
Product Safety Assessment

TRITON™ Sulfate-based Surfactants

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Names

- CAS No. 72379-24-9
- CAS No. 68649-55-8
- CAS No. 55348-40-8
- C12–14-tert-alkyl-ethoxylated sodium sulfate
- Poly(oxy-1,2-ethanediyl), α -sulfo- ω -(nonylphenoxy) ammonium salt
- Sodium alkyl aryl ether sulfate
- TRITON™ QS-15 surfactant
- TRITON XN-45S surfactant
- TRITON W-30 surfactant

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Product Overview

- TRITON™ sulfate-based surfactants are anionic, amber liquids with a mild to pungent odor. These surfactants are soluble in water and most alkaline solutions and are compatible with other anionic and nonionic surfactants.^{1,2,3,4,5,6} For further details, see [Product Description](#).
- TRITON sulfate-based surfactants are used in industrial and institutional cleaning applications, emulsion polymerization, wax emulsification, and other applications.^{7,8,9} For further details, see [Product Uses](#).
- Exposure can occur either in facilities that manufacture TRITON sulfate-based surfactants or in the various industrial or manufacturing facilities that formulate and use these products. TRITON sulfate-based surfactants are formulated into products such as cleaners, the use of which may present potential for consumer exposure.^{10,11,12,13} For further details, see [Exposure Potential](#).
- Contact may cause severe eye irritation with corneal injury, which may result in permanent vision impairment, even blindness. Prolonged skin contact may cause moderate skin irritation, even a burn, with local redness and drying and flaking of the skin. Exposure to vapor may cause irritation of the nose, throat, and lungs as well as central nervous system effects. These products have low toxicity if swallowed. Repeated exposure to some components of these products have been shown to have adverse effects on humans and laboratory animals.^{14,15,16} For further details, see [Health Information](#).
- TRITON sulfate-based surfactants are inherently biodegradable and will not persist in the environment. These products would not be expected to accumulate in the food chain and are

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practically nontoxic ($EC_{50} > 100$ mg/L) or slightly toxic (EC_{50} of 10 to 100 mg/L) to aquatic organisms on an acute basis.¹⁷ For further details, see [Environmental Information](#).

- TRITON™ sulfate-based surfactants are stable at recommended storage and use temperatures, but can decompose at elevated temperatures. Avoid contact with strong acids, strong bases, strong oxidizers, and strong reducing agents.¹⁸ For further details, see [Physical Hazard Information](#).

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Manufacture of Product

- **Locations** – The Dow Chemical Company manufactures TRITON™ sulfate-based surfactants at facilities in the United States.
- **Process** – TRITON sulfate-based surfactants are manufactured using proprietary methods, chemistries, and formulations.

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Product Description^{19,20,21}

TRITON™ sulfate-based surfactants are anionic, amber liquids with a mild to pungent odor. These products contain:

- TRITON QS-15 surfactant – C12–14-tert-alkyl-ethoxylated sodium sulfate
- TRITON XN-45S surfactant – Poly(oxy-1,2-ethanediyl), α -sulfo- ω -(nonylphenoxy) ammonium salt in ethanol / water
- TRITON W-30 surfactant – Sodium alkyl aryl ether sulfate in isopropyl alcohol / water

TRITON sulfate-based surfactants are soluble in water and most alkaline solutions. They are bleach-stable and compatible with most anionic and nonionic surfactants.

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Product Uses^{22,23,24}

TRITON™ sulfate-based surfactants are used in industrial and institutional cleaning applications, emulsion polymerization, wax emulsification, and other applications such as:

- TRITON Q-15 surfactant – highly alkaline metal cleaners, bottle washing, zinc plating brightener, gas-well cleaning, and steam cleaners
- TRITON XN-45S surfactant – emulsion polymerization, wax emulsification, and cleaners
- TRITON W-30 surfactant – textile processing, water-repellant finishes for fabric and carpet

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Exposure Potential^{25,26,27,28}

TRITON™ sulfate-based surfactants are used in the formulation of industrial and consumer products. Based on the uses for this product, the public could be exposed through:

- **Workplace exposure** – Exposure can occur either in facilities that manufacture TRITON sulfate-based surfactants or in the various industrial or manufacturing facilities that formulate and 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 TRITON sulfate-based surfactants** – TRITON sulfate-based surfactants are not sold for direct consumer use. However, they are

