

**DOWFAX DF-111**

Nonionic Surfactant

General Information

The Dow Chemical Company is a science and technology-based company and one of the world's largest producers of polyalkylene glycols. Our worldwide research, manufacturing, and distribution include facilities in Europe, North America, Latin America, and Asia-Pacific. With over 30 years experience in polyglycol manufacturing, the industry's broadest product line, and a leadership position in new product development, Dow is uniquely positioned to meet the needs of a diverse global marketplace. This success results from expanding our customers' markets through combined customer formulation knowledge and Dow alkoxylation expertise in joint development applications. Together we focus these resources to help ensure success for our customers and their products.

DOWFAX Nonionic surfactants

DOWFAX* Nonionic Surfactants are high-performance products that feature excellent solvency, low foam characteristics, chemical stability, and a long list of other valuable performance properties. They are produced by polymerizing ethylene oxide (EO), propylene oxide (PO), and/or butylene oxide (BO) in the same molecule. The ratio and order of oxide addition, together with the choice of initiator, control the chemical and physical properties.

DOWFAX DF-111 Nonionic Surfactant – Product Characteristics

DOWFAX DF-111 Nonionic Surfactant is a viscous liquid at room temperature with a low pour point. It is an efficient foam control agent by having low foam characteristics and inverse water solubility. The optimum operating temperature for defoaming characteristics is 10 to 15°C above the surfactant's cloud point in the system. See TABLE 1 for Typical Properties of DOWFAX DF-111 Nonionic Surfactant.

Applications and Uses

Due to low foam characteristic, DOWFAX DF-111 makes a particularly efficient low temperature foam control agent. It is used in such processes as fermentation, food processing, food washing and pulp and paper processing. Other applications include industrial surfactant and a chemical intermediate by reacting it with an organic acid to form esters, which are also effective foam control agents.

TABLE 1: Typical Properties of DOWFAX DF-111 Nonionic Surfactant

Property (Unit)	Typical Value	Test Method
Viscosity @ 25°C (cSt)	790	ASTM D 445 / D 446
Cloud Point, 1% Aqueous (°C)	20	ASTM D 2024
Cloud Point, 10% Aqueous (°C)	15	ASTM D 2024
Cloud Point, 10% Solvent ¹ (°C)	26	ASTM D 2024
Surface Tension ² (mN/m)	34.2	ASTM D 1331
Pour Point (°C)	<-20	ASTM D 97
Specific Gravity (g/cm ³ @ 25°C/25°C)	1.020	ASTM D 892

¹ 10% surfactant in a solution of 25% diethylene glycol butyl ether in water

² Temperature 20°C, 1% surfactant in water

Notice: The information and data contained herein do not constitute sales specifications.

No liability, warranty or guarantee of final product performance is created by this document.

DOWFAX Nonionic Surfactants

Your first choice

Technical Expertise When and Where You Need It

Dow experts on DOWFAX Nonionic Surfactants are regionally located to quickly respond to your needs. They are globally networked to take maximum advantage of years of combined experience. Whether your question involves products, applications, or regulations, Dow offers comprehensive customer and technical service.

Safe Use and Handling

DOWFAX DF-111 Nonionic Surfactant is easy to store and handle. For specific safe use and handling information, or to obtain a DOWFAX DF-111 Nonionic Surfactant Material Safety Data Sheet, contact your local Dow representative or please visit us www.dow.com.

Product Stewardship

Dow encourages its customers and potential users of DOWFAX DF-111 Nonionic Surfactant to review their applications from the standpoint of human health and environmental aspects. To help ensure that DOWFAX DF-111 Nonionic Surfactant is not used in ways for which it is not intended or tested, Dow personnel will assist customers in dealing with environmental and product safety considerations. Dow literature, including Safety Data Sheets, should be consulted prior to the use of DOWFAX DF-111 Nonionic Surfactant.

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