Product Safety Assessment

*DOW™ Carboxymethylcellulose (CMC) Ethers*


**Select a Topic:**

- Names
- Product Overview
- Manufacture of Product
- Product Description
- Product Uses
- Exposure Potential
- Health Information
- Environmental Information
- Physical Hazard Information
- Regulatory Information
- Additional Information
- References

**Names**

- CAS No. 9004-32-4
- DOW™ carboxymethylcellulose
- CMC
- Sodium carboxymethylcellulose
- Carboxymethylcellulose, sodium salt
- ANTISOL™ FL 30000 polyanionic cellulose polymer
- WALOCEL™ C sodium carboxymethylcellulose
- Cellulose, carboxymethyl ether, sodium salt
- WALOCEL CRT series purified sodium carboxymethylcellulose

**Product Overview**

- DOW™ carboxymethylcellulose (CMC) ethers are cellulose-based anionic polymers used in modified, purified, or highly purified grade in various applications.\(^1\) For further details, see Product Description.
- DOW carboxymethylcellulose ethers are used as additives for improving product and processing characteristics in applications such as oral care and technical applications, such as paints. These products are also used in pharmaceuticals to aid in the disintegration of tablets in the body.\(^1\) For further details, see Product Uses.
- Although consumers use products that contain DOW carboxymethylcellulose ethers, workers in carboxymethylcellulose ether production facilities or in facilities that formulate products with carboxymethylcellulose ethers are most likely to be exposed to these materials. For further details, see Exposure Potential.
- Dust from carboxymethylcellulose ethers could cause temporary mechanical irritation to the skin or eyes under extreme conditions and may be considered a nuisance dust if inhaled. However, the products are considered to present no significant health hazard.\(^2\) See Health Information.
- Carboxymethylcellulose ethers are expected to slowly degrade in the environment. They are unlikely to accumulate in the food chain, and are practically non-toxic to aquatic organisms on an acute basis. See Environmental Information.
- DOW carboxymethylcellulose ethers are stable under recommended storage conditions. However, fine dusts of this material are capable of forming explosive mixtures with air.\(^2\) See Physical Hazard Information.
Manufacture of Product

- **Capacity** – Dow has a production facility for carboxymethylcellulose ethers in Bomlitz, Germany.
- **Process** – DOW™ carboxymethylcellulose products are produced by chemically converting naturally occurring cellulose molecules into alkali cellulose. Alkali cellulose is then reacted under controlled reaction conditions with monochloroacetic acid to produce the desired products.

Product Description

DOW™ carboxymethylcellulose ethers include a broad range of water-soluble, white to off-white cellulose-based anionic polymers. They are available in modified, purified, or highly purified grades and in different physical forms and viscosities to suit a variety of applications. They are marketed under the trade names ANTISOL™ cellulose polymer and WALOCEL™ cellulose polymer.

Product Uses

DOW™ carboxymethylcellulose ethers play an important role in the formulation and processing of construction products, paints, personal-care products, and pharmaceuticals. Applications within many of these product areas are listed below.

- **Construction products** – Tile adhesives and grouts, fillers, levelers, joint compounds, reinforcing and bonding mortars, gypsum and cement hand and spray plasters
- **Paints** – Latex paints and scrape-off and flush-off paint removers
- **Personal-care products** – Denture adhesives and toothpaste
- **Pharmaceuticals** – Disintegration aid in medication tablets

Exposure Potential

DOW™ carboxymethylcellulose ethers are used in the formulation of many consumer products. Based on the uses for these products, the public could be exposed through:

- **Workplace exposure** – Exposure can occur either in a carboxymethylcellulose ethers manufacturing facility or in the various industrial or manufacturing facilities that use these products. Those working with these products in manufacturing operations could be exposed during maintenance, sampling, testing, or other procedures. Each manufacturing facility should provide general and/or local exhaust ventilation to control airborne levels of cellulosic dusts below exposure guidelines. See Health Information.

- **Consumer exposure to products containing DOW carboxymethylcellulose ethers** – DOW carboxymethylcellulose ethers are formulated as components of many consumer products. Direct contact with these materials is possible only for those working in manufacturing or formulation operations. Consumer exposure to high concentrations of these materials is very unlikely because these materials are generally used in low concentrations in the final products. Carboxymethylcellulose ethers have been evaluated for use in consumer products and pharmaceuticals by the relevant government and regulatory organizations. These organizations have determined that the carboxymethylcellulose ethers used in these products pose no known risk to human health. See Health Information.

