



FLUROSURFACTANTS FLUOROPOLYMERS

An extensive line of high-performance fluorosurfactants.

- Innovative short-chain chemistry
- Proven superior performance
- High purity
- Excellent fluorine efficiency
- Broad environmental capability
- Customized product and application formulation

Paints

Multi-functional Chemguard fluorosurfactants reduce surface tension, improving wetting, flow, and leveling on contaminated surfaces and low-energy substrates. Fluorosurfactants can reduce foam, improve open time, gloss, blocking and impart resistance to dirt pick-up at low concentration. The addition of Chemguard fluorosurfactants reduces orange-peel effect and cratering. In many instances, the use of fluorosurfactants reduces or even replaces multiple ingredients and achieves improved results. The low concentrations required reduce surfactant interferences with critical properties of paints

Wood Stains and Sealers

Chemguard fluorosurfactants are effective in wetting soiled or contaminated surfaces, including new wood with a difficult-to-penetrate surface due to improper curing or drying. The addition of fluorosurfactants can allow wood to be used without additional drying times or costs. Using Chemguard fluorosurfactants in stains can eliminate voids and surface defects caused by entrapped bubbles during mixing application. Formulation costs can be reduced due to improved pore penetration, which allows lower application rates and reduces waste.

Caulks

Chemguard fluorosurfactants improve UV stability, enhance anti-soiling, and improve the durability of caulks. The fluorosurfactants improve bond strength by increasing pore penetration, which increases the total surface area in contact with the caulk. Fluorosurfactants also increase open time in certain formulations, creating a wider application window without slowing curing. The addition of fluorosurfactants can also eliminate silicone bleeding. For non-aqueous formulations, select Chemguard S-554-100.

Adhesives

Chemguard fluorosurfactants are effective in wetting soiled or contaminated surfaces, including new wood with a difficult-to-penetrate surface due to improper curing or drying. The addition of fluorosurfactants can allow wood to be used without additional drying times or costs. Using Chemguard fluorosurfactants in stains can eliminate voids and surface defects caused by entrapped bubbles during mixing application. Formulation costs can be reduced due to improved pore penetration, which allows lower application rates and reduces waste.

Waxes

Chemguard fluorosurfactants effectively maximize wetting power to produce uniform film formation, improved gloss, and excellent recoat performance. Many fluorosurfactants are low foaming for smooth, void-free finishes and reduced orange-peel effect. Waxes formulated with Chemguard fluorosurfactants can give excellent results when applied to surfaces that are not perfectly cleaned. Available for both water-based and solvent-based systems.

Polishes

In polishes, Chemguard fluorosurfactants give uniform film formation, improved gloss, and excellent recoat performance by effectively maximizing wetting and leveling. The low-foaming characteristics of many surfactants produce smooth, void-free finishes with reduced orange-peel effect. Incorporating Chemguard fluorosurfactants allows polishes to be used on less-than-perfect wood or other porous surfaces and still give excellent results. Available for both water-based and solvent-based systems.

Cleaners

Incorporating Chemguard fluorosurfactants in cleaners reduces surface tension and promotes high penetration and wetting of contaminants, which in turns allows the ingredients added for emulsification and dissolution to work efficiently at reduced concentrations. For glass and hard-surfaces, the improved wetting power of Chemguard fluorosurfactants results in less residue, faster drying and no streaking or haze. S-559 can impart anti-fogging properties. For foam cleaners, S-111, S-103A, S-106A, and S-500 create very stable, high-quality foams, even at low concentrations.

Metal Plating

Chemguard fluorosurfactants assist in wetting contaminated surfaces and in penetrating difficult-to-wet tight spaces, which improves etching efficiency and reduces scale build-up. Fluorosurfactants are very stable in acid environments, even when heated, and many act as fume suppressants. By reducing drag-out and mist formation, Chemguard fluorosurfactants prolong bath quality while reducing contamination to the work environment and adjacent plating-solution tanks. S-151 is ideal for aggressive plating solutions including chrome plating.

Polymers

Chemguard fluorosurfactants improve particle wetting, aid in hydrocarbon emulsification, act as coupling agents, and serve as internal lubricants. Low foam generators, fluorosurfactants reduce surface tension and improve leveling to reduce voiding in 100% solids, polymer-based systems. In UV-curable systems, Chemguard fluorosurfactants can improve adhesion by improving pore penetration and leveling. Products are available for water-based and water-sensitive polymer-based systems.

Inks / Graphic Art

Chemguard fluorosurfactants dramatically reduce surface tension to improve wetting, flow, and leveling without creating "bleeding" issues. In addition, the low concentrations will not interfere with dye and pigment dispersion phases. Low-foam options are available for low-voiding potential. Because Chemguard fluorosurfactants tend to migrate to the surface of applied inks, they can improve anti-blocking characteristics, which reduces transfer when printed sheets are stacked after ink application. Fluorosurfactants can also increase printing cylinder life.

CHEMGUARD S-103A

High Performance Anionic Fluorosurfactant

T + 1 817 473 9964
F + 1 817 473 0606

Product Description

Chemguard S-103A is a short-chain perfluoro-based anionic fluorosurfactant of the fluoroalkyl sodium sulfonate type. It provides surface tensions as low as 20 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-103A imparts excellent wetting, spreading, leveling, and flow control properties on various types of water-based as well as aqueous hydrocarbon surfactant solutions. 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.

Attributes

- Provides low surface tension at low concentrations
- Excellent for wetting contaminated or difficult to coat surfaces
- Provides excellent hard water resistance
- Works in water-based and hydrocarbon surfactant systems
- More chemically stable than typical hydrocarbon surfactants
- Composed of short chain C-6 perfluoro telomer

Typical Properties¹

Appearance	Clear, pale yellow liquid			
Ionic Character	Anionic			
Percent Solids (Actives)	45%			
Diluent Composition	Water/Hexylene Glycol/Magnesium Sulfate 38:15:2			
Density (25°C)	1.2 g/ml			
Flash Point (Pensky-Martens, closed cup)	>95°C			
pH	6-8			
Freezing Point	8°C (46°F)			
Aqueous Surface Tension dynes/cm (mN/m), 25°C (77°F)	0.001% Solids	56		
	0.01% Solids	35		
	0.1% Solids	20		
Foam Height, mm, Initial/5 min. at 49°C (120°F) Ross-Miles Test, ASTM D-1173-53	Solvent	0.001%	0.01%	0.1%
	Water, DI	13/8	83/68	243/209
Draves Wetting test, seconds at 25°C (77°F) ASTM D-2281-68	Solvent	0.01%	0.1%	0.5%
	Water, DI	>300	12	4

¹Not for specification purposes.

Typical Applications

Chemguard S-103A is a dilute solution composed of 45% 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, and pickling and plating baths. Applications of Chemguard S-103A are generally those in which typical hydrocarbon surfactants are found to be inadequate.

Fluorosurfactants such as Chemguard S-103A 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 0.01% to 0.5% are common. 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-103A is soluble in water and most organic solvents. The chart below is an example of the solubility of S-103A in many solvent systems. Chemguard can assist in determining solubility in any system.

<i>Solvent</i>	<i>Grams of Chemguard S-103A/ 100 grams of solvent</i>
<i>Distilled Water</i>	>2
<i>Isopropanol</i>	>2
<i>1:1 Water/Isopropanol</i>	>2
<i>Methyl Alcohol</i>	>2

All values measured at 25 °C

Storage and Shelf Life

Chemguard S-103A should be stored between 10°C and 50°C. Some solids begin to separate at temperatures below 10°C (50°F) over time. 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 five years if stored tightly sealed in the original container at temperatures below 50°C (151°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-103A is composed of predominately six carbon (greater than 98%) and shorter perfluoro chains with no known pathway of decomposing to PFOS or PFOA.



