of P.N.O.C.s may:

seriously reduce visibility, cause unpleasant deposits in the eyes, ears and nasal passages, contribute to skin or mucous membrane injury by chemical or mechanical action, per se, or by the rigorous skin cleansing procedures necessary for their removal. [ACGIH]

This limit does not apply: to brief exposures to higher concentrations nor does it apply to those substances that may cause physiological impairment at lower concentrations but for which a TLV has as yet to be determined. This exposure standard applies to particles which are insoluble or poorly soluble* in water or, preferably, in aqueous lung fluid (if data is available) and have a low toxicity (i.e.. are not cytotoxic, genotoxic, or otherwise chemically reactive with lu and do not emit ionizing radiation, cause immune sensitization, or cause toxic effects other than by inflammation or by a mechanism of lung overload).



EYE

- ⊙ Safety glasses with side shields.
- ⊙ Chemical goggles.
- ⊙ Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59].

HANDS/FEET

Suitability and durability of glove type is dependent on usage. Factors such as:

- ⊙ Frequency and duration of contact,
- ⊙ Chemical resistance of glove material,
- ⊙ Glove thickness and
- ⊙ Dexterity, are important in the selection of gloves.

Experience indicates that the following polymers are suitable as glove materials for protection against undissolved, dry solids, where abrasive particles are not present.

- ⊙ Polychloroprene
- ⊙ Nitrile rubber
- ⊙ Butyl rubber
- ⊙ Fluorocarbon
- ⊙ Polyvinyl chloride

Gloves should be examined for wear and/ or degradation constantly.

OTHER

- ⊙ Overalls.
- ⊙ P.V.C. apron.
- ⊙ Barrier cream.
- ⊙ Skin cleansing cream.
- ⊙ Eye wash unit.

RESPIRATOR

Protection Factor Half- Face Respirator Full- Face Respirator Powered Air Respirator

10 x ES P1 Air- line* - - PAPR- P1 -

50 x ES Air- line** P2 PAPR- P2

100 x ES - P3 -

Air- line* -

100+ x ES - Air- line** PAPR- P3

* - Negative pressure demand ** - Continuous flow.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required. For further information consult site specific CHEMWATCH data (if available), or your Occupational Health and Safety Advisor.

ENGINEERING CONTROLS

- ⊙ Local exhaust ventilation is required where solids are handled as powders or crystals; even when particulates are relatively large, a certain proportion will be powdered by mutual friction.
- ⊙ If in spite of local exhaust an adverse concentration of the substance in air could occur, respiratory protection should be considered.

Such protection might consist of:

- (a): particle dust respirators, if necessary, combined with an absorption cartridge;
 - (b): filter respirators with absorption cartridge or canister of the right type; © fresh-air hoods or masks.
- Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant. Type of Contaminant: Air Speed: direct spray, spray painting in shallow booths, 1- 2.5 m/s (200- 500 f/min.) drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion) grinding, abrasive blasting, tumbling, high 2.5- 10 m/500-2000 f/min.)

speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion). Within each range the appropriate value depends on:

Lower end of the range Upper end of the range

1: Room air currents minimal or favourable to 1: Disturbing room air currents capture

2: Contaminants of low toxicity or of nuisance 2: Contaminants of high toxicity value only.

3: Intermittent, low production. 3: High production, heavy use

4: Large hood or large air mass in motion 4: Small hood- local control only

Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 4-10 m/s (800-2000 f/min) for extraction of crusher dusts generated 2 metres distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.

PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL PROPERTIES

Solid.

Mixes with water.

Molecular Weight: 246.47 Boiling Range (°C): Not available.

Melting Range (°C): 150 deg.C. Specific Gravity (water=1): 1.68

Solubility in water (g/L): Miscible pH (as supplied): Not applicable

pH (1% solution): 7 +/- 0.5 Vapour Pressure (kPa): Not applicable.

Volatile Component (%vol): Not applicable. Evaporation Rate: Not applicable

Relative Vapour Density (air=1): Not applicable. Flash Point (°C): Not Applicable

Lower Explosive Limit (%): Not applicable Upper Explosive Limit (%): Not applicable

Autoignition Temp (°C): Not available. Decomposition Temp (°C): Not available.

State: Divided solid

Viscosity: Not Applicable

APPEARANCE

Colourless, rhombic or monoclinic crystals; freely soluble in water.

Odourless or almost odourless and saline, bitter taste. Slightly soluble in alcohol, glycerol.

Solubility in water @ 20 deg.C: 70 g/100 cc.

@ 40 deg.C: 91 g/100 cc.

Melting point: -6H₂O @ 150 deg.C

Boiling point: -7H₂O @ 200 deg.C

CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

- ⊙ Presence of incompatible materials.
- ⊙ Product is considered stable.
- ⊙ Hazardous polymerisation will not occur.

For incompatible materials - refer to Section 7 - Handling and Storage.

TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

- Although ingestion is not thought to produce harmful effects (as classified under EC Directives), the material may still be damaging to the health of the individual, following ingestion, especially where preexisting organ (e.g liver, kidney) damage is evident. Present definitions of harmful or toxic substances are generally based on doses producing mortality rather than those producing morbidity (disease, ill-health). Gastrointestinal tract discomfort may produce nausea and vomiting. In an occupational setting however, ingestion of insignificant quantities is not thought to be cause for concern.
- Accidental ingestion of the material may be damaging to the health of the individual.
- Sulfate salts are poorly absorbed from the gastro-intestinal tract but because of osmotic activity are able to draw water from the lumen to produce diarrhoea (purging). Sulfate ion usually has little toxicological potential.
- Magnesium salts are generally absorbed so slowly that oral administration causes few toxic effects with purging being the most significant. If evacuation fails due to bowel obstruction or atony, mucosal irritation and absorption may result.
- Systemically the magnesium ion produces electrolyte imbalance, central nervous system depression, neurological and cardiac involvement, reflex abolition and death from respiratory paralysis. These effects are rare in the absence of intestinal or renal disorders.
- Early signs and symptoms of magnesium intoxication include nausea, vomiting, malaise and confusion. Deep tendon reflexes may be diminished. central nervous system depression may progress to coma and paralysis of the release of acetylcholine at myoneuronal junctions. Central nervous system depression may be compounded peripheral vasodilation and/ or decreased cardiac output secondary to conduction defects. Bradycardia is common, leading to eventual arrest in diastole.

EYE

- Although the material is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may produce transient discomfort characterised by tearing or conjunctival redness (as with windburn).
- Limited evidence exists, or practical experience suggests, that the material may cause eye irritation in a substantial number of individuals and/or is expected to produce significant ocular lesions which are present twenty-four hours or more after instillation into the eye(s) of experimental animals. Repeated or prolonged eye contact may cause inflammation characterised by temporary redness (similar to windburn) of the conjunctiva (conjunctivitis); temporary impairment of vision and/or other transient eye damage/ulceration may occur.

SKIN

- The material is not thought to produce adverse health effects or skin irritation following contact (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.
- Entry into the blood-stream through, for example, cuts, abrasions, puncture wounds 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 is not thought to produce either adverse health effects or irritation of the respiratory tract following inhalation (as classified by EC Directives using animal models). Nevertheless, adverse systemic effects have been produced following exposure of animals by at least one other route and good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.

CHRONIC HEALTH EFFECTS

- 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. Long-term exposure to the product is not thought to produce chronic effects adverse to the health (as classified by EC Directives using animal models); nevertheless exposure by all routes should be minimised as a matter of course. A patient with normal kidney function developed symptomatic hypermagnesaemia with respiratory arrest and bradycardia after receiving 90 grams of magnesium sulfate over 18 hours. When given to pregnant rats, a sharp reduction of both the number and the weight of the offspring was observed.

TOXICITY AND IRRITATION

unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

TOXICITY

IRRITATION

Oral (man) TDLo	:	183 mg/kg/4h- I	Nil Reported
Oral (Human) TDLo	:	183 mg/kg	

MAGNESIUM SULFATE, ANHYDROUS:

unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

TOXICITY

IRRITATION

Oral (man) TDLo	:	183 mg/kg/4h- I	Nil Reported
Oral (Human) TDLo	:	183 mg/kg	

ECOLOGICAL INFORMATION

- DO NOT discharge into sewer or waterways.

Refer to data for ingredients, which follows:

MAGNESIUM SULFATE, ANHYDROUS:

- DO NOT discharge into sewer or waterways.

DISPOSAL CONSIDERATIONS

- ⦿ Recycle wherever possible or consult manufacturer for recycling options.
- ⦿ Consult State Land Waste Management Authority for disposal.
- ⦿ Bury residue in an authorised landfill.
- ⦿ Recycle containers if possible, or dispose of in an authorised landfill.

According to the European Waste Catalogue, Waste Codes are not product specific but application specific. Waste Codes should be assigned by the User based on the application in which the product is used.

TRANSPORTATION INFORMATION

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: ADR, IATA, IMDG

REGULATORY INFORMATION

RISK

None under normal operating conditions.

SAFETY

Safety Codes Safety Phrases

S22 » Do not breathe dust.

S24 » Avoid contact with skin.

S39 » Wear eye/face protection.

S26 » In case of contact with eyes, rinse with plenty of water and contact Doctor or Poisons Information Centre.

REGULATIONS

Regulations for ingredients

Magnesium Sulphate ANHYDROUS (CAS: None):

No regulations applicable

magnesium sulfate, ANHYDROUS (CAS: 10034-99-8) is found on the following regulatory lists;

EU Directive 96/61/EC concerning integrated pollution prevention and control, Annex III

European Customs Inventory of Chemical Substances (English)

European Union - European Inventory of Existing Commercial Chemical Substances (EINECS) (English)

European Union (EU) Inventory of Ingredients used in Cosmetic Products

European Union (EU) Restrictions on the Marketing and Use of Certain Dangerous Substances and Preparations

OECD Representative List of High Production Volume (HPV) Chemicals

This safety data sheet is in compliance with the following EU legislation and its adaptations – as far as applicable - : 67/548/EEC, 1999/45/EC, 76/769/EEC, 98/24/EC, 92/85/EEC, 94/33/EC, 91/689/EEC, 1999/13/EC, as

well as the following British legislation:

The Control of Substances Hazardous to Health Regulations (COSHH) 2002

- COSHH Essentials

- The Management of Health and Safety at Work Regulations 1999

OTHER INFORMATION

LIMITED EVIDENCE

- Ingestion may produce health damage*.

- May produce discomfort of the eyes*.

* (limited evidence).

- Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

A list of reference resources used to assist the committee may be found at:

www.chemwatch.net/references.

» The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

- For detailed advice on Personal Protective Equipment, refer to the following EU CEN Standards:

EN 16 Personal eye-protection

EN 340 Protective clothing

EN 374 Protective gloves against chemicals and micro-organisms

EN 13832 Footwear protecting against chemicals

EN 133 Respiratory protective devices.



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