

3M Advanced Materials Division

3M™ Fluorosurfactant FC-4434

Introduction

3M™ Fluorosurfactant FC-4434 is a water-soluble, general purpose nonionic fluorinated surfactant which contributes excellent wetting, spreading and leveling properties to a variety of coating systems. Some typical application areas include architectural coatings, inks, high solids coatings, water reducible coatings and radiation curable coatings.

Suggested Applications

3M fluorosurfactant FC-4434 is a dilute solution of 25% active fluorochemical surfactant in a water miscible diluent. It may be used as a flow and leveling agent in various applications including, inks, paints and coatings, polymers, adhesives, waxes, polishes and caulks, as well as other industrial coatings. FC-4434 can provide benefits for dirt pick up resistance and stain resistance in certain applications including architectural paints and coatings.

Recommended use level is between 0.05% and 0.3% active surfactant. However, use level can vary depending on the application and concentration of other additives and solvents in the formulation.

Typical Physical Properties

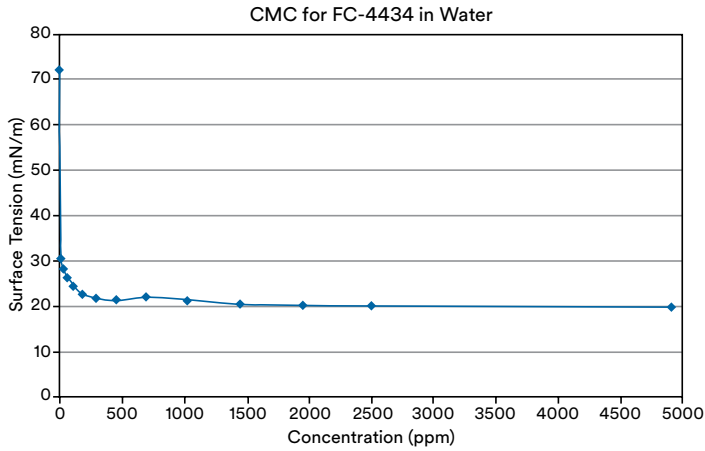
(Not for specification purposes)

Properties	Typical Values
Appearance	Clear yellow liquid
Gardner Color	2.2 – 2.7
Refractive Index	1.43
Specific gravity	1.006 g/cc
Density (lbs./gal)	8.4
Flash point (Setaflash closed cup)	78°C (173°F)
pH (of 1% aqueous solution)	4.5
Viscosity	14
Solubility in water	1.0 wt%
Type	Non-ionic, polymeric
Composition	25% fluoroaliphatic polymeric esters in dipropylene glycol monomethyl ether

Note: All values determined at 77°F (25°C) unless otherwise specified

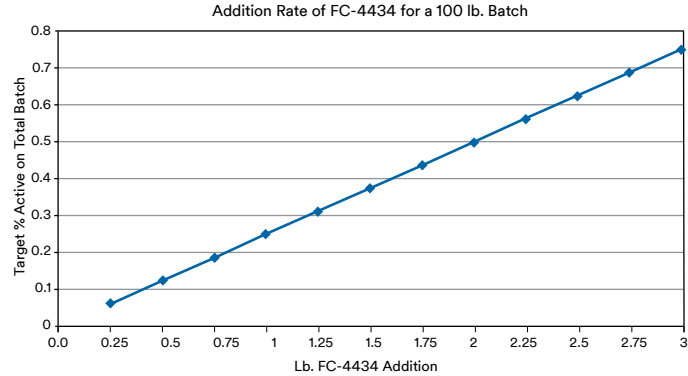
Surface Tension/CMC (in water)

3M™ Fluorosurfactant FC-4434 is very efficient at reducing the surface tension in aqueous coating systems.



Addition Rate

The chart below shows a convenient way to determine how much fluorosurfactant FC-4434 is needed to provide a target % active surfactant level. This combined with the CMC chart above provides target levels of total active surfactant in a coating system.



Note: Data not for specification purposes
All values determined at 77°F (25°C)
unless otherwise specified

Foaming

The 3M fluorosurfactant FC-4434 shows low tendency to form foam in aqueous systems. This can translate into the ability to use less defoamer and/or a less aggressive defoamer additive in your formulation.

Product	Foam Quality (%)	Foam Stability (minutes) (t 1/2 value)
FC-4434	81.25	0.75
FC-4430	85.58	2
FC-4432	85.85	2

Solubility

Solvent	Grams of FC-4434/100 grams of solvent
Distilled water	1
Butyl cellulose	100
Toluene	100
Methyl ethyl ketone	100
Dimethyl formamide	100
Isopropyl alcohol	100
Methanol	100
Dowanol™ PM	100
Texanol™	100
Proglyde™ DMM	100
N-Methyl Pyrrolidone	100
Mineral spirits	25

Packaging

3M fluorosurfactant FC-4430 is currently available in:

- 7 lb. drum
- 38 lb. drum
- 220 lb. drum
- 440 lb. drum

Thermal Stability

The active ingredient in 3M™ Fluorosurfactant FC-4434 exhibits good thermal stability when used in thermal processing applications.

TGA data for FC-4434

This data shows the excellent thermal stability of 3M fluorosurfactant FC-4434 if used in a thermal processing application.

Temperature (°C)	FC-4434 Specified % Weight Loss
195	5%
255	10%
305	50%
330	80%
355	90%
405	95%

(10 mg sample heated at 5°C/minute in air). Temperatures (°C) at which specified % weight loss occur.

Regulatory Summary

- The PFBS-based surfactant produced by 3M has been reviewed by the U.S. EPA and placed on the TSCA inventory. There is a testing consent order in place which only applies to 3M, not 3M customers. The products are REACH compliant in Europe. The products are available for purchase in all countries without chemical inventories and in China, Korea, New Zealand and on a limited basis in Australia, Canada and Japan. FC-4434 is not on the Philippines chemical inventory. Please see current product Safety Data Sheet for most current regulatory listing information.
- PFBS and PFBS-based surfactants are not included in the U.S. EPA's PFAS Final Significant New Use Rule (SNUR) (67 Fed. Reg. 72854).

For additional country specific information, please contact 3M at 1-800-367-8905.

Product Safety and Handling

3M fluorosurfactant FC-4434 is intended for use in non-dispersive applications.

3M does not recommend this product for use in applications involving repeated exposure through skin contact, inhalation, or ingestion. It is not intended for food, cosmetic, medical or pharmaceutical usage. Neither 3M nor the U.S. Food and Drug Administration has evaluated or reviewed this product for food, cosmetic, medical or pharmaceutical applications.

It is the user's responsibility to determine whether a coating containing this product is durable and properly cured for the end use. Any used or unused material for disposal should be incinerated in an industrial or commercial facility in the presence of a combustible material. Combustion products will include HF. Facility must be capable of handling halogenated materials. As a disposal alternative, dispose of waste product in a facility permitted to accept chemical waste. For additional disposal information, see the product Safety Data Sheet.

For additional product safety and handling information, please read the product label and Safety Data Sheet before using this product.

3M Resources

To request a sample, place an order or request additional information, please contact your local 3M representative, an authorized 3M distributor or call 1800 367 8905.

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