Tyco Fire Protection Products

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CHEMGUARD S-106A

High Performance Cationic Fluorosurfactant

T + 1 817 473 9964
F + 1 817 473 0606

Product Description

Chemguard S-106A is a short-chain perfluoro-based cationic fluorosurfactant of the fluoroalkyl ammonium chloride type. It provides surface tensions as low as 19 dynes/cm in hard water at low concentrations. Chemguard S-106A imparts excellent wetting, spreading, leveling, and flow control properties on various types of water-based systems compatible with cationic surfactants. For ease of handling, Chemguard S-106A is formulated as a 30% actives solution which can be diluted directly with water.

Attributes

- Provides low surface tension for hard water at low concentrations
- Excellent leveling agent
- Excellent for wetting contaminated or difficult to coat surfaces
- Stable at high and low pH and at elevated temperatures
- More chemically stable than typical hydrocarbon surfactants
- Composed of short chain C-6 perfluoro telomer

Typical Properties¹

Appearance	Clear, pale yellow liquid	
Ionic Character	Cationic	
Percent Solids (Actives)	30%	
Diluent Composition	Water/Hexylene Glycol 60:10	
Density (25°C)	1.14 g/ml	
Flash Point (Pensky-Martens, closed cup)	>100°C (212°F)	
pH	7.0-8.0	
Boiling Point	100°C (212°F)	
Aqueous Surface Tension dynes/cm (mN/m), 25°C (77°F), Kruss Tensiometer K100	0.1% Solids in DI Water	28.6
	0.1% Solids in Brine	18.7
Foam Height, mm, Initial/5 min. at 49°C (120°F) Ross-Miles Test, ASTM D-1173-53	Solvent	0.1%
	Water, DI	114/109
Draves Wetting Test, seconds at 25°C (77°F) ASTM D-2281-68	300 ⁺	

¹Not for specification purposes.

Typical Applications

Chemguard S-106A is a dilute solution composed of 30% active fluorosurfactant in a water and solvent miscible diluent. Typical uses include cleaning products where it provides leveling, wetting/penetration, good foaming and streak-free drying. These advantages also find use in floor polishes, paints and coatings, adhesives, inks, waxes, caulks.

Fluorosurfactants such as Chemguard S-106A are much more chemically stable than typical hydrocarbon surfactants, particularly in the presence of acids, alkalies, or heat.

CHEMGUARD S-106A

High Performance Cationic Fluorosurfactant

T + 1 817 473 9964
F + 1 817 473 0606

Recommended application rates depend on the formulation makeup but typical levels of 0.01% to 0.5% are common. 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-106A is soluble in water and most organic solvents. The chart below is an example of the solubility of S-106A in many solvent systems. Chemguard can assist in determining solubility in any system.

<i>Solvent</i>	<i>Grams of Chemguard S-106A/ 100 grams of solvent</i>
<i>Distilled Water</i>	>2
<i>Isopropanol</i>	>2
<i>1:1 Water/Isopropanol</i>	>2
<i>Methyl Alcohol</i>	>2

All values measured at 25 °C

Storage and Shelf Life

Chemguard S-106A should be stored between 10°C and 50°C. Some solids begin to separate at temperatures below -6°C over time. 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 five years if stored tightly sealed in the original container at temperatures below 50°C (151°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-106A 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.

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CHEMGUARD S-111

High Performance Amphoteric Fluorosurfactant

T + 1 817 473 9964
F + 1 817 473 0606

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 Properties¹

Appearance	Clear, light amber liquid	
Ionic Character	Amphoteric	
Percent Solids (Actives)	40%	
Diluent Composition	Water/Diethylene Glycol n-butyl Ether/Propylene Glycol 40:10:10	
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

¹Not for specification purposes.

Typical Applications

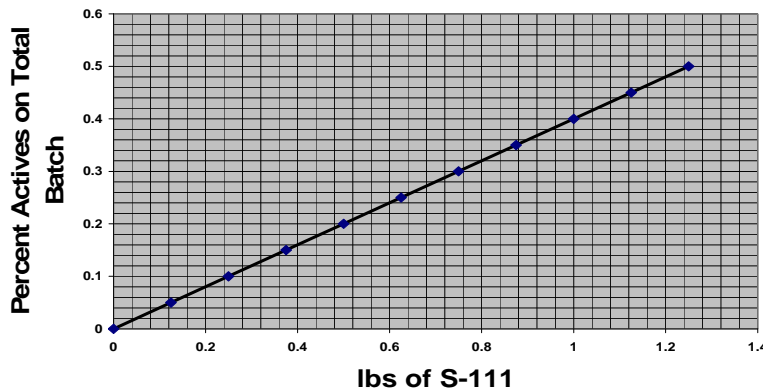
Chemguard S-111 is a dilute solution composed of 40% active fluorosurfactant in a water and solvent miscible diluent. Typical uses include leveling and anti-static agents for photographic coatings, floor polishes, paints and coatings, adhesives, inks, waxes, caulks, pickling and plating baths, and in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

Addition Rate of S-111 for 100 lb. Batch



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.

<i>Solvent</i>	<i>Grams of Chemguard S-111/ 100 grams of solvent</i>
<i>Distilled Water</i>	>2
<i>Isopropanol</i>	>2
<i>1:1 Water/Isopropanol</i>	>2
<i>Methyl Alcohol</i>	>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 five years if stored tightly sealed in the original container at temperatures below 49°C (149°F).



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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.

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CHEMGUARD S-151 High Performance Anionic Fluorosurfactant

T + 1 817 473 9964
 F + 1 817 473 0606

CHEMGUARD S-151 is a highly efficient, proprietary short-chain **polyfluorinated** anionic fluorosurfactant at 30% actives. It provides surface tensions as low as 20 dynes/cm in water at very low concentrations and is very low foaming. It also has excellent dynamic surface tension properties, allowing for rapid attainment of low equilibrium surface tensions. Chemguard S-151 imparts excellent wetting in highly acidic solutions including chrome plating baths, metal pickling and descaling solutions and acidic cleaning baths. Chemguard S-151 is also excellent for use in emulsion production of fluoropolymers and in the polymerization of PVDF and PTFE monomers.

Attributes

- Superior chemical stability in acidic solutions
- Low Foaming
- Provides low surface tension at low concentrations
- Excellent for wetting contaminated or difficult to coat surfaces
- Provides protective foam layer for chrome plating baths
- Excellent replacement for 1033D and FS-10
- Composed of short chain C-6 polyfluoro telomer

Typical Properties¹:

Appearance	Clear, pale yellow liquid
Composition	30% Polyfluoroalkylsulfonic acid
Density	1.2 g/ml at 25°C
Flash Point	>95°C (203°F) Pensky-Martens, closed cup
pH (1% solution)	2-3

¹ Not for specification purposes.

Typical surfactant properties of CHEMGUARD S-151:

	0.1% Actives	0.01% Actives
Distilled Water Surface Tension ^a	20 dynes/cm	50 dynes/cm
Chrome Plating Solution Surface Tension ^a	20 dynes/cm	21 dynes/cm

^a Wilhelmy plate technique, Kruss K-10 tensiometer

Typical Applications

Chemguard S-151 is a dilute aqueous solution composed of 30% active fluorosurfactant. For applications in chrome plating baths the concentration recommended is between 0.03% and 0.05% of the total weight of the bath. Surface tension should be maintained below 40 dynes/cm. Additions for metal pickling and descaling should be between 0.05% and 0.2%. Chemguard S-151 is also very effective in stabilizing emulsions of fluoropolymer products including PTFE and PVDF. It improves the wetting of the particles and stabilizes the emulsion.

Availability

Chemguard S-151 is available in 2 oz samples, 8 lb jugs, 40 lb. pails, and 440 lb. drums.

Storage and Shelf Life

Chemguard S-151 should be stored between 10°C and 50°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 five years if stored tightly sealed in the original container at temperatures below 50°C (151°F).

Health and Safety

Chemguard does not recommend this product for use in applications involving repeated exposure to skin contact, inhalation, or ingestion. This product is not intended to be used for medical, cosmetic, food or pharmaceutical applications.

