

## Product Safety Summary

### MEYCO<sup>®</sup> MP 357 GS

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 Material Safety Data Sheet (MSDS) for the chemical substance.

#### Chemical Identity

Abbreviation: None

CAS Number : Mixture

Common Names: MEYCO<sup>®</sup> MP 357 GS

#### Product Overview

- MEYCO<sup>®</sup> MP 357 GS is a two-component, solvent-free polyurethane injection resin designed to stabilize strata in mining applications.
- It is sold in drums, metal cans and bulk containers for use in mining operations.
- The product is sold in two parts. Part A is a polymer resin and castor oil. Part B is primarily composed of methylene bisphenyl isocyanate and its polymers.
- The parts are mixed and reacted through application by an injection pump with an in-line mixer. The resulting cured resin is non-hazardous.
- The primary potential hazards associated with overexposure to this product include eye and skin irritation on contact and respiratory irritation. The product contains methylene bisphenyl isocyanate (CAS No. 101-68-8), which may cause acute and chronic respiratory effects and pulmonary sensitization. The American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) for TDI is 0.005 ppm for 8 hours with a 15 minute short-term exposure limit (STEL) of 0.02 ppm. OSHA has established a 0.02 ppm ceiling limit.
- For further safety and health information, refer to the current Material Safety Data Sheets (MSDS) for MEYCO<sup>®</sup> MP 357 GS and the BASF Corporation Product Safety Summary for Diphenylmethane diisocyanate (methylene bisphenyl isocyanate).

#### Physical/Chemical Properties

- The product components are liquids with a musty odor.
- Both components are non-combustible, with flash points above 200 °F.

#### Health Information

##### Acute Hazards

The castor oil component of Part A may cause eye and skin irritation on contact. MDI and MDI polymers in Part B are potentially hazardous materials. A thorough knowledge of potential dangers, with strict adherence to recommended safety practices, is essential before MDI products are handled, stored or used. Workers must be properly instructed and supervised in the handling of MDI. MDI can be potentially hazardous in liquid, vapor, mist (aerosol), or dust form. Aerosols are airborne droplets and maybe present anywhere MDI is sprayed. These droplets may present

a risk even at normal temperatures. A dust hazard may arise whenever solid MMDI or MDI is absorbed on finely divided materials when handled. The primary hazard with MDI is the inhalation of its vapors.

**Effects on Respiratory System:**

High concentrations (above the Occupational Exposure Limit) of MDI vapors from Part B may irritate the mucous membranes of the nose, throat, and lungs. It may cause throat dryness and tightness in the chest and breathing difficulties. Overexposure symptoms may be delayed. Allergic reactions can appear in susceptible persons. The health of all personnel coming into contact with MDI should be regularly monitored.

**Effects on Eyes:**

Contact with the liquid from both parts is irritating to the eyes. Direct eye contact with MDI products may produce severe watering, irritation and inflammation of mucous membranes. Corneal opacity and discharge may result, if MDI is not removed.

**Effects on Skin:**

Skin contact with MDI may result in irritation and a mild tanning action, depending on the amount and length of contact. Direct contact may produce skin sensitization, contact dermatitis, and eczema from repeated exposure. An animal study indicates that MDI may induce respiratory hypersensitivity upon dermal exposure.

**Effects on Ingestion:**

Ingestion may result in severe irritation of the gastrointestinal tract.

**Chronic Hazards**

Repeated exposure of the skin, the eyes, nose or upper respiratory tract may cause chronic irritation.

Some individuals may develop a hypersensitivity to MDI vapors and may experience a severe reaction when exposed to MDI vapors at concentrations below established guidelines. Symptoms of hypersensitivity to MDI may include wheezing, shortness of breath and difficulty in breathing (See Sensitization). Long-term overexposure to diisocyanates has also been reported to cause lung damage, including reduced lung function, which may be permanent. Exposure above the PEL may result in bronchitis, bronchial spasms and pulmonary edema. Long-term exposure to MDI has been reported to cause lung damage including reduced lung function that may be permanent.

**Sensitization**

Sensitization is an affect whereby a physiological response is caused by re-exposure to a very low concentration of chemical in an individual following higher, initial acute exposure or following chronic exposures. The response may be immediate, delayed or both.

The PEL values and ceiling limits should be sufficiently low to prevent sensitization in most individuals. However, allergic reactions may occur in sensitized individuals at concentrations well below these values. Once sensitized, individuals should be excluded from further exposure. If sensitized individuals continue to work with MDI, the time period between exposure and onset of symptoms may be shortened and the severity of the symptoms may increase.

