Product Safety Summary

Magnesium Peroxide

CAS No. 1335-26-8

This Product Safety Summary is intended to provide a general overview of the chemical substance. The information on the summary is basic information and is not intended to provide emergency response information, medical information or treatment information. The summary should not be used to provide in-depth safety and health information. In-depth safety and health information can be found on the Safety Data Sheet (SDS) for the chemical substance.

Names

- Magnesium peroxide
- Magnesium dioxide
- Magnesium superoxide

Product Overview

Solvay Chemicals, Inc. does not sell magnesium peroxide directly to consumers. Most magnesium peroxide is used as a destruction agent for polymers employed in the extraction of shale gas. Afterwards, the product decomposes to form magnesium hydroxide, a naturally occurring compound found in many soils. Consumers are not exposed to magnesium peroxide in this application.

Magnesium peroxide is a solid chemical used as a source of oxygen. When placed in water, magnesium peroxide slowly produces oxygen by decomposing. Magnesium peroxide is a white granular or powdered solid material.

Exposure to magnesium peroxide can cause irritation to the skin, eyes, and respiratory tract. Ingestion should be avoided at all concentrations.

Magnesium peroxide is not persistent in the environment and very slowly decomposes to form magnesium hydroxide and oxygen.

Manufacture of Product

- Magnesium peroxide is made by mixing magnesium oxide with hydrogen peroxide, then drying to form a powder which can be granulated.

$$MgO + H_2O_2 \rightarrow MgO_2 + H_2O$$

- Magnesium peroxide naturally decomposes, very slowly, to form magnesium hydroxide, and oxygen.

$$2MgO_2 + 2H_2O \rightarrow 2Mg(OH)_2 + O_2$$

or

$$MgO_2 + 2H_2O \rightarrow Mg(OH)_2 + H_2O_2$$

$$2H_2O_2 \rightarrow 2H_2O + O_2$$

- Solvay Chemicals, Inc. imports magnesium peroxide which is manufactured by affiliated Solvay companies outside of North America.

Product Description

Magnesium peroxide is manufactured and sold as a white, odorless powder or granules. Typical physical properties are provided in Table 1.

Table 1: Typical physical properties for Magnesium Peroxide

Decomposition Temperature	> 662ºF (350ºC)
Bulk Density	40.5 lbs./ft^3 (650 kg/m^3)
Flash Point	Non- flammable
Solubility in Water	86 mg/L @ 64ºF (18ºC)
pH	10.3 (1% aqueous suspension)

Product Uses

The majority of magnesium peroxide exported to the United States is used in the hydraulic fracturing process used to extract natural gas from shale. A small amount may also be used for soil bioremediation (to decontaminate soil).

Exposure Potential

- **Workplace Exposure** - Exposures can occur at a magnesium peroxide manufacturing facility or a manufacturing, packaging or storage facility that handles the product. Exposure may also occur in the event of a transportation incident. Persons involved in maintenance, sampling and testing activities, or in the loading and unloading of magnesium peroxide containers are at greater risk of exposure. Following good industrial hygiene practices will minimize the likelihood of exposure; however, persons involved in higher risk activities should always wear proper

personal protective equipment such as protective gloves, goggles and a hard hat. In instances where the potential for dusting is high, proper respiratory protection should also be worn.

- **Consumer Exposure to Products Containing Magnesium Peroxide** - Solvay Chemicals, Inc. does not sell magnesium peroxide directly to consumers. The user should always use any products which contain magnesium peroxide in strict compliance with the manufacturer's use and/or label instructions.

- **Environmental Releases** - Spills of magnesium peroxide should be contained and isolated from waterways, sewer drains, and any flammable or combustible materials. Small spills should be swept up and placed in a compatible container. Never replace any spilled or contaminated magnesium peroxide back in the original container. Any remaining residues should be diluted with large amounts of water. Dispose of waste, rinsate or residues in accordance with applicable local, state or federal regulations. Do not use adsorbents to soak up magnesium peroxide washings. Absorbents and adsorbents may contain chemicals that can react with magnesium peroxide. Rinse magnesium peroxide contaminated combustibles such as cloth or paper towels with water until they are free of residual magnesium peroxide. Persons attempting to clean up magnesium peroxide spills should wear proper personal protective equipment (see guidelines in Workplace Exposure section of this document or Safety Data Sheet).

- **Fires** - Fires involving magnesium peroxide should be extinguished with large amounts of water. Containers of magnesium peroxide involved in a fire should be cooled with water sprays taking care not to contaminate the contents inside with water. Wet or damp magnesium peroxide may start to decompose and release heat causing any nearby combustibles to catch fire. If a container of magnesium peroxide begins to discolor or vent violently, emergency responders should evacuate the area.

For additional information concerning magnesium peroxide emergency response procedures, please consult the Safety Data Sheet.

Health Information

Exposure may pose a risk of symptoms due to skin or inhalation irritation. Magnesium peroxide can produce the following adverse health affects:

- **Contact** - Skin exposure can cause symptoms ranging from minor skin irritation or itching to redness and swelling. Eye exposure to magnesium peroxide may result in severe eye irritation, lachrymation (tearing) and swelling.
- **Inhalation** - The inhalation of magnesium peroxide dusts can cause nose and throat irritation or coughing. Repeated or prolonged exposures may cause shortness of breath and tightness of the chest.
- **Ingestion** - The ingestion of magnesium peroxide may cause bloating, belching, irritation of the mouth and throat, nausea, vomiting, abdominal pain and diarrhea.
- **Other Effects** - The International Agency for Research on Cancer (IARC) has not classified magnesium peroxide as a carcinogen (cancer causing).

For more information on health effects and routes of exposure, or for information concerning proper first aid measures, please consult the Safety Data Sheet.

Environmental Information

Magnesium peroxide does not naturally occur in the environment.

Magnesium peroxide is not known to bioaccumulate or persist in the environment for a prolonged time. The degradation products of magnesium peroxide are magnesium hydroxide and oxygen. For more ecological and environmental information concerning this product, please consult the Safety Data Sheet.

Physical Hazard Information

Magnesium peroxide is a weak oxidizer and will support combustion. Magnesium peroxide can cause fires when left in contact with combustible materials such as paper, wood or cloth, especially if wet or damp.

Exposure of magnesium peroxide to impurities such as strong acids, bases, and transition metals (copper, manganese, chromium, etc.) and their salts can cause magnesium peroxide decomposition. Magnesium peroxide decomposition will result in the liberation of heat and oxygen gas. Systems used to store or transport magnesium peroxide must be properly vented and must have enough emergency venting capacity to allow the contents of the system to withstand a catastrophic decomposition event.

For more information concerning the physical hazards of this product, please consult the Safety Data Sheet. For information concerning the proper design of magnesium peroxide systems, please contact Solvay Chemicals, Inc.

Regulatory Information

Regulations may exist that govern the manufacture, sale, transportation, use and/or disposal of this chemical. These regulations can vary by city, state, country or geographic region. Information may be found by consulting the relevant Safety Data Sheet specific to your country or region.

Additional Information

- Solvay America, Inc. www.solvaynorthamerica.com
- Solvay Chemicals, Inc. www.solvaychemicals.us
- Solvay Chemicals, Inc. Safety Data Sheets
  www.solvaychemicals.us/EN/Literature/LiteratureDocuments.aspx
- Contact Solvay Chemicals, Inc. solvaychemicals.us@solvay.com
- This summary was prepared in February, 2011
  This summary was revised in September, 2013

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