

SILWET* Hydrostable* 212 superspreader

SPECIALTY FLUIDS - CONSUMER CARE



Silwet Hydrostable 212 superspreader is an organommodified copolymer that can provide surface tension reduction and superspreading properties to aqueous solutions while remaining stable in formulations from pH 2-12.

Key Features and Typical Benefits

Silwet Hydrostable 212 superspreader can reduce surface tension in aqueous solutions at use levels up to 1.0% by weight. Typical recommended starting levels are 0.1%.

Silwet Hydrostable 212 superspreader can provide surface tension reduction down to 26.7 mN/m. It also assists aqueous solutions to wet most substrates with contact angles near 0/1° on high and low energy surfaces. Silwet Hydrostable 212 superspreader solutions may provide spread areas 150 times greater than the corresponding volume drop of pure water, and 25 times greater than conventional surfactants.

Typical associated benefits are antifogging, sheeting, quick-dry, hard water spot elimination, and penetration of the solution delivering dissolved materials to otherwise unreachable locations sometimes increasing the efficacy of actives.

Potential Applications

Silwet Hydrostable 212 superspreader may be considered for use in home care formulations where pH can be controlled between 2 and 12. Examples of such potential applications include tub and tile cleaners, toilet bowl cleaners, oven cleaners, rust removers, drain cleaners, stain removers and disinfectants.

Typical Physical Properties

Appearance	Yellow to amber liquid
Viscosity @ 25°C, cSt	20
Surface Tension (0.1%) mN/m	26.7
Pour Point, (°C)	2
Flash Point, PMCC, °C (°F)	165 (329)
Specific Gravity @ 25°C	1.00g/mL
Solubility (5%)	
Water	Dispersible
Methanol	Soluble
Isopropanol	Soluble
Mineral Oil	Dispersible

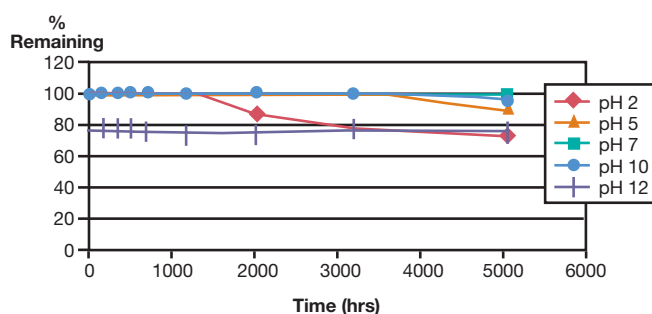
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Performance Data

Silwet L-77* surfactant is well known for surface tension reduction and superspreading properties. However, it has always been limited to applications with neutral pH. Silwet L-77 surfactant is degraded as a function of time and pH. After 1 week, it is 50% decomposed at pH 5 and 9.

The Silwet Hydrostable 212 surfactant has shown no decomposition at >12 months with pH from 2-12. We did not evaluate pH extremes below 2 and above 12. We interpret the levelness of the below graphs as an indicator of complete stability, the 80% value for pH 12 is believed to be a bias in the test method at that pH.

Figure 1: Silwet Hydrostable 212 Hydrolytic Stability



Silwet Hydrostable 212 superspreader was post-added to a commercial toilet bowl cleaner. This formulation (below, right) exhibited enhanced spreading and coverage on porcelain substrates as compared to the commercial control (below, left).



Silwet Hydrostable 212 surfactant was post-added to two different commercial tub & tile cleaners. Black bathroom tiles were washed with these formulations and the commercial controls and allowed to air dry. The washed substrates were then rinsed with a synthetic scale solution, allowed to dry and evaluated for appearance. The substrates washed with formulations containing the Silwet Hydrostable 212 superspreader product (right) showed improved appearance and less visible scaling and spotting than the commercial controls (left). Two commercial tub and tile cleaners, with (right) and without (left) Silwet Hydrostable 212 surfactant post-added are seen below to have a better appearance after assault with a synthetic scale solution.



Note: Test data. Actual results may vary.

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Patent Status

Technical subject matter in this publication is described and protected by one or more of the following U.S. Patents and their foreign counterpart patents and/or patent applications: U.S. Patent No. 7,700,797. Other U.S. and foreign patents and/or patent applications not listed covering the subject matter may be relevant.

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Worldwide Hotline	T +1.607.786.8131		F +1.607.786.8309
	T +1.800.295.2392		

Visit us at Momentive.com



Momentive Performance Materials
22 Corporate Woods Boulevard
Albany, NY 12211

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MOM-132-023-20E-GL 04/11 Printed in U.S.A.

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