CHEMGUARD S-111

High Performance Amphoteric Fluorosurfactant

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Product Description

Chemguard S-111 is a short-chain perfluoro-based amphoteric fluorosurfactant of the alkyl amine oxide type. It provides surface tensions as low as 15 dynes/cm in water at very low concentrations. It also has excellent dynamic surface tension properties, allowing for rapid attainment of low equilibrium surface tensions. Chemguard S-111 imparts excellent wetting, spreading, leveling, and flow control properties on various types of water-based as well as solvent-based systems. Its extremely low equilibrium surface tension in conjunction with excellent dynamic surface tension properties makes it ideal for coating formulations designed for difficult to coat, low surface tension substrates. Its amphoteric nature allows S-111 to be unsusceptible to the differences in pH, which provides excellent hard water resistance.

Attributes

- Non-flammable
- Excellent dynamic surface tension properties
- Excellent for wetting difficult to coat surfaces
- Excellent foamer
- Excellent replacement for **FS-510** and **FS-51**
- Composed of short chain C-6 perfluoro telomer

Typical Properties[1]

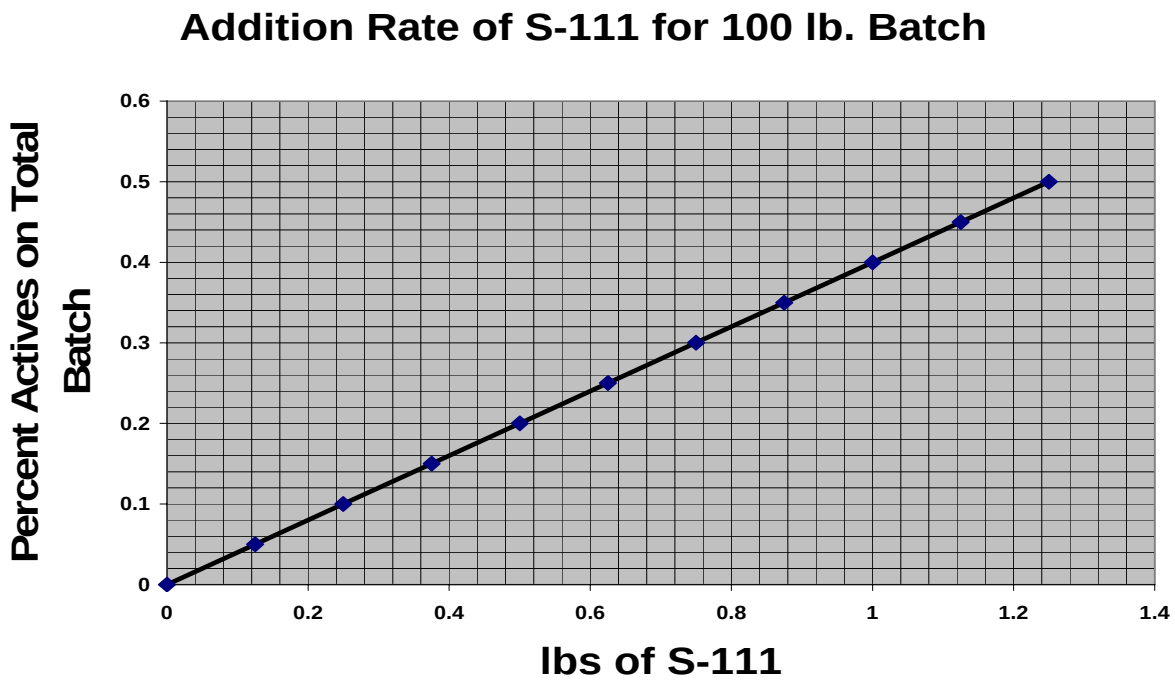
Appearance	Clear, light amber liquid	
Ionic Character	Amphoteric	
Percent Solids (Actives)	40%	
Diluent Composition	Water/Diethylene Glycol n-butyl Ether/Propylene Glycol 40:15:10	
Density (25°C)	1.22 g/ml	
Flash Point (Pensky-Martens, closed cup)	>93°C	
pH	6.0-8.5	
Refractive Index (at 25°C)	1.373	
	0.01% Solids	17
	0.1% Solids	15

[1]Not for specification purposes.

Typical Applications

Chemguard S-111 is a dilute solution composed of 40% active fluorosurfactant in a water and solvent miscible diluent. Typical uses include leveling and anti-static agents for photographic coatings, floor polishes, paints and coatings, adhesives, inks, waxes, caulks, pickling and plating baths, and in solvent

extraction of metals in aqueous solutions. Applications of Chemguard S-111 are generally those in which typical hydrocarbon surfactants are found to be inadequate.
Fluorosurfactants such as Chemguard S-111 are much more chemically stable than typical hydrocarbon surfactants, particularly in the presence of acids, alkalies, or heat.
Recommended application rates depend on the formulation makeup but typical levels of 0.05% to 0.4% are common. The charts below will aid in determining the amount of Chemguard S-111 that is required for a targeted level of active surfactant concentration to achieve the degree of surface tension reduction. The ideal method for determining the proper level is to screen several ranges of concentrations to achieve the desired effect on the surface tension and wetting action.



Solubility

Chemguard S-111 is soluble in water and most organic solvents. The chart below is an example of the solubility of S-111 in many solvent systems. Chemguard can assist in determining solubility in any system.

Solvent	Grams of Chemguard S-111/ 100 grams of solvent
Distilled Water	**>2**
Isopropanol	**>2**
1:1 Water/Isopropanol	**>2**
Methyl Alcohol	**>2**

All values measured at 25°C

Storage and Shelf Life

Chemguard S-111 begins to solidify at temperatures below 10°C. If frozen or if solids separate, warm to room temperature before use. Freezing and thawing will not affect the properties or performance.
Shelf life is at least one year if stored tightly sealed in the original container at temperatures below 49°C (149°F).

Health and Safety

Chemguard does not recommend this product for use in applications involving repeated exposure to skin contact, inhalation, or ingestion.

Chemguard fluorosurfactants are based on telomer synthesis. No PFOS, no PFOA, and no derivatives that decompose to them are used in the manufacturing process. Chemguard S-111 is composed of predominately six carbon (greater than 98%) and shorter perfluoro chains with no known pathway of decomposing to PFOS or PFOA.

Please refer to the material safety data sheet (MSDS) for recommended disposal, handling, and protection information.