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formulated into cleaners and other products that consumers may use. Always read product information before use and follow label instructions. 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. Do not use water for cleanup. Absorb small spills with sand or dirt. Collect in suitable and properly labeled containers. Once introduced to water, TRITON™ sulfate-based surfactants will remain in water. Because they are inherently biodegradable, they will be removed from water and soil environments, including wastewater-treatment facilities. See [Environmental](#), [Health](#), and [Physical Hazard Information](#).
- **Large release** – Industrial spills or releases are infrequent and generally contained. If a large spill does occur, evacuate the area. Keep upwind of the spill and ventilate the area. Only trained and properly protected personnel must be involved in clean-up operations. Spilled product may cause a slipping hazard. Use appropriate safety equipment. Some products contain flammable solvents. Eliminate all sources of ignition immediately. Use only explosion-proof equipment; ground and bond all containers and handling equipment. See [Environmental](#), [Health](#), and [Physical Hazard Information](#).
- **In case of fire** – Keep people away. Isolate the fire and deny any unnecessary entry. Use water fog, dry-chemical or carbon-dioxide extinguishers, or foam to fight the fire. 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. The public should be warned of downwind vapor explosion hazards. Vapors are heavier than air and may travel a long distance and accumulate in low-lying areas. Keep vapors out of sewers. Keep fire water 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 Information^{29,30,31}

Health information for TRITON™ sulfate-based surfactants 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. These products may also contain minor components or additives that may have additional health risks. An overview of health information for TRITON sulfate-based surfactants is provided below.

Eye contact – Contact may cause severe irritation with corneal injury, which may result in permanent vision impairment, even blindness. Chemical burns may occur.

Skin contact – Prolonged contact may cause moderate irritation, even a burn, with local redness and drying and flaking of the skin. Prolonged contact is unlikely to result in absorption of harmful amounts.

Inhalation – Exposure to vapor may cause irritation of the nose, throat, and lungs. Exposure to vapor may cause central nervous system effects including anesthetic or narcotic effects, dizziness, and drowsiness.

Ingestion – These products 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 during ingestion or vomiting may cause lung damage, even death, from chemical pneumonia.

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Repeated exposure – Components in some of these products ([isopropanol](#), CAS No. 67-63-0, ethanol, CAS No. 51617-74-4, and sulfuric acid, CAS No. 7664-93-9) have been shown to cause adverse effects in laboratory animals and, in some cases, humans.

- Repeated exposure to isopropanol has been reported to cause adverse effects on the liver and kidney in laboratory animals. In laboratory animals, this material has been shown to be toxic to the fetus at doses toxic to the mother.
- Repeated exposure to ethanol has been reported to cause adverse effects on the central nervous system and liver in studies of laboratory animals. Ethanol has been shown to cause birth defects or toxicity to the fetus in laboratory animal tests and to cause human fetotoxicity and/or birth defects when ingested during pregnancy. In animal studies, ethanol has been shown to interfere with fertility in males and ingestion of large amounts has been shown to interfere with fertility in human males.
- Sulfuric acid mist has been shown to cause cancer in humans. Epidemiology studies have reported an increased incidence of cancers of the upper respiratory tract in workers exposed to strong-inorganic-acid mists containing sulfuric acid. These products are not considered to contain strong acids.

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

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Environmental Information³²

Environmental data associated with individual products in this family of materials may vary. The Safety Data Sheet is the preferred source for specific environmental information.

TRITON™ sulfate-based surfactants are water soluble and are expected to stay in water when introduced into the environment. TRITON sulfate-based surfactants are inherently biodegradable (per OECD testing guidelines). Because of their biodegradability, they will be removed from water, soil and wastewater-treatment facilities through biodegradation. These products are not expected to accumulate in the food chain (low bioconcentration potential).

TRITON sulfate-based surfactants are practically nontoxic ($EC_{50} > 100$ mg/L) or slightly toxic (EC_{50} of 10 to 100 mg/L) to 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 Information³³

TRITON™ sulfate-based surfactants are thermally stable at recommended storage and use temperatures. Exposure to elevated temperatures can cause these products to decompose. Decomposition products depend upon temperature, air supply, and the presence of other materials. Avoid contact with strong acids, strong bases, strong oxidizers, and strong reducing agents.

Spilled surfactant can be a slipping hazard.

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 TRITON™ sulfate-based surfactants. These regulations may vary by city, state, country, or geographic region. Information may be found by consulting the relevant [Safety Data Sheet](#), [Product Information Sheet](#), or [Contact Us](#).

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Additional Information

- Request the Safety Data Sheet from the [Dow Customer Information Group](#) (www.dow.com/assistance/dowcig.htm)
- Contact Us (www.dow.com/surfactants/contact/index.htm)
- TRITON™ QS-15 Surfactant, Product Information Sheet, The Dow Chemical Company, Form No. 119-01903-1107 (www.dow.com/scripts/litorder.asp?filepath=surfactants/pdfs/noreg/119-01903.pdf)
- TRITON™ XN-45S Surfactant, Product Information Sheet, The Dow Chemical Company, Form No. 119-01905-1107 (www.dow.com/scripts/litorder.asp?filepath=surfactants/pdfs/noreg/119-01905.pdf)
- TRITON™ W-30 Concentrate Surfactant, Product Information Sheet, The Dow Chemical Company, Form No. 119-01906-1107 (www.dow.com/scripts/litorder.asp?filepath=surfactants/pdfs/noreg/119-01906.pdf)

For more business information about TRITON™ sulfate-based surfactants, visit the Dow Surfactants website at www.dow.com/surfactants/.

