



Product Safety Assessment

EcoSmooth™ 100 Conditioning Polymer

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Names

- CAS No. 65497-29-2
- Guar gum, 2-hydroxy-3-(trimethylammonio)propyl ether, chloride
- EcoSmooth™ 100 conditioning polymer
- Guar hydroxypropyltrimonium chloride (INCI name)
- Cationic guar gum

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Product Overview

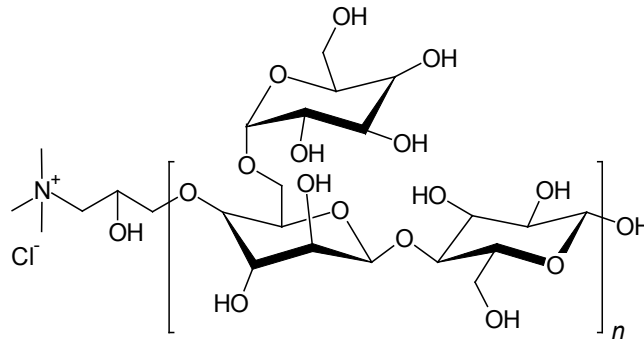
- EcoSmooth™ 100 conditioning polymer is the Dow trade name for a product containing guar gum, 2-hydroxy-3-(trimethylammonio)propyl ether, chloride, along with buffers and stabilizers. This product is manufactured as an odorless yellow powder.¹ For further details, see [Product Description](#).
- EcoSmooth 100 conditioning polymer is added to liquid and gel personal-care products such as shampoo, hair conditioner, and body wash.² For further details, see [Product Uses](#).
- Worker exposure to EcoSmooth 100 conditioning polymer is possible during manufacture, transport, or use. Consumers may use personal-care products that contain small amounts of this product.³ For further details, see [Exposure Potential](#).
- EcoSmooth 100 conditioning polymer, when formulated in personal care products, is nontoxic, not irritating to skin, produces minimal to no eye irritation, not sensitizing, not photo-toxic and not photo-sensitizing. In the industrial setting, eye contact with product solid or dust may cause irritation due to mechanical action. Prolonged skin contact may cause slight irritation with local redness. Inhalation of product dust during processing may cause irritation of the nose, throat, and lungs.⁴ For further details, see [Health Information](#).
- Guar gum, 2-hydroxy-3-(trimethylammonio)propyl ether chloride, the main component of EcoSmooth 100 conditioning polymer is expected to biodegrade in the environment. The polymer is unlikely to accumulate in the food chain, and is toxic to fish and other aquatic organisms on an acute basis.⁵ For further details, see [Environmental Information](#).
- EcoSmooth 100 conditioning polymer is thermally stable at typical use temperatures. Elevated temperatures can cause decomposition.⁶ For further details, see [Physical Hazard Information](#).

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Manufacture of Product

- **Location** – EcoSmooth™ 100 conditioning polymer is manufactured for The Dow Chemical Company by a contractor in the Rajasthan district in India.
- **Process** – EcoSmooth 100 conditioning polymer is produced from guar gum, a large polysaccharide (sugar) molecule made up of galactose and mannose in a 2:1 ratio. Guar gum is derived from the guar bean and is then chemically modified by adding positively charged trimethylammonium hydroxypropyl ether side chains. The structure is shown below.



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Product Description⁷

EcoSmooth™ 100 conditioning polymer is the Dow trade name for the main ingredient guar gum, 2-hydroxy-3-(trimethylammonio)propyl ether, chloride. A common name is cationic guar gum. This positively charged polymer attracts and holds water and is also attracted to the proteins in hair. EcoSmooth 100 conditioning polymer is manufactured as an odorless yellow powder containing a minimum of 85% of gum, 2-hydroxy-3-(trimethylammonio)propyl ether, chloride, along with buffers and product stabilizers.

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Product Uses⁸

EcoSmooth™ 100 conditioning polymer is added to the following types of liquid and gel personal-care formulations to impart conditioning properties:

- Shampoo, conditioner
- Body wash, shower gel
- Liquid hand soap

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Exposure Potential⁹

EcoSmooth™ 100 conditioning polymer is added to personal-care products. Based on this, human and environmental could occur through:

- **Workplace exposure** – Those working with EcoSmooth polymers in manufacturing and/or formulating operations could be exposed during maintenance, sampling, testing, or other procedures. Good housekeeping and control of product dusts are necessary for the safe handling of this product. 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 EcoSmooth 100 conditioning polymer** – This product is not sold directly to consumers, but it is added to hair-care formulations and

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other personal-care products. Always read and follow product label instructions before use. See [Health Information](#).

- **Environmental releases** – Because EcoSmooth™ 100 conditioning polymer is formulated into personal-care products, small quantities could enter wastewater-treatment facilities when consumer products are washed off or discarded. The polymer is expected to degrade in the environment and would likely be removed by biological waste-water treatment facilities via adsorption to biosolids. In the event of a spill, the focus is on containing the spill to prevent contamination of soil and surface or ground water. 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 focus is on immediate containment to prevent contamination of soil and surface or ground water. Ventilate the area. Keep upwind of spill. Spilled material may cause a slipping hazard. Use appropriate safety equipment. Collect in suitable and properly labeled containers. See [Environmental](#) and [Physical Hazard Information](#).
- **In case of fire** – Isolate the area and deny any unnecessary entry. Minimize ignition sources. Use water spray or dry-chemical or carbon-dioxide (CO₂) extinguishers to fight the fire. Firefighters should wear positive-pressure, self-contained breathing apparatus (SCBA) and protective firefighting clothing. Product dust suspended in air can pose an explosion hazard. Keep fire water run-off out of waterways and sewers to minimize the potential for environmental damage. Follow emergency procedures carefully. See [Environmental](#), [Health](#), and [Physical Hazard Information](#).

