Product Safety Assessment

CARBOWAX™ and CARBOWAX SENTRY™
Methoxypolyethylene Glycols


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Names
- CARBOWAX™ Methoxypolyethylene Glycol 350
- CAS No. 9004-74-4
- CARBOWAX SENTRY™ Methoxypolyethylene Glycol 350
- CARBOWAX SENTRY Methoxypolyethylene Glycol 550
- CARBOWAX Methoxypolyethylene Glycol 550
- CARBOWAX Methoxypolyethylene Glycol 750

Product Overview
- CARBOWAX™ and CARBOWAX SENTRY™ Methoxypolyethylene Glycols (MPEGs) are water-soluble polymers. MPEG 350 is a liquid and 550 is a liquid/semi-solid; whereas, MPEG 750 is a solid. Most are colorless/white with a mild odor.¹ For further details, see Product Description.
- CARBOWAX Methoxypolyethylene Glycols are used as chemical intermediates, in adhesives, lubricants, inks, mining, and soaps/detergents. The SENTRY grade products are used in cosmetics/personal care, food processing/packaging, and pharmaceuticals.²³ For further details, see Product Uses.
- Exposure can occur either in a facility that manufactures these products or in the various industrial or manufacturing facilities that formulate or use these products. Dow does not sell these products for direct consumer use, but they are formulated into a wide variety of industrial and consumer products.⁴ For further details, see Exposure Potential.
- Eye contact may cause slight, temporary irritation with pain. Skin contact may cause slight irritation with local redness. No adverse effects are expected from inhalation of mists from these products, and they have very low toxicity if swallowed.⁵ For further details, see Health Information.
- CARBOWAX and CARBOWAX SENTRY Methoxypolyethylene Glycols have a low bioconcentration potential. They biodegrade slowly and are practically nontoxic to aquatic organisms on an acute basis.⁶ For further details, see Environmental Information.
- CARBOWAX and CARBOWAX SENTRY Methoxypolyethylene Glycols are stable under recommended storage and normal use conditions. Avoid contact with strong acids, strong bases, and strong oxidizers.⁷ For further details, see Physical Hazard Information.

References

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Created: September 25, 2013
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Manufacture of Product
- **Capacity** – The Dow Chemical Company is a major global producer of methoxypolyethylene glycols. The Dow Chemical Company and produces these products at facilities in Plaquemine, Louisiana, in the United States.
- **Process** – Methoxypolyethylene glycols are addition polymers of ethylene oxide and methanol or equivalent, represented by the generalized formula \( CH_3-(OCH_2-CH_2)_n-OH \), with “n” indicating the average number of oxyethylene groups.

Product Description
CARBOWAX™ and CARBOWAX SENTRY™ Methoxypolyethylene Glycols are water-soluble polymers. MPEG 350 is a liquid and 550 is a liquid/semi-solid; whereas, MPEG 750 is a solid. These products are colorless to white with a mild odor. They contain more than 95% methoxypolyethylene glycol with the balance, polyethylene glycol (CAS No. 25322-68-3).

Product Uses
CARBOWAX™ and CARBOWAX SENTRY™ Methoxypolyethylene Glycols are used in a wide range of industries to formulate products with enhanced solvency, lubricity, hygroscopicity, and other important functional properties.

CARBOWAX Methoxypolyethylene Glycols are used as lubricants, softeners, conditioners, antistatic agents, and intermediates in the following applications:
- Adhesives
- Chemical intermediates
- Inks
- Lubricants
- Mining
- Soaps and detergents

CARBOWAX SENTRY Methoxypolyethylene Glycols are used in the following applications:
- Cosmetic and Personal Care
- Chemical Intermediates
- Food Processing & Packaging
- Pharmaceuticals

Exposure Potential
CARBOWAX™ and CARBOWAX SENTRY™ Methoxypolyethylene Glycols are used in the formulation of industrial and consumer products. Based on the uses for these products, individuals could be exposed through:
- **Workplace exposure** – Exposure can occur either in facilities that manufacture these products or in the various industrial or manufacturing facilities that formulate or use them. Those working with these products in manufacturing operations could be exposed during maintenance, sampling, testing, or other procedures. Each manufacturing facility should have a thorough training program for employees and appropriate work processes and safety equipment in place to limit exposure. See Health Information.
- **Consumer exposure to products containing CARBOWAX and CARBOWAX SENTRY Methoxypolyethylene Glycols** – Dow does not sell these products for direct consumer use, but they can be formulated into a wide variety of industrial and consumer products, such as lubricants, food packaging, and pharmaceuticals. These products have been evaluated and approved for use by the FDA, EPA, and Cosmetic Ingredient Review (CIR) Expert Panel and deemed safe for use by consumers. Always read and follow product label instructions before use. See Health Information.
- **Environmental releases** – In the event of a spill, the focus is on containing the spill to prevent contamination of soil, surface water, and groundwater. If released to the soil, these products are likely to remain in place, unless mixed with water which may mobilize the products through soil and into groundwater. If released to water, these products would be expected to dissolve quickly and remain dissolved as they ultimately biodegrade. Slow and ultimate biodegradation is also expected in soil, whereas a combination of biodegradation and adsorption to biosolids will result in efficient removal during wastewater treatment. These products are
considered practically non-toxic to aquatic organisms. Spills may result in a slipping hazard. Small spills should be absorbed with sand or soil. See Environmental, Health, and Physical Hazard Information.

