Product Safety Assessment

DOWFAX™ DF Nonionic Surfactants

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Names
Trade names and product grades for these materials include, but are not limited to, the following:

- DOWFAX™ DF nonionic surfactants
- DOWFAX DF-107 surfactant
- DOWFAX DF-108 surfactant
- DOWFAX DF-111 surfactant
- DOWFAX DF-112 surfactant
- DOWFAX DF-113 surfactant
- DOWFAX DF-114 surfactant
- DOWFAX DF-117 surfactant
- DOWFAX DF-122 surfactant
- DOWFAX DF-123 surfactant
- DOWFAX DF-124 surfactant
- DOWFAX DF-125 surfactant
- DOWFAX DF-126 surfactant
- DOWFAX DF-141 surfactant
- DOWFAX DF-142 surfactant
- DOWFAX DF-143 surfactant
- DOWFAX DF-144 surfactant
- DOWFAX DF-146 surfactant
- DOWFAX DF-147 surfactant
- DOWFAX DF-161 surfactant
- DOWFAX DF-162 surfactant
- DOWFAX DF-163 surfactant

Product Overview
- The Dow Chemical Company manufactures several nonionic surfactants under the tradename DOWFAX™ DF surfactants. DOWFAX DF surfactants are supplied as viscous, odorless, yellow to clear liquids.¹ ² For further details, see Product Description.
- DOWFAX DF nonionic surfactants are used as defoaming agents in applications such as vegetable washing, sugar manufacturing, fermentation, food and paper processing, and defoamers for building materials.³ For further details, see Product Uses.
- Worker exposure to DOWFAX DF nonionic surfactants is possible during manufacture, transport, or use. Exposure is minimized by engineering controls and personal protective equipment.⁴ For further details, see Exposure Potential.
- Eye contact with DOWFAX DF nonionic surfactants may cause slight temporary eye irritation. Brief skin contact may cause slight irritation with local redness. At room temperature, exposure to vapor is minimal due to low volatility. These products have low toxicity if swallowed.⁴ For further details, see Health Information and the relevant Safety Data Sheet.
- The biodegradability of these products varies depending on their molecular structure and molecular weight. Although not all product grades of DOWFAX DF nonionic surfactants are considered to be readily biodegradable according to stringent test guidelines, these results do not necessarily mean that these products are not biodegradable under environmental conditions. These products are

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- Water soluble, and are not expected to accumulate in the food chain. DOWFAX™ DF nonionic surfactants are practically nontoxic to aquatic organisms on an acute basis. For further details, see Environmental Information.
- DOWFAX DF nonionic surfactants are thermally stable under recommended storage and normal use conditions. Exposure to elevated temperatures can cause these products to decompose. For further details, see Physical Hazard Information.

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**Manufacture of Product**
- **Locations** – Dow and its global affiliates manufacture DOWFAX™ DF nonionic surfactants at facilities in The Netherlands and Spain.
- **Process** – DOWFAX DF nonionic surfactants are manufactured using proprietary methods, chemistries, and formulations.

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**Product Description**
DOWFAX™ DF nonionic surfactants are water-soluble defoaming agents, supplied as yellow to clear liquids with no odor.

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**Product Uses**
DOWFAX™ DF nonionic surfactants are used as defoaming/antifoam agents in industrial processes and products, including:
- Vegetable washing
- Sugar manufacturing
- Fermentation
- Food and paper processing
- Defoamers for building materials

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**Exposure Potential**
DOWFAX™ DF nonionic surfactants are used in the production 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 DOWFAX DF nonionic surfactants or in the various industrial or manufacturing facilities that use these products. Those working with DOWFAX DF nonionic surfactants 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, ventilation, and safety equipment in place to limit exposure. See Health Information.
- **Consumer exposure to products containing DOWFAX DF nonionic surfactants** – Dow does not sell DOWFAX DF nonionic surfactants for direct consumer use. Although DOWFAX DF nonionic surfactants are used in industrial processes such as sugar manufacturing, vegetable washing, and fermentation, these uses are not expected to pose an exposure risk to consumers. 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, or groundwater. DOWFAX DF nonionic surfactants are water soluble and have low volatility. If released to the environment, these products would tend to dissolve and remain in water. Although not all product grades can be considered readily biodegradable according to Organization for Economic Cooperation and Development (OECD) test guidelines, these products would be expected to degrade slowly in the environment and be removed by wastewater-treatment processes. These products are practically nontoxic 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, the product should be captured, collected, and reprocessed or disposed of according to applicable governmental requirements. Keep unnecessary and unprotected personnel from entering the area. Spilled product may cause a slipping hazard. Use appropriate safety equipment. Prevent the product from entering soil, ditches, sewers, waterways, and/or groundwater. Contain spilled product if possible. Absorb with materials such as dirt, sand, or clay. Use non-sparking tools in cleanup operations. Collect in suitable and properly labeled containers. See Environmental, Health, and Physical Hazard Information.
- **In case of fire** – Keep people away. Isolate the fire and deny unnecessary entry. Use water spray to cool fire-exposed containers and the fire-affected zone until the fire is out and danger of reignition has passed. Wear positive-pressure, self-contained breathing apparatus (SCBA) and protective firefighting clothing. Fight the fire from a protected location or safe distance. Consider the use of