Chemguard short-chain 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-151 is composed of predominately six carbon (greater than 95%) and shorter polyfluoro 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.

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CHEM GUARD S-228M

High Performance Low Foaming Fluorosurfactant

CHEM GUARD, INC. 204 South 6th Ave. Mansfield, Texas 76063 USA • 817-473-9964 • Fax: 817-473-0606 • www.chemguard.com

Product Description

Chemguard S-228M is a special low foaming blend of short-chain perfluoro/silicone surfactants. It has been especially designed to be an effective wetting, spreading, leveling and flow control agent for various coating applications, especially in water-based systems. S-228M provides surface tensions as low as 19 dynes/cm in water at very low concentrations. It also has excellent dynamic surface tension properties, allowing the coating formulation to rapidly attain of low equilibrium surface tensions. Chemguard S-228M 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 low foaming and excellent dynamic surface tension properties makes it ideal for coating formulations designed for difficult to coat, low surface energy substrates.

Attributes

- Provides low surface tension at low concentrations
- Excellent dynamic surface tension properties
- Excellent for wetting difficult to coat surfaces
- Exceptional low foaming
- More chemically stable than typical hydrocarbon surfactants
- Composed of short chain C-6 perfluoro telomer

Typical Properties¹

Appearance	Clear liquid	
Ionic Character	Blend of ionic/nonionics	
Percent Solids (Actives)	48%	
Diluent Composition	Water/Hexylene glycol/Inorganic salts 39:10:2	
Density (25°C)	1.14 g/ml	
Flash Point (Pensky-Martens, closed cup)	>100°C	
pH	7.0	
Refractive Index (at 25°C)	1.393	
Aqueous Surface Tension dynes/cm (mN/m), 25°C (77°F)	0.001% Solids	28.5
	0.01% Solids	16.7
	0.1% Solids	15.9

¹Not for specification purposes.

Typical Applications

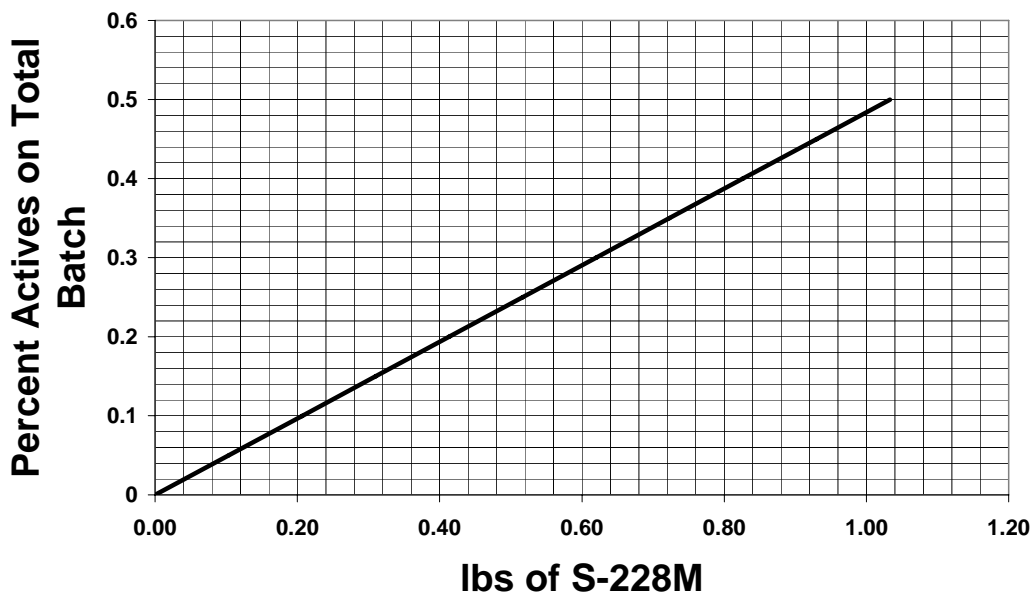
Chemguard S-228M is a dilute solution composed of 48% active fluorosurfactant in a water and solvent miscible diluent. Typical uses include paints and coatings, adhesives, inks, waxes, polishes, caulks, and for applications requiring low foaming.

Fluorosurfactants such as Chemguard S-228M are much more chemically stable than typical hydrocarbon surfactants, particularly in the presence of acids, alkalis, or heat.

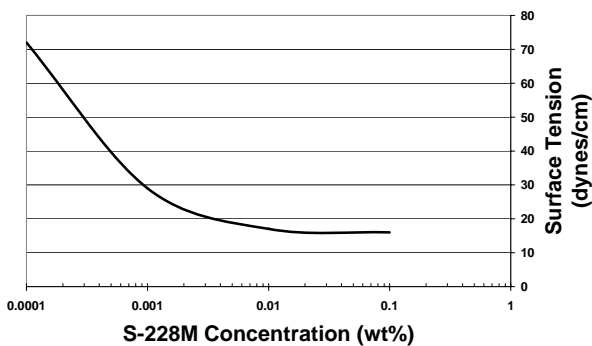
Recommended application rates depend on the formulation makeup but typical levels of 0.05% to 0.3% are common.

The charts below will aid in determining the amount of Chemguard S-228M 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.

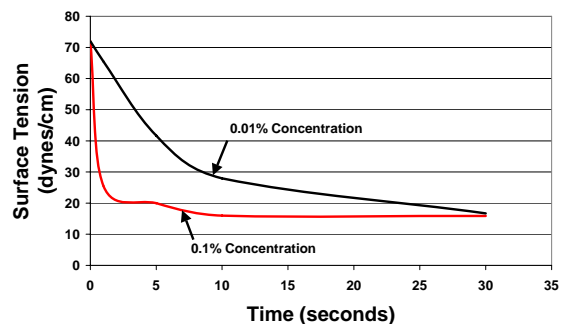
Addition Rate of S-228M for 100 lb. Batch



Surface Tension of S-228M



S-228M Dynamic Surface Tension



Solubility

Chemguard S-228M is soluble in water and most organic solvents. The chart below is an example of the solubility of S-228M in many solvent systems. Chemguard can assist in determining solubility in any system.

Solvent	Grams of Chemguard S-228M/ 100 grams of solvent
Distilled Water	>2
Isopropanol	>2
1:1 Water/Isopropanol	>2
Methyl Alcohol	6.2
Butyl Carbitol	6.2
Toluene	Insoluble
Methyl Propyl Ketone	Insoluble

All values measured at 25°C

Storage and Shelf Life

Chemguard S-228M begins to separate below 8°C. If frozen or if solids separate, warming to room temperature with slight agitation will return the product to a clear liquid. Freezing and thawing will not affect the properties or performance.

Shelf life is at least five years if stored tightly sealed in the original container at a temperature not exceeding 49°C.

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-228M is composed of predominately six carbon (greater than 98%) and shorter perfluoro chains with no known pathway of decomposing to PFOS or PFOA.

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CHEMGUARD S-500

High Performance Amphoteric Fluorosurfactant

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Product Description

Chemguard S-500 is a highly efficient short-chain perfluoro-based amphoteric fluorosurfactant. 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-500 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-500 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-500** and **FS-50**
- Composed of short chain C-6 perfluoro telomer

Typical Properties¹

Appearance	Clear, dark amber liquid
Composition	27% actives, 18% solvents, 55% water
Density	1.18g/ml at 25°C
pH	5.5-7.0
Aqueous Surface Tension dynes/cm (mN/m), 25°C (77°F), Kruss Tensiometer K100	
0.1% Actives	15.0-16.5
0.01% Actives	15.5-18.5
Flash Point	>93°C (200°F) Pensky-Martens Closed Cup
Freezing Point	-4°C

¹ Not for specification purposes.

Typical Applications

Chemguard S-500 is a dilute solution composed of 27% 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-500 are generally those in which typical hydrocarbon surfactants are found to be inadequate.

Fluorosurfactants such as Chemguard S-500 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-500 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-500 is soluble in water and most organic solvents. The chart below is an example of the solubility of S-500 in many solvent systems. Chemguard can assist in determining solubility in any system.