**Environmental Information**

Any release to the environment of over 5000 lbs. must be reported to the NRC and the local planning commission as outlined under EPCRA regulations. Each plant should have a system for dealing with emergencies within the plant to limit environmental release.

MDI will react with water to form carbon dioxide (CO<sub>2</sub>) and insoluble polyurea compounds, which are not biodegradable but chemically inert. Because of this reaction, all unreactive MDI release to the environment would be consumed when exposed to water, water in the air or water in the ground.

Environmental toxicity test data from several animal species shows that MDI is practically nontoxic or not appreciably toxic to animals.

This product must be disposed of in accordance with national, state and local regulations and must not be released into waterways or sewer systems without proper authorization.

**Additional Hazard Information**

The reaction of MDI with moisture, even from ambient air, will produce polyurea solids and CO<sub>2</sub> gas. These insoluble polyureas will deposit on surfaces of pipes and tanks causing line restrictions and filtration problems. The generated CO<sub>2</sub> could present a pressure hazard, including the potential of a violent rupture of an under-vented tank or vessel.

Although both parts are non-combustible, they should not be stored adjacent to highly flammable materials. Water, dry chemical, protein foam, or CO<sub>2</sub> fire extinguishers should be available in all storage and processing areas. Automatic fire or smoke detection equipment as well as automatic sprinklers should be installed in all MDI processing and storage areas.

**Exposure Potential**

This product is designed for use by persons experienced in application by trained professionals in mining operations. This product is not intended for use by the general public and no consumer exposure is expected.

Workplace exposure should be limited by the use of engineering controls. MDI vapors must be monitored and controlled below applicable regulatory limits. If possible, MDI should be processed within closed systems. When this is impractical, special consideration should be given to ventilation design to limit exposure.

Regulations involving hazardous chemicals are continually evolving and thus exposure guidelines are reviewed regularly and modified whenever new information dictates a change. It is important that all companies handling MDI products are aware of the current legislative requirements. The guidelines established by OSHA, ACGIH, NIOSH and others, represent current thinking and are believed to be conservative and protective of occupational workers. There is not guarantee of absolute safety.

**Risk Management**

The potential hazards associated with MDI can be avoided if workers are adequately instructed in supervised on the proper procedures of handling MDI. Every worker should be trained to realize that exposure to a hazardous chemical requires immediate washing of affected areas using large amounts of soap and water, and that immediate attention may markedly decrease the severity of any health effects. (See First Aid.) Do not wash affected area with solvents.

Protective clothing, gloves, boots and eye protection must be worn whenever there is any possibility of MDI exposure. Protective clothing shall be made of impervious materials. Soiled or contaminated clothing should be laundered or destroyed. Proper respiratory protective equipment should be readily available and in good working order. Exhaust and ventilating equipment should be inspected and tested regularly to assure MDI vapors/aerosols are being controlled to acceptable levels.

Properly designed emergency showers and eyewash fountains should be placed in convenient locations wherever MDI is used. All employees should know the location and operation of this equipment. All equipment must be frequently inspected to make sure they are in proper working condition. Workers handling NP1 can safely work with this material if adequately instructed and educated regarding proper handling procedures.

Workers should be trained to realize that exposure to a hazardous chemical requires immediate washing of affected areas using large amounts of soap and water, and that immediate attention should be obtained in case of exposure.

Appropriate clothing, gloves, boots and eye protection must be worn when handling this product. Protective clothing should be made of impervious materials and soiled or contaminated clothing should be laundered or destroyed.

Ventilation must be available in work areas to control potential airborne exposures to acceptable levels.

**Federal/Science Findings**

U.S. Environmental Protection Agency – Integrated Risk Information System (IRIS)

<http://www.epa.gov/iris/subst/0529.htm>

U.S. Department of Labor – Occupational Safety and Health Administration (OSHA)

[http://www.osha.gov/dts/chemicalsampling/data/CH\\_253300.html](http://www.osha.gov/dts/chemicalsampling/data/CH_253300.html)

American Conference of Governmental Industrial Hygienists (ACGIH)

<http://www.acgih.org>

National Institute for Occupational Safety and Health (NIOSH)

<http://www.cdc.gov/niosh/topics/isocyanates>

**Contact Information**

<http://www.basf.com>

**MSDS**

[http://worldaccount.basf.com/wa/PublicMSDS~en\\_US/Search](http://worldaccount.basf.com/wa/PublicMSDS~en_US/Search)

**Center for the Polyurethanes Industry (CPI)**

<http://www.polyurethane.org>

**Contact Information**

<http://www.basf.com>

**MSDS**

<http://www.basf-admixtures.com/en/products/Pages/ProductSearch.aspx>

## References

*Polyurethane MDI Handbook*, BASF Corporation, February 2007

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