- **Large release** – Industrial spills or releases are infrequent and generally contained. If a large spill does occur, the product should be captured, collected, and reprocessed or disposed of according to applicable governmental requirements. See Environmental, Health, and Physical Hazard Information.

- **In case of fire** – Deny any unnecessary entry into the area and consider the use of unmanned hose holders. Use water spray or fog, carbon-dioxide or dry-chemical extinguishers, or foam to fight the fire. ATC-type foams are preferred. Use of a direct water stream may spread the fire. Firefighters should wear positive-pressure, self-contained breathing apparatus (SCBA) and protective firefighting clothing. Follow emergency procedures carefully. See Environmental, Health, and Physical Hazard Information.

For more information, request the relevant Safety Data Sheet from the Dow Customer Information Group.

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**Health Information**

Health information for CARBOWAX™ and CARBOWAX SENTRY™ Methoxypolyethylene Glycol products is summarized on the relevant Safety Data Sheet. It is important to note that the health risks associated with individual products may vary based on their formulation or intended use. These products may also contain minor components or additives that have additional health risks. The Safety Data Sheet is the preferred source for specific health information. An overview of health information for these products appears below.

**Eye contact** – Contact may cause slight temporary eye irritation with pain disproportionate to the level of irritation to eye tissues. Corneal injury is unlikely.

**Skin contact** – Prolonged contact may cause slight skin irritation with local redness, but is unlikely to result in absorption of harmful amounts.

**Inhalation** – These products have low volatility. No adverse effects are expected from a single exposure to product mist.

**Ingestion** – These products have very low toxicity if swallowed.

**Repeated exposure** – Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

For more information, request the relevant Safety Data Sheet from the Dow Customer Information Group.

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**Environmental Information**

CARBOWAX™ and CARBOWAX SENTRY™ Methoxypolyethylene Glycols have very low volatility and are miscible in water. When introduced to water, these products will have a tendency to remain dissolved as they slowly but ultimately biodegrade. They have minimal tendency to bind to soil or sediment, and thus will remain mobile in these media. These products are expected to ultimately biodegrade in soil, surface waters, and groundwater environments, and will be removed during biological wastewater treatment by a combination of biodegradation and adsorption.

They have a low potential to accumulate in the food chain and are practically non-toxic to fish and other aquatic organisms on an acute basis (LC₉₀ >100 mg/L for the most sensitive species tested).

For more information, request the relevant Safety Data Sheet from the Dow Customer Information Group.
Physical Hazard Information

CARBOWAX™ and CARBOWAX SENTRY™ Methoxypolyethylene Glycols are stable under recommended storage and normal use conditions, but may decompose and generate gases at elevated temperatures. Avoid contact with strong acids, strong bases, and strong oxidizers.

For more information, request the relevant Safety Data Sheet from the Dow Customer Information Group.

Regulatory Information

Regulations may exist that govern the manufacture, sale, transportation, use, and/or disposal of CARBOWAX™ and CARBOWAX SENTRY™ Methoxypolyethylene Glycols. These regulations may vary by city, state, country, or geographic region. Information may be found by consulting the relevant Safety Data Sheet or Contact Us.

Additional Information

- Request the Safety Data Sheet from the Dow Customer Information Group (www.dow.com/assistance/dowcig.htm)
- Contact Us (www.dow.com/polyglycols/index.htm)

For more information about CARBOWAX™ and CARBOWAX SENTRY™ Methoxypolyethylene Glycols, visit the Dow Polyethylene Glycols website at www.dow.com/polyglycols/polyethylene/.

References

2. CARBOWAX™ PEGs and MPEGs: Improving Formulation and Processes for More than 70 Years, The Dow Chemical Company, Form No. 118-01789-1011 AMS, October 2011, pages 1–9.
3. CARBOWAX™ SENTRY™ PEGs and MPEGs: A Leading Choice for Pharmaceutical, Personal Care and Food Products, The Dow Chemical Company, Form No. 118-01790-1011 AMS, October 2011, pages 1–10.
10. CARBOWAX™ SENTRY™ PEGs and MPEGs: A Leading Choice for Pharmaceutical, Personal Care and Food Products, The Dow Chemical Company, Form No. 118-01790-1011 AMS, October 2011, pages 1–10.

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