Solvent	Grams of Chemguard S-500/ 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-500 should be stored between 0°C and 50°C. Some solids begin to separate at temperatures below -4°C over time. 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 five years if stored tightly sealed in the original container at temperatures below 50°C (151°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-500 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.

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CHEMGUARD S-550

High Performance Nonionic Fluorosurfactant

CHEMGUARD, INC. 204 South 6th Ave. Mansfield, Texas 76063 USA • 817-473-9964 • Fax: 817-473-0550 • www.chemguard.com

Product Description

CHEMGUARD S-550 is a short-chain perfluoro-based ethoxylated nonionic fluorosurfactant. It provides surface tensions as low as 20 dynes/cm in water at low concentrations and is also surface active in many solvents. This product has excellent dynamic surface tension properties, allowing rapid attainment of low equilibrium surface tensions. Due to its exceptional surface activity, Chemguard S-550 imparts excellent wetting; spreading, leveling and flow control properties to various types of water-based as well as solvent based coating formulations.

Chemguard Fluorosurfactants

- Non-flammable
- Effective in solvent based coatings
- Effective at low concentrations of 50-1000 ppm, depending on the application
- Excellent replacement for **FSO and FS-31, FS-34, and FS-35**
- Composed of short chain C-6 perfluoro telomer

Typical Properties¹

Appearance	Clear, pale yellow liquid
Ionic Character	Nonionic
Composition	Approx. 50% actives,
Flash Point	>95°C, Pensky-Martens, closed cup
Density (25°C)	1.1 g/ml
pH	5.0-7.0
Melting Point(solids)	<55°C
Odor	Mild

¹ Not for specification purposes.

Solubility

Chemguard S-550 is sparingly soluble in water and most organic solvents. Chemguard can assist in determining solubility in any system.

Typical Applications

Chemguard S-550 is a dilute solution composed of 50% active fluorosurfactant in a water and solvent miscible diluent. Typical uses include paints and coatings, adhesives, inks, waxes, polishes, caulks, and cleaning solutions.

Fluorosurfactants such as Chemguard S-550 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 0.3% are common.

Storage and Shelf Life

Chemguard S-550 should be stored between 10°C and 50°C. Freezing and thawing will not affect the properties or performance.

Shelf life is at least five years if stored tightly sealed in the original container at temperatures below 50°C (151°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-550 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.

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CHEMGUARD S-550-100

High Performance Nonionic Fluorosurfactant

CHEMGUARD, INC. 204 South 6th Ave. Mansfield, Texas 76063 USA • 817-473-9964 • Fax: 817-473-0550 • www.chemguard.com

Product Description

CHEMGUARD S-550-100 is a 100% active short-chain perfluoro-based ethoxylated nonionic fluorosurfactant. It provides surface tensions as low as 19 dynes/cm in water at low concentrations and is also surface active in many solvents. This product has excellent dynamic surface tension properties, allowing rapid attainment of low equilibrium surface tensions. Due to its exceptional surface activity, Chemguard S-550-100 imparts excellent wetting; spreading, leveling and flow control properties to various types of water-based as well as solvent based coating formulations.

Chemguard Fluorosurfactants

- 100% Actives Concentration
- Non-flammable
- Effective at low concentrations of 50-1000 ppm, depending on the application.
- Excellent replacement for **FSO-100**
- Effective in both high and low pH
- Composed of short chain C-6 perfluoro telomer

Typical Properties¹

Appearance	Clear, pale yellow liquid/paste (Stir thoroughly before use.)
Ionic Character	Nonionic
Composition	100% actives,
VOC Content	0 g/L
Flash Point	>95°C, Pensky-Martens, closed cup
Density (25°C)	1.38 g/ml
pH	5.0-7.0
Melting Point(solids)	<55°C
Odor	Mild

¹ Not for specification purposes.

Solubility

Chemguard S-550-100 is sparingly soluble in water and most organic solvents. Chemguard can assist in determining solubility in any system.

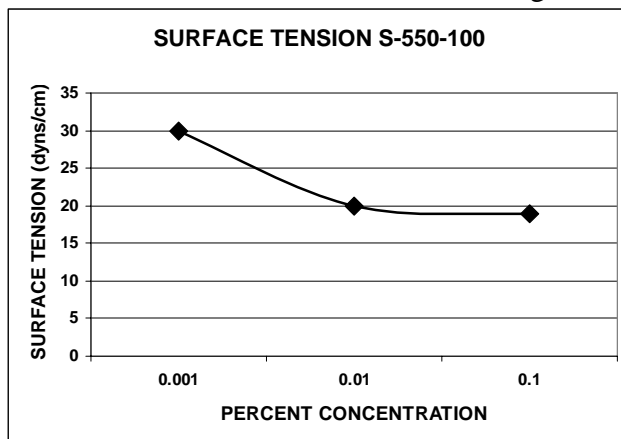
Typical Applications

Chemguard S-550-100 can improve wetting and leveling, and reduce defects such as cratering and orange peel. Typical uses include paints and coatings, adhesives, inks, waxes, polishes, caulks, and cleaning solutions.

Fluorosurfactants such as Chemguard S-550-100 are much more chemically stable than typical hydrocarbon surfactants, particularly in the presence of acids, alkalis, or heat.

Recommended application rates depend on the formulation makeup but typical levels of 0.05% to 0.3% are common.

The charts below will aid in determining the amount of Chemguard S-550-100 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.



Storage and Shelf Life

Chemguard S-550-100 should be stored between 10°C and 50°C. Freezing and thawing will not affect the properties or performance. Stir thoroughly before use.

Shelf life is at least five years if stored tightly sealed in the original container at temperatures below 50°C (151°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-550-100 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.

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CHEMGUARD S-554

High Performance Nonionic Fluorosurfactant

CHEMGUARD, INC. 204 South 6th Ave. Mansfield, Texas 76063 USA • 817-473-9964 • Fax: 817-473-0606 • www.chemguard.com

Product Description

CHEMGUARD S-554 is a short-chain perfluoro-based ethoxylated nonionic fluorosurfactant. It provides surface tensions as low as 17 dynes/cm in water at low concentrations and is also surface active in many solvents. This product has excellent dynamic surface tension properties, allowing rapid attainment of low equilibrium surface tensions. Due to its exceptional surface activity, Chemguard S-554 imparts excellent wetting; spreading, leveling and flow control properties to various types of water-based as well as solvent based coating formulations.

Chemguard Fluorosurfactants

- Non-flammable
- Effective in solvent based coatings
- Effective at low concentrations of 50-1000 ppm, depending on the application
- Excellent replacement for **FSH, FS-31, and FS-35**
- Composed of short chain C-6 perfluoro telomer

Typical Properties¹

Appearance	Clear, yellow liquid
Ionic Character	Nonionic
Composition	Approx. 50% actives,
Flash Point	>95°C, Pensky-Martens, closed cup
Density (25°C)	1.2 g/ml
pH	6.0-8.0
Melting Point(solids)	<55°C
Odor	Mild
C6 perfluoro content	>97%

¹ Not for specification purposes.

Solubility

Chemguard S-554 is sparingly soluble in water and most organic solvents. Chemguard can assist in determining solubility in any system.

Typical Applications

Chemguard S-554 is a dilute solution composed of 50% active fluorosurfactant in a water and solvent miscible diluent. Typical uses include paints and coatings, adhesives, inks, waxes, polishes, caulks, and cleaning solutions.

Fluorosurfactants such as Chemguard S-554 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 0.3% are common.

Storage and Shelf Life

Chemguard S-554 should be stored between 10°C and 50°C. 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 50°C (151°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-554 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.

