Product Safety Assessment

SoftCAT™ Polymers

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Names
- CAS No. 68610-92-4
- Polyquaternium-67
- Quaternized hydroxyethyl cellulose
- SoftCAT™ SK polymers
- SoftCAT SL polymers
- SoftCAT SX polymers

Product Overview
- SoftCAT™ polymers are based on quaternary ammonium salts of hydroxyethyl cellulose. They are white to off-white powders or granules with an amine odor. See Product Description.
- These conditioning polymers are formulated into personal-care products to help deliver and deposit emollients, sunscreens, and fragrances to the skin and hair. See Product Uses.
- These products are used in skin and hair care formulations used by the public. See Exposure Potential.
- Eye contact may cause slight eye irritation, although corneal injury is unlikely. Solids or dust may cause irritation or corneal injury due to mechanical action. Prolonged skin contact may cause slight skin irritation with local redness, but is unlikely to result in absorption of harmful amounts. See Health Information.
- These products are stable at typical storage and use conditions. However, exposure to elevated temperatures can cause them to decompose. Polymer dusts can present an explosion hazard. See Physical Hazard Information.

Manufacture of Product
- Production Sites – SoftCAT polymers are produced by Dow at facilities in Greensburg, Louisiana.
- Process – These polymers are prepared by substituting trimethyl ammonium and dimethyldodecyl ammonium compounds onto hydroxyethyl cellulose. The basic structure of the final product is shown in the figure to the right.
Product Safety Assessment: SoftCAT Polymers

Product Description

SoftCAT™ polymers are white to off-white powders or granules with an amine odor. They include several families of cationic products that differ in both viscosity and charge: SoftCAT SK polymers, SoftCAT SL polymers, and SoftCAT SX polymers. The various products are based on quaternary ammonium salts of hydroxyethylcellulose. The molecules are cationic because they possess positive charges at the nitrogen atoms and have chloride counter ions. Typically, SoftCAT products contain about 91% polymer, with the balance water, sodium chloride, sodium acetate, and isopropyl alcohol.

Product Uses

These polymers are used primarily in hair and skin cleansing products (for example, shampoos, body washes) to condition hair and skin and deposit beneficial ingredients onto hair and skin, such as emollients, fragrance, and silicones. Secondary functions include their use as moisturizers and film-formers.

Exposure Potential

SoftCAT™ polymers are used in the production of consumer products. Based on the uses for SoftCAT polymers, the public could be exposed through:

- **Workplace exposure** – Exposure can occur either in a manufacturing facility or in the various industrial or manufacturing facilities that formulate products with SoftCAT polymers. Those working with SoftCAT polymers 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 unnecessary exposure. See Health Information.

- **Consumer exposure to these products** – These products are used in skin and hair care formulations used by the public. See Health Information.

- **Environmental releases** – Since SoftCAT polymers are used in a variety of consumer products, small amounts are expected to be released to sewers and enter wastewater treatment plants. Because cationic materials like SoftCAT™ polymers will bind to oppositely charged particles, the compounds will become strongly associated with the bio-solids. During the wastewater treatment process, other cationic polymers are commonly used to condition and dewater the bio-solids prior to disposal. 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 material should be captured, collected, and reprocessed or disposed of according to applicable governmental requirements. Eliminate all sources of ignition immediately. Use only explosion-proof equipment and ground and bond all containers and handling equipment. See Environmental, Health, and Physical Hazard Information.

- **In case of fire** – Isolate the area and deny any unnecessary entry. Firefighters should wear positive-pressure, self-contained breathing apparatus (SCBA) and protective firefighting clothing. Use water fog or fine spray, dry-chemical or carbon-dioxide extinguishers, or foam
to extinguish the fire. Avoid creating airborne dusts. Follow emergency procedures carefully. See Environmental, Health, and Physical Hazard Information.

For more information, see the relevant Safety Data Sheet.

**Health Information**

SoftCAT™ polymers have very low toxicity if ingested and harmful effects are not anticipated from swallowing small amounts.

Eye contact may cause slight eye irritation, although corneal injury is unlikely. Solids or dust may cause irritation or corneal injury due to mechanical action. Prolonged skin contact may cause slight skin irritation with local redness, but is unlikely to result in absorption of harmful amounts. These products do not cause allergic skin reactions.

Animal genetic toxicity studies were negative.

For more information, see the relevant Safety Data Sheet.

**Environmental Information**

SoftCAT™ polymers are highly soluble and once introduced into water, will have a tendency to remain in water. Because they are charged (ionic), they will bind to oppositely charged particles in the environment. They would not be expected to be mobile in soils or groundwater.

Generally polymers are considered essentially non-biodegradable, although they are likely to biodegrade slowly in the environment.

SoftCAT polymers are not likely to accumulate in the food chain (bioaccumulation potential is very low for high molecular weight polymers). They are slightly to moderately toxic to fish and other aquatic organisms on an acute basis.

For more information, see the relevant Safety Data Sheet.

**Physical Hazard Information**

SoftCAT polymers are stable at typical storage and use conditions. However, exposure to elevated temperatures can cause these products to decompose. Decomposition products depend on the temperature, air supply, and the presence of other materials. Avoid contact with strong acids and strong oxidizers.

SoftCAT polymer dusts can present an explosion hazard. Minimize dust accumulation and avoid sources of ignition such as heat, sparks, and open flames.

For more information, see the relevant Safety Data Sheet.

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Regulatory Information
Regulations may exist that govern the manufacture, sale, transportation, use, and/or disposal of SoftCAT™ polymers. 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.asp)
- Contact Us (http://www.dow.com/ucc/amerchol/resource/samples.htm)


References

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8 SoftCAT™ SK Conditioning Polymers, Amerchol Corporation (a subsidiary of The Dow Chemical Company), Form No. 324-00195-0405 AMS, April 2005, page 1.
13 Estimates by The Dow Chemical Company.
16 SoftCAT Polymer SX-400H Safety Data Sheet, Dow Chemical Company Ltd., June 26, 2007, pages 1 and 5.
NOTICES:

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