

WATER GUARD, INC

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TECHNICAL BULLETIN ~ MAGNESIUM HYDROXIDE

MAGNESIUM HYDROXIDE is a light-tan slurry with a specific gravity between 1.42 and 1.48. It is an aqueous suspension composed predominately of homogenized magnesium hydroxide particles to resist settling during storage. This slurry can be pumped and becomes more fluid under slight agitation. The slurry produces a tight, compact sludge that is easily dewatered, is self-buffering to pH 9, and will not present the same handling problems of sodium hydroxide or lime.

It contains more alkalinity per dry ton than either lime, caustic soda, or soda ash so less material is required to neutralize the same amount of acid. Its dewatering ability allows for more efficient filter operation and reduces polymer consumption required for settling and dewatering. The Maximum pH of 9 significantly reduces anaerobic bacteria kills from over treatment.

Magnesium Hydroxide reacts rapidly at low pH levels and/or high acid concentrations. As pH levels increase and acid contents decrease, the magnesium hydroxide slows its reaction. In acid neutralization, it produces a limited number of hydroxide ions and exhibits very low solubility. As the neutralization takes place, the soluble hydroxide ions become available as the magnesium hydroxide dissolves.

REGISTRATIONS

National Sanitation Foundation:

Water Guard's Magnesium Hydroxide is NSF certified and meets ANSI/NSF standards for use in drinking water systems.

PHYSICAL AND CHEMICAL PROPERTIES

Typical Analysis	
Mg(OH) ₂	98.4
SiO ₂	0.45
Ca(OH) ₂	0.65
Fe ₂ O ₃	0.12
Weight % Solids	53-58
Density (lbs/gal)	12.2-12.6
Freezing Point	C(32F)

STORAGE

All employees who handle this material should be trained to handle it safely. Avoid breathing sprays or mists generated by this product. Store containers in a dry location away from direct sunlight, sources of intense heat, and where freezing is possible. No special insulation is required if storage is in a building heated above 40°F. Keep container tightly closed when not in use. Avoid contact with leather, wool, and incompatible material. Store away from incompatible chemicals. Wash hands thoroughly after using this material. Carbon, steel, fiberglass, and poly are preferred for storage tanks. Aluminum is not compatible with Magnesium Hydroxide and therefore should be avoided.

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HANDLING

Magnesium Hydroxide is comparable to a concentrated milk of magnesia product and can be classified as a low-degree health hazard from a handling point of view. Magnesium's natural prevalence as a factor in human growth, in conjunction with its low solubility, would cause a minimal environmental impact in the event of an accidental spill. As with all chemicals, avoid getting this product *on you* or *in you*. Wash hands after handling chemicals. Do not eat or drink while handling this solution. All work practices should minimize the generation of splashes.

TANK SPECIFICATION

Dedicated Magnesium Hydroxide is recommended but not always practical. Some agitation is required to keep solids in suspension while the slurry is in storage. This can be done by a top entering, pitch blade turbine or rake-type agitator. Top mounted agitators offer greater efficiency and ease of service. Agitators need not be operated continuously and can be in operation 1 hour in every 3 hours.

The following are horsepower requirements for agitators used in cylindrical tanks that have a 1:1 height to diameter ratio:

Slurry Concentration—50-65%

Pounds Per Gallon—12-13.4

HP/1000 Gallons—0.7

Containers, unloading pumps, hoses, and other equipment should be thoroughly inspected and flushed before and after transport. Cross contamination from residual products must be avoided to ensure proper slurry viscosity and stability. When flushing from the pump to the tank through the discharge line, be careful not to add too much water. Excess water will effect the stability of all slurries and cause faster settling.

HAZARD IDENTIFICATION

Magnesium Hydroxide is not classified as a hazardous material and therefore has significantly less identification requirements for OSHA and NFPA compliance than does other products such as Sodium Hydroxide.

Because of the low degree of health hazard anticipated in industrial handling or use, no special precautions are required. Reasonable care should be exercised to avoid breathing dusts or mists of this product.

For more information on Magnesium Hydroxide, consult a Water Guard Representative.