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CHEMGUARD S-554-100

Nonionic Fluorosurfactant

CHEMGUARD, 204 South 6th Ave. Mansfield, Texas 76063 USA • 817-473-9964 • Fax: 817-473-0554-100 • www.chemguard.com

Product Description

CHEMGUARD S-554-100 is a 100% active short-chain perfluoro-based ethoxylated nonionic fluorosurfactant. It provides surface tensions as low as 17 dynes/cm in water at low concentrations and is also surface active in many solvents. This product has excellent dynamic surface tension properties, allowing rapid attainment of low equilibrium surface tensions. Due to its exceptional surface activity, Chemguard S-554-100 imparts excellent wetting; spreading, leveling and flow control properties to various types of water-based as well as solvent based coating formulations.

Chemguard Fluorosurfactants

- 100% Actives Concentration
- VOC Free
- Non-flammable
- Effective in solvent based coatings
- Effective at low concentrations of 50-1000 ppm, depending on the application
- Excellent replacement for **FSH and FS-3100**
- Composed of short chain C-6 perfluoro telomer

Typical Properties¹

Appearance	Clear, pale yellow liquid/paste (Stir thoroughly before use.)
Ionic Character	Nonionic
Composition	100% actives,
VOC Content	0 g/L
Flash Point	>95°C, Pensky-Martens, closed cup
Density (25°C)	1.38 g/ml
pH	5.0-7.0
Melting Point(solids)	<55°C
Odor	Mild

¹ Not for specification purposes.

Solubility

Chemguard S-554-100 is sparingly soluble in water and most organic solvents. Chemguard can assist in determining solubility in any system.

Typical Applications

Chemguard S-554-100 can improve wetting and leveling, and reduce defects such as cratering and orange peel. Typical uses include paints and coatings, adhesives, inks, waxes, polishes, caulks, and cleaning solutions.

Fluorosurfactants such as Chemguard S-554-100 are much more chemically stable than typical hydrocarbon surfactants, particularly in the presence of acids, alkalis, or heat.

Recommended application rates depend on the formulation makeup but typical levels of 0.05% to 0.3% are common.

Storage and Shelf Life

Chemguard S-554-100 should be stored between 10°C and 50°C. Freezing and thawing will not affect the properties or performance. Stir thoroughly before use.

Shelf life is at least one year if stored tightly sealed in the original container at temperatures below 50°C (151°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-554-100 is composed of predominately six carbon (greater than 99%) and shorter perfluoro chains that have 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.

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CHEMGUARD S-559

High Performance Nonionic Fluorosurfactant

CHEMGUARD, INC. 204 South 6th Ave. Mansfield, Texas 76063 USA • 817-473-9964 • Fax: 817-473-0559 • www.chemguard.com

Product Description

CHEMGUARD S-559 is a short-chain perfluoro-based ethoxylated nonionic fluorosurfactant. It provides surface tensions as low as 22 dynes/cm in water at low concentrations and is also surface active in many solvents. This product has excellent dynamic surface tension properties, allowing rapid attainment of low equilibrium surface tensions. Due to its exceptional surface activity, Chemguard S-559 imparts excellent wetting; spreading, leveling and flow control properties to various types of water-based as well as solvent based coating formulations.

Chemguard Fluorosurfactants

- Non-flammable
- Effective at low concentrations of 50-1000 ppm, depending on the application
- Excellent replacement for **FSN, FS-300, FS-30, and FS-34**
- Composed of short chain C-6 perfluoro telomer

Typical Properties¹

Appearance	Clear, pale yellow liquid
Ionic Character	Nonionic
Composition	Approx. 40% actives,
Flash Point	>95°C, Pensky-Martens, closed cup
pH (1% solution)	4.0-7.0
Density	1.3 g/ml
Melting Point(solids)	<55°C
Odor	Mild

¹ Not for specification purposes.

Solubility

Chemguard S-559 is soluble in water and most organic solvents. Chemguard can assist in determining solubility in any system.

Typical Applications

Chemguard S-559 is a dilute solution composed of 40% active fluorosurfactant in a water and solvent miscible diluent. Typical uses include paints and coatings, adhesives, inks, waxes, polishes, caulks, and cleaning solutions.

Fluorosurfactants such as Chemguard S-559 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 0.3% are common.

Storage and Shelf Life

Chemguard S-559 should be stored between 10°C and 50°C. Freezing and thawing will not affect the properties or performance.

Shelf life is at least five years if stored tightly sealed in the original container at temperatures below 50°C (151°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-559 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.

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CHEMGUARD S-559-100

High Performance Nonionic Fluorosurfactant

CHEMGUARD, INC. 204 South 6th Ave. Mansfield, Texas 76063 USA • 817-473-9964 • Fax: 817-473-0606 • www.chemguard.com

Product Description

CHEMGUARD S-559-100 is a 100% active short-chain perfluoro-based ethoxylated nonionic fluorosurfactant. It provides surface tensions as low as 22 dynes/cm in water at low concentrations and is also surface active in many solvents. This product has excellent dynamic surface tension properties, allowing rapid attainment of low equilibrium surface tensions. Due to its exceptional surface activity, Chemguard S-559-100 imparts excellent wetting; spreading, leveling and flow control properties to various types of water-based as well as solvent based coating formulations.

Chemguard Fluorosurfactants

- 100% Actives Concentration
- Non-flammable
- VOC Free
- Effective at low concentrations of 50-1000 ppm, depending on the application
- Excellent replacement for **FSN-100**
- Effective in both high and low pH
- Composed of short chain C-6 perfluoro telomer

Typical Properties¹

Appearance	Clear, pale yellow liquid/paste (Stir thoroughly before use.)
Ionic Character	Nonionic
Composition	100% actives,
VOC Content	0 g/L
Flash Point	>95°C, Pensky-Martens, closed cup
Density (25°C)	1.38 g/ml
pH	5.0-7.0
Melting Point(solids)	<55°C
Odor	Mild

¹ Not for specification purposes.

Solubility

Chemguard S-559-100 is soluble in water and most organic solvents. Chemguard can assist in determining solubility in any system.

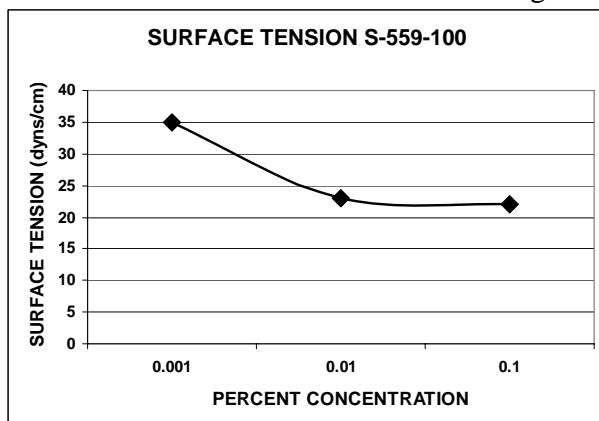
Typical Applications

Chemguard S-559-100 can improve wetting and leveling, and reduce defects such as cratering and orange peel. Typical uses include paints and coatings, adhesives, inks, waxes, polishes, caulks, and cleaning solutions.

Fluorosurfactants such as Chemguard S-559-100 are much more chemically stable than typical hydrocarbon surfactants, particularly in the presence of acids, alkalis, or heat.

Recommended application rates depend on the formulation makeup but typical levels of 0.05% to 0.3% are common.

The charts below will aid in determining the amount of Chemguard S-559-100 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.



Storage and Shelf Life

Chemguard S-559-100 should be stored between 10°C and 50°C. Freezing and thawing will not affect the properties or performance. Stir thoroughly before use.

Shelf life is at least one year if stored tightly sealed in the original container at temperatures below 50°C (151°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-559-100 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.

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CHEMGUARD S-760P

High Performance Anionic Fluorosurfactant

CHEMGUARD 204 South 6th Ave. Mansfield, Texas 76063 USA • 817-473-9964 • Fax: 817-473-0606 • www.chemguard.com

Product Description

Chemguard S-760P is a short-chain perfluoro-based anionic fluorosurfactant of the phosphate ester type. It provides surface tensions as low as 16 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-760P imparts excellent wetting, spreading, leveling, and flow control properties on various types of water-based coatings for architectural paints and stains, concrete coatings, industrial coatings as well as aqueous hydrocarbon surfactant solutions. Chemguard S-760P is low foaming and can provide improved dirt pick-up resistance to exterior paints and interior low gloss paints, sealers, and stains.