For more information, request the Safety Data Sheet from the [Dow Customer Information Group](#).

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Health Information¹⁰

EcoSmooth 100 conditioning polymer, when formulated in personal care products, is nontoxic, not irritating to skin, produces minimal to no eye irritation, not sensitizing, not photo-toxic and not photo-sensitizing.

In the industrial setting, potential toxicity to EcoSmooth 100 conditioning polymer includes the following:

Eye contact – In the industrial setting, contact with solid or dust may cause irritation due to mechanical action (scratch or abrade the eyes).

Skin contact – Prolonged contact with the solid may cause slight irritation with local redness. Drying and flaking of the skin is possible. Prolonged contact is not likely to result in absorption of harmful amounts.

Inhalation – Product dust may cause irritation of the upper respiratory tract (nose and throat) and lungs.

Ingestion – This product has very low toxicity if swallowed. Harmful effects are not anticipated from swallowing small amounts.

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Environmental Information¹¹

Guar gum, 2-hydroxy-3-(trimethylammonio)propyl ether chloride, the main ingredient in this product, is soluble in water, and would be expected to biodegrade in the environment over time. The polymer is expected to be removed by adsorption to biosolids during wastewater treatment. If released to surface waters the polymeric component would initially remain dispersed in water and eventually adsorb onto sediments.

Because of its high molecular weight, guar gum, 2-hydroxy-3-(trimethylammonio)propyl ether, chloride would not be expected to accumulate in the food chain (low bioconcentration potential). The main polymeric component of EcoSmooth™ 100 is toxic to fish and other aquatic organisms on an acute basis.

For more information, request the Safety Data Sheet from the [Dow Customer Information Group](#).

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Physical Hazard Information¹²

EcoSmooth™ 100 conditioning polymer is stable under recommended storage and use conditions. Exposure to elevated temperatures can cause this product to decompose. Avoid contact with strong acids, strong bases, and strong oxidizers. Avoid accumulation of product dust.

Electrically bond and ground all containers, personnel, and equipment before transfer or use of this material.

For more information, request the Safety Data Sheet from the [Dow Customer Information Group](#).

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Regulatory Information

Regulations may exist that govern the manufacture, sale, transportation, use, and/or disposal of EcoSmooth™ 100 conditioning polymer. 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](#).

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Additional Information

- Safety Data Sheet request from the [Dow Customer Information Group](#), (www.dow.com/assistance/dowcig.htm)
- Contact Us (www.dow.com/personalcare/ecosmooth_silk/contact/)
- "Guar hydroxypropyltrimonium chloride," Household Products Database, U.S. Department of Health and Human Services, National Institutes of Health, National Library of Medicine (<http://householdproducts.nlm.nih.gov/cgi-bin/household/brands?tbl=chem&id=222>)

For more business information about EcoSmooth™ 100 conditioning polymer, contact the [Dow Customer Information Group](#), (www.dow.com/assistance/dowcig.htm).

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References

- ¹ *EcoSmooth™ 100 Conditioning Polymer Material Safety Data Sheet*, The Dow Chemical Company, July 28, 2011, pages 1 and 5.
- ² "Guar hydroxypropyltrimonium chloride," Household Products Database, U.S. Department of Health and Human Services, National Institutes of Health, National Library of Medicine.
- ³ *EcoSmooth 100 Conditioning Polymer Material Safety Data Sheet*, The Dow Chemical Company, July 28, 2011, pages 3–4.
- ⁴ *EcoSmooth 100 Conditioning Polymer Material Safety Data Sheet*, The Dow Chemical Company, July 28, 2011, pages 1–2 and 5.
- ⁵ *EcoSmooth 100 Conditioning Polymer Material Safety Data Sheet*, The Dow Chemical Company, July 28, 2011, pages 5–6.
- ⁶ *EcoSmooth 100 Conditioning Polymer Material Safety Data Sheet*, The Dow Chemical Company, July 28, 2011, pages 4–5.
- ⁷ *EcoSmooth 100 Conditioning Polymer Material Safety Data Sheet*, The Dow Chemical Company, July 28, 2011, pages 1 and 5.
- ⁸ "Guar hydroxypropyltrimonium chloride," Household Products Database, U.S. Department of Health and Human Services, National Institutes of Health, National Library of Medicine.
- ⁹ *EcoSmooth™ 100 Conditioning Polymer Material Safety Data Sheet*, The Dow Chemical Company, July 28, 2011, pages 2–4.
- ¹⁰ *EcoSmooth 100 Conditioning Polymer Material Safety Data Sheet*, The Dow Chemical Company, July 28, 2011, pages 1–2 and 5.
- ¹¹ *EcoSmooth 100 Conditioning Polymer Material Safety Data Sheet*, The Dow Chemical Company, July 28, 2011, pages 5–6.
- ¹² *EcoSmooth 100 Conditioning Polymer Material Safety Data Sheet*, The Dow Chemical Company, July 28, 2011, pages 3 and 4–5.

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NOTICES:

As part of its 2015 Sustainability Goals, Dow has committed to make publicly available safety assessments for its products globally. This product safety assessment is intended to give general information about the chemical (or categories of chemicals) addressed. It is not intended to provide an in-depth discussion of health and safety information. Additional information is available through the relevant Safety Data Sheet, which should be consulted before use of the chemical. This product safety assessment does not replace required communication documents such as the Safety Data Sheet.

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