- **Environmental releases** – Carboxymethylcellulose ethers may be released slowly from products containing them. Small amounts may be released to sewers and enter wastewater treatment plants. They are non-volatile, water soluble polymers, and are expected to degrade...
slowly in the environment. Spills of dry powder should be thoroughly vacuumed or swept up, using care to minimize the generation of airborne dust. Any residual material on the walls or floor can be flushed with water. If the spill is a viscous solution, it should be diluted with cold water before disposal. See Environmental, Health, and Physical Hazard Information.

- **Large release** – Industrial spills or releases of carboxymethylcellulose ethers are infrequent and generally contained. If a large release does occur, do not permit dust to accumulate. When suspended in air, dusts can pose an explosion hazard. Eliminate all sources of ignition immediately. See Environmental, Health, and Physical Hazard Information.

- **In case of fire** – Deny any unnecessary entry into the area. Fires can be extinguished by conventional means. Avoid raising dust by strong water jets. The use of water spray, carbon-dioxide, or dry-powder extinguishers is recommended when fighting a fire involving cellulose ethers. Follow emergency procedures carefully. See Environmental, Health, and Physical Hazard Information.

For more information, see the relevant Safety Data Sheet.

**Health Information**

Health information for DOW™ carboxymethylcellulose products is summarized on the relevant Safety Data Sheets. It is important to note that health risks associated with individual products may vary based on their formulation or intended use. The Safety Data Sheet is the preferred source for specific health information.

**Eye and skin contact** – Dust may cause slight skin and eye irritation under extreme or repeated conditions, including the possibility of corneal injury. Prolonged skin contact is unlikely to result in adsorption of harmful amounts or in an allergic reaction.

**Inhalation** – Dust may cause irritation to upper respiratory tract (nose and throat).

**Ingestion** – If swallowed, the oral toxicity of these materials is very low.

For more information, see the relevant Safety Data Sheet.

**Environmental Information**

Carboxymethylcellulose ethers are polymers with very low volatility. Because they are soluble in water, once in solution with water, they have a tendency to remain in water.

Carboxymethylcellulose ethers are unlikely to persist in the environment. Although many polymers are considered essentially nonbiodegradable, carboxymethylcellulose ethers would be expected to slowly biodegrade in the environment.

Carboxymethylcellulose ethers are not likely to accumulate in the food chain due to their water solubility and high molecular weight (bioconcentration potential is low) and they are practically nontoxic to fish and aquatic organisms on an acute basis.

For more information, see the relevant Safety Data Sheet.
Physical Hazard Information

Carboxymethylcellulose ethers are stable under recommended storage conditions. However, these materials will burn under certain conditions of heat and oxygen supply. Fine dusts are capable of forming explosive mixtures with air. Dusts should not be exposed to temperatures above 135°C (275°F) as they may decompose and lead to a possible dust explosion. These materials should not be stored near peroxides or other oxidizing agents. Avoid contact with strong acids or bases.

Water solutions of these materials are slippery. To prevent falls and injury, spills of dry powder should be thoroughly vacuumed or swept up.

These products are classified as nonhazardous and are not subject to European Union (EU) legislation concerning dangerous substances and preparations.

For more information, see the relevant Safety Data Sheet.

Regulatory Information

Regulations may exist that govern the manufacture, sale, transportation, use, and/or disposal of DOW™ carboxymethylcellulose ethers. 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

- Safety Data Sheet (http://www.dow.com/webapps/msds/msdssearch.aspx)
- Contact Us (http://www.dow.com/dowwolff/en/contactus.htm)

References

1 Dow Wolff Cellulosics website: Products

2 WALOCEL™ CRT 20000 PA Sodium Carboxymethylcellulose Material Safety Data Sheet, The Dow Chemical Company

   (http://www.dow.com/dowwolff/en/industrial_solutions/application/)

4 Product Overview: Technologies, Products, and Product Development Leverage for the Personal Care Industry, Amerchol Corporation (a subsidiary of The Dow Chemical Company), Form No. 324-00318-0309 JMS

5 Dow Wolff Cellulosics website: Products: CMC – Packaging and Handling.
   (http://www.dow.com/dowwolff/en/products/cmc_handling.htm)

Back to top
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