Attributes

- Provides low surface tension at low concentrations
- Excellent for wetting contaminated or difficult to coat surfaces
- Minimizes surface defects such as cratering and fisheyes
- Imparts excellent anti-blocking characteristics
- Provides oil repellency to water-based stains
- Excellent replacement for **FSP, FS-60, and FS-63**
- Composed of short chain C-6 perfluoro telomer
- Low foaming

Typical Properties¹

Appearance	Clear, colorless liquid	
Ionic Character	Anionic	
Percent Solids (Actives)	35%	
Diluent Composition	Water/Isopropanol	
Density (25°C)	1.1 g/ml	
Flash Point (Pensky-Martens, closed cup)	31°C	
pH	7.0-8.0	
Freezing Point	-15°C (5°F)	
Aqueous Surface Tension dynes/cm (mN/m), 25°C (77°F)	0.001% Solids	40
	0.01% Solids	18
	0.1% Solids	16
	CMC (critical micelle concentration)	0.014%

¹Not for specification purposes.

Typical Applications

Chemguard S-760P is a dilute solution composed of 35% active fluorosurfactant in a water and solvent miscible diluent. Typical uses include leveling and oil repellency for floor polishes, paints and coatings,

adhesives, inks, waxes, caulks, and wood stains. Chemguard S-760P can minimize common surface defects in paints and coatings such as fisheyes, orange peel effects and cratering. Chemguard S-760P is also very effective in improving anti-blocking for the new low/no VOC paints in both semi-gloss and high gloss formulas.

Applications of Chemguard S-760P are generally those in which typical hydrocarbon surfactants are found to be inadequate.

Fluorosurfactants such as Chemguard S-760P 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 0.01% to 0.2% are common. 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-760P is soluble in water and most organic solvents. The chart below is an example of the solubility of S-760P in many solvent systems. Chemguard can assist in determining solubility in any system.

Solvent	Grams of Chemguard S-760P/ 100 grams of solvent
Distilled Water	>1
Isopropanol	>1
Acetone	0.1
Methyl Alcohol	>2
Hydrocarbon solvents	Insoluble

All values measured at 25°C

Storage and Shelf Life

Chemguard S-760P should be stored between 10°C and 50°C. Some solids begin to separate at temperatures below -15°C (2°F) over time. 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 five years if stored tightly sealed in the original container at temperatures below 50°C (151°F).

Availability

Chemguard S-760P is available in 1 oz samples, 40 lb. pails, and 440 lb. drums.

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-760P 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.

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CHEMGUARD S-761P

High Performance Anionic Fluorosurfactant

CHEMGUARD 204 South 6th Ave. Mansfield, Texas 76163 USA • 817-473-9964 • Fax: 817-473-0606 • www.chemguard.com

Product Description

Chemguard S-761P is a short-chain perfluoro-based anionic fluorosurfactant of the phosphate ester type. It provides surface tensions as low as 16 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-761P imparts excellent wetting, spreading, leveling, and flow control properties on various types of water-based coatings for architectural paints and stains, concrete coatings, industrial coatings as well as aqueous hydrocarbon surfactant solutions. Chemguard S-761P is low foaming and can provide improved dirt pick-up resistance to exterior paints and interior low gloss paints, sealers, and stains.

Attributes

- Provides low surface tension at low concentrations
- Excellent for wetting contaminated or difficult to coat surfaces
- Minimizes surface defects such as cratering and fisheyes
- Imparts excellent anti-blocking characteristics
- Provides oil repellency to water-based stains
- Excellent replacement for **9361 and FS-63**
- Composed of short chain C-6 perfluoro telomer

Typical Properties¹

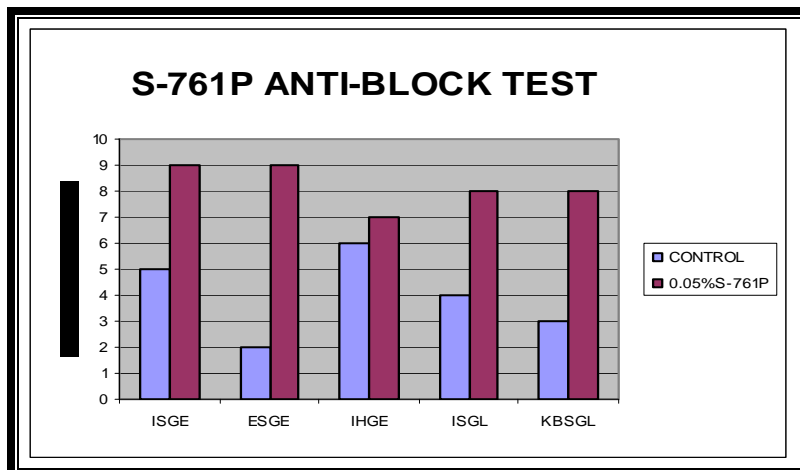
Appearance	Clear, colorless liquid	
Ionic Character	Anionic	
Percent Solids (Actives)	34%	
Diluent Composition	Water/Isopropanol	
Density (25°C)	1.1 g/ml	
Flash Point (Pensky-Martens, closed cup)	31°C	
pH	7-9	
Freezing Point	-15°C (5°F)	
Aqueous Surface Tension dynes/cm (mN/m), 25°C (77°F)	0.001% Solids	28
	0.01% Solids	17
	0.1% Solids	15.5
	CMC (critical micelle concentration)	0.014%

¹Not for specification purposes.

Typical Applications

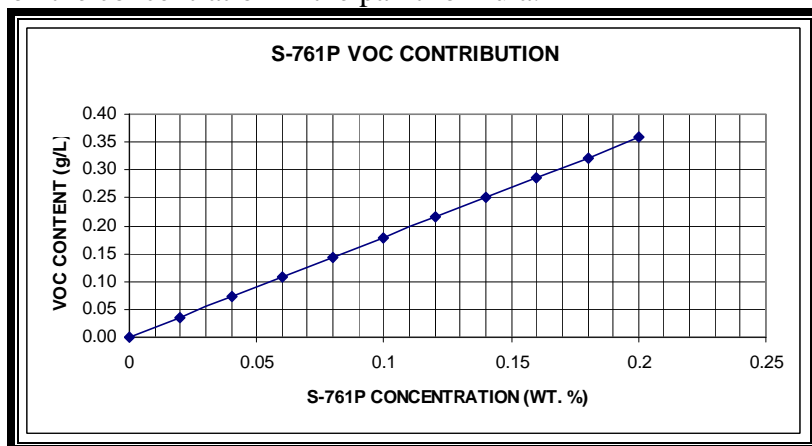
Chemguard S-761P is a dilute solution composed of 34% actives fluorosurfactant in a water and solvent miscible diluent. Typical uses include leveling and oil repellency for floor polishes, paints and coatings, adhesives, inks, waxes, caulks, and wood stains. Chemguard S-761P can minimize common surface defects in paints and coatings such as fisheyes, orange peel effects and cratering.

Chemguard S-761P is also very effective in improving anti-blocking for the new low/no VOC paints in both semi-gloss and high gloss formulas. The table below highlights typical results when S-761P is incorporated at levels as low as 0.05% by weight (full report available upon request).

