Product Safety Assessment

ECOSURF™ EH Series and SA Series Surfactants

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Names
- CAS No. 64366-70-7
- CAS No. 68937-66-6
- CAS No. 69227-221
- DOW™ specialty ethoxylate surfactants
- ECOSURF™ EH series nonionic surfactant
- ECOSURF EH-3 surfactant
- ECOSURF EH-6 surfactant
- ECOSURF EH-9 surfactant
- ECOSURF EH-9 (90% Actives) surfactant
- ECOSURF EH-14 (90% Actives) surfactant
- 2-Ethyl hexanol EO-PO nonionic surfactant
- Alcohols C6–C12 ethoxylated propoxylated
- Alcohols C10–C16 ethoxylated propoxylated
- DOW seed oil surfactants
- ECOSURF SA series nonionic surfactant
- ECOSURF SA-4 surfactant
- ECOSURF SA-7 surfactant
- ECOSURF SA-9 surfactant
- ECOSURF SA-15 surfactant

In Japan and Canada, products are sold under the trade name TERGITOL™ not ECOSURF™.

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Product Overview

- The Dow Chemical Company (Dow) manufactures a family of nonionic surfactants under the trade name ECOSURF™ surfactants, and in select locations, TERGITOL™ EH or SA surfactants. ECOSURF surfactants are low odor, low foaming, fast wetting, and are designed to have reduced environmental impact.¹ For further details, see Product Description.
- ECOSURF surfactants are concentrated, commercial-grade products used for a broad range of applications. These surfactants are formulated into hard-surface and high-performance cleaners, prewash spotters, paints, and coatings. They are also used in the pulp and paper, textile, oilfield, and agrochemical industries.²³ For further details, see Product Uses.
- Worker exposure to ECOSURF surfactants is possible during manufacture, transport, or use. Exposure is minimized by engineering controls and personal protective equipment. Consumers may use cleaners, detergents, or paints containing these surfactants.₄⁵ For further details, see Exposure Potential.
- Eye contact with these surfactants may cause moderate irritation and moderate corneal injury. Brief skin contact may cause slight to moderate irritation with local redness and drying and

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flaking of the skin. At room temperature, exposure to vapor is minimal. For further details, see Health Information.

- ECOSURF™ surfactants are readily biodegradable. Rapid and complete biodegradation is expected in the environment and during wastewater treatment. These products are slightly (EH series) to moderately (SA series) toxic to fish and other aquatic organisms on an acute basis. For further details, see Environmental Information.

- ECOSURF surfactants are thermally stable under recommended storage conditions and use. Exposure to elevated temperatures can cause these products to decompose. For further details, see Physical Hazard Information.

Manufacture of Product

- **Locations** – Dow manufactures ECOSURF™ surfactants at facilities in North America.
- **Process** – ECOSURF surfactants are manufactured by reacting an alcohol with ethylene oxide and propylene oxide under basic conditions using proprietary methods, chemistries, and formulations.

Product Description

Dow manufactures a family of nonionic surfactants under the trade name ECOSURF™ surfactants, and in select locations, TEGITOL™ EH or SA surfactants. ECOSURF surfactants are low odor, low foaming, fast wetting, and designed to have reduced environmental impact. The ECOSURF EH series are alcohol alkylate-based products. The ECOSURF SA series are seed oil-based products. Both are formulated as colorless to yellow liquids.

Product Uses

ECOSURF™ nonionic surfactants are formulated into a broad range of products capable of cleaning kitchen soil to industrial petroleum-based grease. ECOSURF surfactants are used for the following applications:

- **Household cleaners** – hard-surface cleaners, bathroom cleaners, car wash and car care, laundry, prewash spotters, floor and carpet cleaners
- **Industrial and institutional cleaners** – janitorial cleaners, metal cleaners, electronic/precision cleaners, commercial car-wash cleaners, floor and carpet care, commercial laundry
- **Concentrated and ultraconcentrated cleaning products**
- **Paints and coatings** – architectural, automotive, flexible and rigid packaging ink systems, industrial coatings and paints
- **Pulp and paper** – mill operations including pulping and processing, deinking, defoaming, emulsification, and felt cleaning
- **Textile processing** – apparel, floor coverings, home furnishings, automotive, and industrial products
- **Oilfield**
- **Agrochemicals** – emulsifier for pesticide formulations
Exposure Potential\textsuperscript{4,5}

ECOSURF\textsuperscript{TM} surfactants are used in the production of industrial and consumer products. Based on the uses for these surfactants, individuals can be exposed through:

- **Workplace exposure** – Exposure can occur in a facility that manufactures ECOSURF surfactants or in the various industrial or manufacturing facilities that use these products. Occupational exposure in manufacturing could occur during maintenance, sampling, testing, or other procedures. Each 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 ECOSURF\textsuperscript{TM} surfactants** – ECOSURF surfactants are not sold for direct consumer use. However, they are formulated into hard-surface cleaners, laundry detergents, paints and other products used by consumers. Always read product information before use and follow the label/use instructions. See Health Information.