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References

- ¹ TRITON™ Q-15 Surfactant Material Safety Data Sheet, The Dow Chemical Company, February 7, 2011, Hazards Identification and Composition Information.
- ² TRITON™ XN-45S Surfactant Material Safety Data Sheet, The Dow Chemical Company, January 4, 2010, Hazards Identification and Composition Information.
- ³ TRITON™ W-30 Surfactant Material Safety Data Sheet, The Dow Chemical Company, May 13, 2011, Hazards Identification and Composition Information.
- ⁴ TRITON™ QS-15 Surfactant Product Information, Technical Data Sheet, The Dow Chemical Company, Form No. 119-01903-1107, page 1.
- ⁵ TRITON™ XN-45S Surfactant Product Information, Technical Data Sheet, The Dow Chemical Company, Form No. 119-01905-1107, page 1.
- ⁶ TRITON™ W-30 Surfactant Product Information, Technical Data Sheet, The Dow Chemical Company, Form No. 119-01906-1107, page 1.
- ⁷ TRITON™ QS-15 Surfactant Product Information, Technical Data Sheet, The Dow Chemical Company, Form No. 119-01903-1107, page 1.
- ⁸ TRITON™ XN-45S Surfactant Product Information, Technical Data Sheet, The Dow Chemical Company, Form No. 119-01905-1107, page 1.
- ⁹ TRITON™ W-30 Surfactant Product Information, Technical Data Sheet, The Dow Chemical Company, Form No. 119-01906-1107, page 1.
- ¹⁰ TRITON™ QS-15 Surfactant Product Information, Technical Data Sheet, The Dow Chemical Company, Form No. 119-01903-1107, page 1.
- ¹¹ TRITON™ XN-45S Surfactant Product Information, Technical Data Sheet, The Dow Chemical Company, Form No. 119-01905-1107, page 1.
- ¹² TRITON™ W-30 Surfactant Product Information, Technical Data Sheet, The Dow Chemical Company, Form No. 119-01906-1107, page 1.
- ¹³ TRITON™ W-30 Surfactant Material Safety Data Sheet, The Dow Chemical Company, May 13, 2011, Fire Fighting Measures, Accidental Release Measures, Handling and Storage, and Stability and Reactivity.
- ¹⁴ TRITON™ Q-15 Surfactant Material Safety Data Sheet, The Dow Chemical Company, February 7, 2011, Hazards Identification and Toxicological Information.
- ¹⁵ TRITON™ XN-45S Surfactant Material Safety Data Sheet, The Dow Chemical Company, January 4, 2010, Hazards Identification and Toxicological Information.

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- ¹⁶ TRITON™ W-30 Surfactant Material Safety Data Sheet, The Dow Chemical Company, May 13, 2011, Hazards Identification and Toxicological Information.
- ¹⁷ TRITON™ XN-45S Surfactant Material Safety Data Sheet, The Dow Chemical Company, January 4, 2010, Ecological Information.
- ¹⁸ TRITON™ W-30 Surfactant Material Safety Data Sheet, The Dow Chemical Company, May 13, 2011, Stability and Reactivity.
- ¹⁹ TRITON™ QS-15 Surfactant Product Information, Technical Data Sheet, The Dow Chemical Company, Form No. 119-01903-1107, page 1.
- ²⁰ TRITON™ XN-45S Surfactant Product Information, Technical Data Sheet, The Dow Chemical Company, Form No. 119-01905-1107, page 1.
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- ²³ TRITON™ XN-45S Surfactant Product Information, Technical Data Sheet, The Dow Chemical Company, Form No. 119-01905-1107, page 1.
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- ²⁵ TRITON™ QS-15 Surfactant Product Information, Technical Data Sheet, The Dow Chemical Company, Form No. 119-01903-1107, page 1.
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- ²⁸ TRITON™ W-30 Surfactant Material Safety Data Sheet, The Dow Chemical Company, May 13, 2011, Fire Fighting Measures, Accidental Release Measures, Handling and Storage, and Stability and Reactivity.
- ²⁹ TRITON™ Q-15 Surfactant Material Safety Data Sheet, The Dow Chemical Company, February 7, 2011, Hazards Identification and Toxicological Information.
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- ³² TRITON™ XN-45S Surfactant Material Safety Data Sheet, The Dow Chemical Company, January 4, 2010, Ecological Information.
- ³³ TRITON™ W-30 Surfactant Material Safety Data Sheet, The Dow Chemical Company, May 13, 2011, Stability and Reactivity.

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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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