Safety Data Sheet (MSDS) for Polyethylene Glycol 4000

Manufacturer: Shandong Ruisheng Pharmaceutical Excipients Co., Ltd.

Packaging Specification: 25KG/drum

Manufacturer's Address: Middle Section of Xihuan Road, Dong'e County, Liaocheng City, Shandong Province

Contact Number: 0635-5018008

Section 1: Chemical Product and Company Identification

Chemical Name

Polyethylene Glycol 4000

This product is a copolymer formed by the polycondensation of ethylene oxide and water. The synthesis of low molecular weight polyethylene glycol mainly uses refined ethylene oxide and ethylene glycol as raw materials, with sodium hydroxide or potassium hydroxide as a catalyst, and is obtained by addition polymerization in a polymerization kettle.

Chemical English Name

Polyethylene Glycol 4000

Section 2: Composition/Information on Ingredients

Molecular Formula: $HO(CH_2CH_2O)_n$ H (where n represents the average number of oxyethylene groups)

Molecular Weight: The average molecular weight shall be 3400 ~ 4200.

Polyethylene Glycol 4000 is a white solid.

Section 3: Hazards Identification

Hazard Class

Not a hazardous substance or mixture in accordance with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Routes of Exposure

Ingestion

Health Hazards

Harmful to the human body if ingested in excess.

Environmental Hazards

Slight hazard to water bodies.

Section 4: First-Aid Measures

Inhalation

If inhaled, remove the victim to fresh air. Administer artificial respiration if breathing stops.

Skin Contact

Wash the affected area with soap and plenty of water.

Eye Contact

Rinse eyes with water as a precautionary measure.

Ingestion

Drink plenty of clean water, induce vomiting, and seek medical attention immediately.

Section 5: Fire-Fighting Measures

Property

This product is not a flammable substance.

Extinguishing Measures

Fight fire with water mist, alcohol-resistant foam, dry chemical powder or carbon dioxide.

Special Hazards

In case of fire, the release of other toxic gases cannot be excluded, e.g., carbon monoxide (CO).

Special Fire-Fighting Procedures

Avoid inhaling dust/smoke/gases/fumes/vapours/spray.

Special Protective Equipment for Firefighters

Wear appropriate respiratory protection in case of insufficient ventilation.

Section 6: Accidental Release Measures

Protective Measures

Wear protective clothing. Use respiratory protection to avoid exposure to smoke/dust/aerosols.

Environmental Precautions

Do not allow the product to enter sewage systems or any water sources.

Spill/Leakage Handling

Absorb the spill with sand or other inert materials, or rinse with plenty of water, dilute and discharge into the wastewater collection system.

Section 7: Handling and Storage

Store in a cool, dry, well-ventilated environment in a sealed container.

Section 8: Exposure Controls/Personal Protection

Engineering Controls

Operate in a sealed system and ensure good ventilation.

Respiratory Protection

Wear a self-priming filter type gas mask (half-mask) when the concentration in the air exceeds the limit; wear an air respirator during emergency evacuation or first aid.

Eye Protection

Wear chemical safety goggles.

Body Protection

Wear protective work clothes resistant to toxic substance penetration.

Hand Protection

Wear rubber gloves.

Other Protection

None.

Section 9: Physical and Chemical Properties

Physical State

White solid

Color

White

Freezing Point

50 ~ 54℃

Kinematic Viscosity

5.5 ~ 9.0 mm^2/s at 40℃

Solution pH

4.0 ~ 7.0

Moisture Content

Not more than 1.0%

Section 10: Stability and Reactivity

Reactivity

Due to the presence of peroxides and impurities generated by auto-oxidation in the product, all grades of polyethylene glycol have a certain oxidizing property. Therefore, polyethylene glycols are incompatible with some pigments and strong oxidants.

Meanwhile, polyethylene glycol can reduce the preservative effect of paraben esters through complexation and decrease the antibacterial activity of antibiotics, especially penicillin and bacitracin. Phenol, tannic acid and salicylic acid can soften and liquefy polyethylene glycol; sulfonamides and dithranol can cause discoloration upon reaction with it; and compatibility with sorbitol can result in precipitation.

Stability

Stable at room temperature.

Section 11: Toxicological and Pharmacological Information

No literature has been reported on the toxicological tests of Polyethylene Glycol 4000. As the product has long been used as a pharmaceutical excipient and no related toxicological reactions have been collected, no relevant research has been conducted.

Polyethylene glycol is non-toxic and non-irritating, and is widely used in various pharmaceutical preparations.

Polyethylene Glycol 4000 has low irritant effect on the skin, but when used as a suppository base, it may cause local stinging due to its hypertonic property; such side effects may be enhanced when drugs are dissolved in PEG [1].

No literature has been reported on the genotoxicity and reproductive toxicity tests of Polyethylene Glycol 4000. As the product has long been used as a pharmaceutical excipient and no related toxicological reactions have been collected, no relevant research has been conducted.

No literature has been reported on the carcinogenicity tests of Polyethylene Glycol 4000. As the product has long been used as a pharmaceutical excipient and no related toxicological reactions have been collected, no relevant research has been conducted. It is not classified as a carcinogen.

Reference

[1] Translated by Zheng Junmin. *Handbook of Pharmaceutical Excipients (4th Edition)*. Beijing: Chemical Industry Press.

Section 12: Ecological Information

Persistence and Degradability

Not readily biodegradable.

Other Information

Potential for Bioaccumulation: No expected accumulation in organisms.

Mobility in Soil: No detailed relevant data available.

Additional Ecological Information: Do not allow undiluted or large quantities of the product to come into contact with groundwater, water courses or sewage systems; Water Hazard Class: Slightly hazardous to water.

- Other Adverse Effects: No detailed relevant data available.

Section 13: Disposal Considerations

Disposal Methods

It is recommended to dispose of the product in strict accordance with government regulations.

Contaminated Containers and Packaging

It is recommended to discard contaminated containers and packaging in accordance with official rules and regulations.

Section 14: Transport Information

Transport Hazard Class

Not specified.

Environmentally Hazardous

No

Marine Pollutant

No

Special Precautions for Users

Not applicable.

Section 15: Regulatory Information

- Not listed in the Hazardous Chemicals Catalogue.
- Chemical Safety Assessment: Not yet conducted.

Section 16: Other Information

None

Shandong Ruisheng Pharmaceutical Excipients Co., Ltd.

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