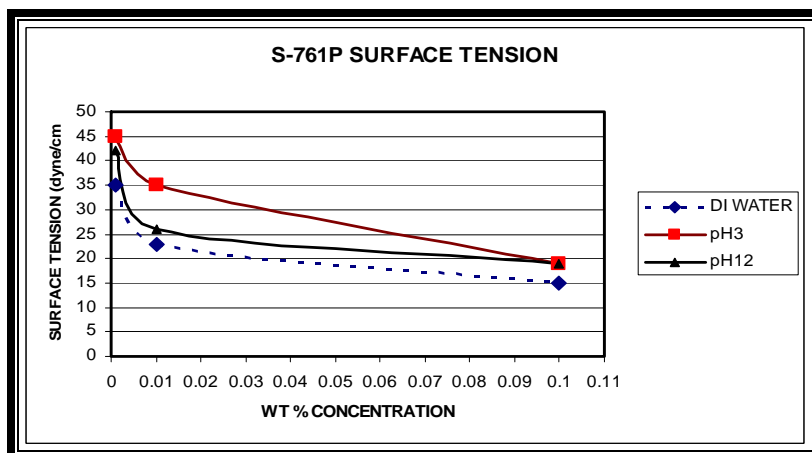


ISGE- Interior Semi-Gloss Enamel, ESGE- Exterior Semi-Gloss Enamel, IHGE- Interior High Gloss Enamel
 ISGL- Interior Semi-Gloss Latex, KBSGL- Kitchen and Bath Semi-Gloss Latex

Although S-761P contains 15% VOC's, the use of S-761P in low/no VOC paints will not contribute substantially to the total VOC content of the paint. The chart below highlights the VOC contribution of S-761P based on the concentration in the paint formula.



Chemguard S-761P is effective in a wide range of pH systems. The charts below will aid in determining the amount of Chemguard S-761P that is required for a targeted level of active surfactant concentration to achieve the degree of surface tension reduction.



Recommended application rates depend on the formulation makeup but typical levels of 0.01% to 0.2% are common. 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.

Applications of Chemguard S-761P are generally those in which typical hydrocarbon surfactants are found to be inadequate.

Fluorosurfactants such as Chemguard S-761P are much more chemically stable than typical hydrocarbon surfactants, particularly in the presence of acids, alkalies, or heat.

Solubility

Chemguard S-761P is soluble in water and most organic solvents. The chart below is an example of the solubility of S-761P in many solvent systems. Chemguard can assist in determining solubility in any system.

Solvent	Grams of Chemguard S-761P/ 100 grams of solvent
Distilled Water	>1
Isopropanol	>1
Acetone	0.1
Methyl Alcohol	>2
Hydrocarbon solvents	Insoluble

All values measured at 25°C

Storage and Shelf Life

Chemguard S-761P should be stored between 10°C and 50°C. Some solids begin to separate at temperatures below -15°C (2°F) over time. 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 five years if stored tightly sealed in the original container at temperatures below 50°C (151°F).

Availability

Chemguard S-761P is available in 1 oz samples, 40 lb. pails, and 440 lb. drums.

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-761P 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.

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CHEMGUARD S-761P-100

High Performance Anionic Fluorosurfactant

CHEMGUARD 204 South 6th Ave. Mansfield, Texas 76163 USA • 817-473-9964 • Fax: 817-473-0606 • www.chemguard.com

Product Description

Chemguard S-761P-100 is a short-chain perfluoro-based anionic fluorosurfactant of the phosphate ester type. It provides surface tensions as low as 16 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-761P-100 imparts excellent wetting, spreading, leveling, and flow control properties on various types of solvent-based and 100% solids coatings for architectural paints and stains, concrete coatings, and inks.

Attributes

- Provides low surface tension at low concentrations
- Excellent for wetting contaminated or difficult to coat surfaces
- Minimizes surface defects such as cratering and fisheyes
- Excellent as an anti-smearing ink additive
- Provides oil repellency to solvent-based stains
- Ideal replacement for Dupont UR and Capstone FS-66
- Composed of short chain C-6 perfluoro telomer

Typical Properties¹

Appearance	White waxy solid
Ionic Character	Anionic
Percent Solids (Actives)	100%
Density (25°C)	1.5 g/ml
Flash Point (Pensky-Martens, closed cup)	>100°C
pH	3-7

¹Not for specification purposes.

Typical Applications

Typical uses include Wetting, leveling and oil repellency for floor polishes, paints and coatings, adhesives, inks, waxes, caulks, and wood stains. Chemguard S-761P-100 can minimize common surface defects in paints and coatings such as fisheyes, orange peel effects and cratering.

Chemguard S-761P-100 is also very effective in improving anti-blocking for the new low/no VOC paints in both semi-gloss and high gloss formulas. It makes an effective internal and external mold release for synthetic resin, plastic and metal molding and external cast film release.

Recommended application rates depend on the formulation makeup but typical levels of 0.01% to 0.2% are common. 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.

Applications of Chemguard S-761P-100 are generally those in which typical hydrocarbon surfactants are found to be inadequate.

Fluorosurfactants such as Chemguard S-761P-100 are much more chemically stable than typical hydrocarbon surfactants, particularly in the presence of acids, alkalies, or heat.

Solubility

Chemguard S-761P-100 is insoluble in water and partially soluble in polar solvents. The chart below is an example of the solubility of S-761P-100 in many solvent systems. Chemguard can assist in determining solubility in any system.

Solvent	Solubility of Chemguard S-761P-100
Distilled Water	Negligible
Isopropanol	>2%
Acetone	>2%
Methyl Alcohol	>2%
Hydrocarbon solvents	Insoluble

All values measured at 25°C

Storage and Shelf Life

Chemguard S-761P-100 should be stored between 10°C and 50°C.

Shelf life is at least five years if stored tightly sealed in the original container at temperatures below 50°C (151°F).

Availability

Chemguard S-761P-100 is available in 1 oz samples, and 40 lb. pails.

Health and Safety

Chemguard does not recommend this product for use in applications involving repeated exposure to skin contact, inhalation, or ingestion. Chemguard S-761P-100 can not be used for consumer spray applications.

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-761P-100 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.

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CHEMGUARD S-764P

VOC*-Free Anionic Fluorosurfactant

CHEMGUARD 204 South 6th Ave. Mansfield, Texas 76463 USA • 817-473-9964 • Fax: 817-473-0606 • www.chemguard.com

Product Description

Chemguard S-764P is a VOC-free, water-based, short-chain fluorosurfactant of the phosphate ester type. It provides surface tensions as low as 17 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-764P imparts excellent wetting, spreading, leveling, and flow control properties on various types of water-based coatings for architectural paints and stains, concrete coatings, industrial coatings as well as aqueous hydrocarbon surfactant solutions. Chemguard S-764P is low foaming and can provide improved dirt pick-up resistance to exterior paints and interior low gloss paints, sealers, and stains.

Attributes

- VOC-Free
- Chloride-Free
- Low Foaming
- Imparts excellent anti-blocking characteristics
- Provides low surface tension at low concentrations
- Excellent for wetting contaminated or difficult to coat surfaces
- Minimizes surface defects such as cratering and fisheyes
- Provides oil repellency to water-based stains
- Excellent replacement for **FS-610, 8952, FS-61, ST-300, FS-64, and FS-65**
- Composed of short chain C-6 perfluoro telomer

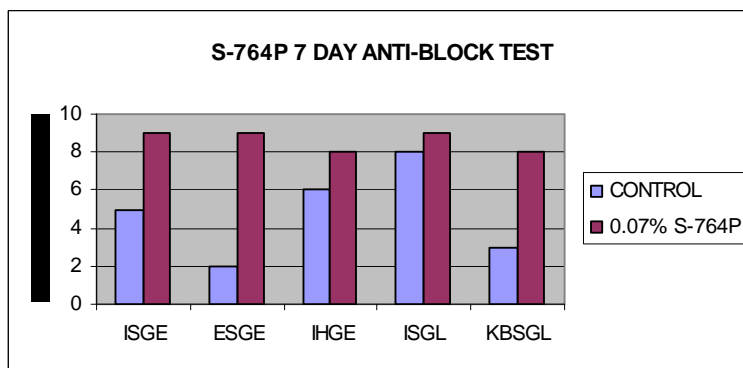
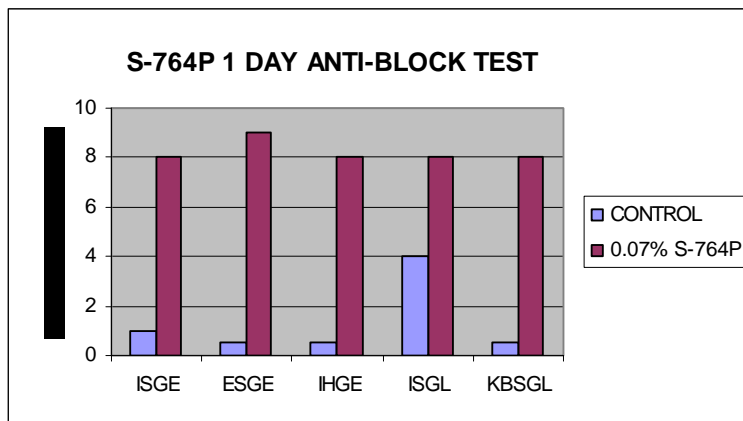
Typical Properties¹