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unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Move containers from the fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Keep fire water out of waterways and sewers to minimize the potential for environmental damage. Follow emergency procedures outlined in the Safety Data Sheet carefully. See Environmental, Health, and Physical Hazard Information.

For more information, see the relevant Safety Data Sheet.

Health Information

Health information for DOWFAX™ DF nonionic surfactants is summarized on the relevant Safety Data Sheets. These products may also contain additives that have additional health impact. It is important to note that health impact 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. An overview of health information for DOWFAX DF nonionic surfactants appears below.

**Eye contact** – Contact may cause slight temporary eye irritation. Corneal injury is unlikely.

**Skin contact** – Brief contact may cause slight skin irritation with local redness.

**Inhalation** – At room temperature, exposure to vapor is minimal due to low volatility.

**Ingestion** – These products have low toxicity if swallowed. Swallowing small amounts incidentally as a result of normal handling operations is not likely to cause injury; however, swallowing larger amounts may cause injury.

For more information, see the relevant Safety Data Sheet.

Environmental Information

Environmental information for DOWFAX™ DF nonionic surfactants is summarized on the relevant Safety Data Sheets. These products may also contain additives that have additional environmental impact. It is important to note that environmental impact associated with individual products may vary based on their formulation or intended use. The Safety Data Sheet is the preferred source for specific environmental information. An overview of environmental information for DOWFAX DF nonionic surfactants appears below.

DOWFAX DF nonionic surfactants are nonvolatile (do not evaporate) products that are soluble in water. If released to the environment, these products would tend to dissolve and remain in water. The biodegradability of these products varies depending on their molecular structure and molecular weight. Although some of these surfactants are not considered readily biodegradable according to stringent OECD test guidelines, these results do not necessarily mean that the products will not degrade slowly under environmental conditions.

These surfactants are not likely to accumulate in the food chain (bioconcentration potential is low). DOWFAX DF nonionic surfactants are practically nontoxic (LC50/EC50 greater than 100 mg/L) to aquatic organisms on an acute basis.

For more information, see the relevant Safety Data Sheet.

Physical Hazard Information

DOWFAX™ DF nonionic surfactants are thermally stable under recommended storage and normal use conditions. Exposure to elevated temperatures can result in decomposition. Generation of gas during decomposition can cause pressure in closed systems. Spilled product can present a slipping hazard. Avoid contact with strong acids, strong bases, and strong oxidizers. Avoid unintended contact with isocyanates, as the reaction of polyols and isocyanates generates heat.

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 DOWFAX™ DF nonionic surfactants. 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
- Obtain the relevant Safety Data Sheet (www.dow.com/webapps/msds/msdsssearch.aspx)
- Request the relevant Technical Data Sheet from the Dow Customer Information Group (www.dow.com/assistance/dowcig.htm)
- DOWFAX™ DF-162 Nonionic Surfactant Technical Data Sheet, The Dow Chemical Company, Form No. 119-02191-0306
- Contact Us (www.dow.com/polyglycols/ppgc/europe/contact/index.htm)

For more business information about DOWFAX™ DF nonionic surfactants, visit the Dow Propylene Glycols and Copolymers business web site at www.dow.com/polyglycols/ppgc/europe/products/dns.htm.

References
1 DOWFAX™ DF-162 Nonionic Surfactant Technical Data Sheet, The Dow Chemical Company, Form No. 119-02191-0306
2 DOWFAX™ DF-162 Nonionic Surfactant Material Safety Data Sheet, The Dow Chemical Company
4 DOWFAX™ DF-141 Defoamer Material Safety Data Sheet, The Dow Chemical Company
5 DOWFAX™ DF-123 Defoamer Material Safety Data Sheet, The Dow Chemical Company
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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