- **Environmental releases** – In the event of a spill, the focus is on containing the spill to prevent contamination of soil and surface or ground water. Absorb small spills with sand or soil. Collect in suitable and properly labeled containers. The components of ECOSURF surfactants are soluble in water and have low volatility. If released to the environment, these products tend to dissolve and remain in water. ECOSURF surfactants are readily biodegradable, and their rapid and complete biodegradation is expected in the environment, including wastewater-treatment processes. Depending on the specific product and formulation, these surfactants are slightly (EH series) to moderately (SA series) toxic to aquatic organisms on an acute basis. See Environmental, Health, and Physical Hazard Information.

- **Large release** – Industrial spills or releases are infrequent and generally contained. If a large spill does occur, isolate the area. Keep unnecessary and unprotected personnel from entering the area. Spilled material may cause a slipping hazard. Use appropriate safety equipment. See Environmental, Health, and Physical Hazard Information.

- **In case of fire** – Keep people away. Isolate the fire and deny unnecessary entry. Use a water fog or fine spray, dry-chemical or carbon-dioxide extinguishers, or foam. Alcohol-resistant foams are preferred. 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, see the relevant Safety Data Sheet.

**Health Information\textsuperscript{4,5}**

Health information for these 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. These products may 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 appears below.

- **Eye contact** – Contact with concentrated surfactants may cause moderate eye irritation and moderate corneal injury.

- **Skin contact** – Brief contact may cause slight to moderate irritation with local redness. Drying and flaking of the skin is possible. Prolonged contact is unlikely to result in absorption of harmful amounts.

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Inhalation – At room temperature, exposure to vapor is minimal due to low volatility. No adverse effects are anticipated from a single exposure to vapor.

Ingestion – These materials have low toxicity if swallowed. Swallowing small amounts incidental to normal handling operations is not likely to cause injury; however, swallowing larger amounts may cause injury. Aspiration into the lungs could occur during ingestion or vomiting, causing lung damage or even death due to chemical pneumonia.

Effects of repeated exposure – For the SA series, based on available data for similar material, repeated exposures are not anticipated to cause significant adverse effects. There is no relevant information for the EH series.

For more information, see the relevant Safety Data Sheet.

Environmental Information

ECOSURF™ surfactants are nonvolatile (do not evaporate), water-soluble materials. If released to the environment, these products tend to dissolve and remain in water. These products are readily biodegradable according to standard tests, and thus their rapid and complete biodegradation is expected in soil and surface waters, and during wastewater treatment.

These surfactants are not likely to accumulate in the food chain (low bioconcentration potential). The ECOSURF surfactant products have acute aquatic toxicity classifications which range from “slightly” (EH series) to “moderately” (SA series) toxic.

For more information, see the relevant Safety Data Sheet.

Physical Hazard Information

ECOSURF™ surfactants are thermally stable at recommended storage and use temperatures. Exposure to elevated temperatures can cause these products to decompose.

Spilled surfactant can be a slipping hazard.

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 ECOSURF™ surfactants. These regulations may vary by city, state, country, or geographic region. Information may be found by consulting the relevant Safety Data Sheet, Technical Data Sheet, or Contact Us.

Additional Information

- Safety Data Sheet (www.dow.com/webapps/msds/msdssearch.aspx)
- Contact Us (www.dow.com/surfactants/contact/index.htm)
- Dow Customer Information Group (www.dow.com/assistance/dowcig.htm)
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For more business information about ECOSURF surfactants, visit the DOW Surfactants web site at www.dow.com/surfactants/index.htm.

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References

2 **ECOSURF™ EH-6 Surfactant**, Technical Data Sheet, The Dow Chemical Company, Form No. 119-02242-0109
3 **ECOSURF SA-7 Surfactant**, Technical Data Sheet, The Dow Chemical Company, Form No. 119-02221-1007

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