Appearance	Clear, colorless to light yellow viscous liquid	
Ionic Character	Anionic	
Percent Actives	22%	
Chloride Content	<50ppm	
Density (25°C)	1.1 g/ml	
Viscosity (cps)	Less than 1000cps	
Flash Point (Pensky-Martens, closed cup)	Non-Flammable	
pH	7.0-8.0	
Aqueous Surface Tension dynes/cm (mN/m), 25°C (77°F)	0.001% Actives	30
	0.01% Actives	19
	0.1% Actives	17
	CMC (critical micelle concentration)	0.012%

¹Not for specification purposes.

Typical Applications

Chemguard S-764P is a dilute aqueous solution composed of 22% active fluorosurfactant. Typical uses include leveling and oil repellency for floor polishes, paints and coatings, adhesives, inks, waxes, caulks, and wood stains and it is ideal for Low-VOC and VOC-free formulas. Chemguard S-764P can minimize common surface defects in paints and coatings such as fisheyes, orange peel effects and cratering. Chemguard S-764P is also very effective in improving anti-blocking for the new low/no VOC paints in both semi-gloss and high gloss formulas. The tables below highlight typical results when S-764P is incorporated at levels as low as 0.07% by weight (full report available upon request)



PAINT TYPE	CODE	VOC CONTENT (g/L)
Interior Semi-gloss Enamel	ISGE	<50
Exterior Semi-gloss Enamel	ESGE	<50
Interior High Gloss Enamel	IHGE	<50
Interior Semi-gloss Latex	ISGL	0
Kitchen and Bath Semi-gloss Latex	KBSGL	0

Applications of Chemguard S-764P are generally those in which typical hydrocarbon surfactants are found to be inadequate. Fluorosurfactants such as Chemguard S-764P are much more chemically stable than typical hydrocarbon surfactants, particularly in the presence of acids, alkalis, or heat.

Recommended application rates depend on the formulation makeup but typical levels of 0.05% to 0.2% are common. 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-764P is soluble in water and most organic solvents. Deionized or soft water is recommended as dilution of this product in hard water can cause precipitation and should be avoided. The use of a chelant is recommended if the water

hardness exceeds 100 ppm. The chart below is an example of the solubility of S-764P in many solvent systems. Chemguard can assist in determining solubility in any system.

Solvent	Grams of Chemguard S-764P/ 100 grams of solvent
Distilled Water	>1
Isopropanol	>1
Acetone	0.1
Methyl Alcohol	>2
Hydrocarbon solvents	Insoluble

All values measured at 25°C

Storage and Shelf Life

Avoid freezing. Mix well before using. Chemguard S-764P should be stored between 5°C and 50°C. If frozen or if solids separate, warm to room temperature and mix before use. Freezing and thawing will not affect the properties or performance. Shelf life is at least five years if stored tightly sealed in the original container at temperatures below 50°C (122°F).

Availability

Chemguard S-764P is available in 2 oz samples, 8 lb jugs, 40 lb. pails, and 440 lb. drums.

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-764P 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.

*VOC stands for "Volatile Organic Compound" and is any organic compound (all chemical compounds containing carbon with exceptions) that is volatile (evaporating or vaporizing readily under normal conditions).

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CHEM GUARD S-764P-14A

VOC*-Free Anionic Fluorosurfactant

CHEM GUARD 204 South 6th Ave. Mansfield, Texas 76463 USA • 817-473-9964 • Fax: 817-473-0606 • www.chemguard.com

Product Description

Chemguard S-764P-14A is a VOC-free, water-based, short-chain fluorosurfactant of the phosphate ester type. It provides surface tensions as low as 18 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-764P-14A imparts excellent wetting, spreading, leveling, anti-blocking, and flow control properties on various types of water-based coatings for architectural paints and stains, concrete coatings, industrial coatings as well as aqueous hydrocarbon surfactant solutions. Chemguard S-764P-14A is low foaming and can provide improved dirt pick-up resistance to exterior paints and interior low gloss paints, sealers, and stains.

Attributes

- VOC-Free
- Chloride-Free
- Low Foaming
- Imparts excellent anti-blocking characteristics
- Provides low surface tension at low concentrations
- Excellent for wetting contaminated or difficult to coat surfaces
- Minimizes surface defects such as cratering and fisheyes
- Provides oil repellency to water-based stains
- Excellent replacement for **FS-610, 8952, FS-61, ST-300, FS-64, and FS-65**
- Composed of short chain C-6 perfluoro telomer

Typical Properties¹

Appearance	Cloudy, slight yellow viscous liquid	
Ionic Character	Anionic	
Percent Actives	14%	
Chloride Content	<50ppm	
Density (25°C)	1.1 g/ml	
Flash Point (Pensky-Martens, closed cup)	Non-Flammable	
pH	7-9	
Aqueous Surface Tension dynes/cm (mN/m), 25°C (77°F)	0.001% Actives	58
	0.01% Actives	21
	0.1% Actives	18

¹Not for specification purposes.

Typical Applications

Chemguard S-764P-14A is a dilute aqueous solution composed of 14% active fluorosurfactant. Typical uses include leveling and oil repellency for floor polishes, paints and coatings, adhesives, inks, waxes, caulks, and wood stains and it is ideal for Low-VOC and VOC-free formulas. Chemguard S-764P-14A can minimize common surface defects in paints and coatings

such as fisheyes, orange peel effects and cratering. Chemguard S-764P-14A is also very effective in improving anti-blocking for the new low/no VOC paints in both semi-gloss and high gloss formulas.

Applications of Chemguard S-764P-14A are generally those in which typical hydrocarbon surfactants are found to be inadequate.

Fluorosurfactants such as Chemguard S-764P-14A 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 0.1% to 0.3% are common. 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-764P-14A is soluble in water and most organic solvents. Deionized or soft water is recommended as dilution of this product in hard water can cause precipitation and should be avoided. The use of a chelant is recommended if the water hardness exceeds 100 ppm. The chart below is an example of the solubility of S-764P-14A in many solvent systems. Chemguard can assist in determining solubility in any system.

Solvent	Grams of Chemguard S-764P-14A/ 100 grams of solvent
Distilled Water	>1
Isopropanol	>1
Acetone	0.1
Methyl Alcohol	>2
Hydrocarbon solvents	Insoluble

All values measured at 25°C

Storage and Shelf Life

Avoid freezing. Mix well before using. Chemguard S-764P-14A should be stored between 5°C and 50°C. If frozen or if solids separate, warm to room temperature and mix before use. Freezing and thawing will not affect the performance of the product.

Shelf life is at least five years if stored tightly sealed in the original container at temperatures below 50°C (122°F).

Availability

Chemguard S-764P-14A is available in 2 oz samples, 8 lb jugs, 40 lb. pails, and 440 lb. drums.

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-764P-14A 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.

*VOC stands for "Volatile Organic Compound" and is any organic compound (all chemical compounds containing carbon with exceptions) that is volatile (evaporating or vaporizing readily under normal conditions).

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