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TECHNICAL DATA SHEET

Silsurf® A008-UP
Silicone Super Wetter

DESCRIPTION

Silsurf® A008-UP is a very low molecular weight ethoxylated polydimethylsiloxane based on a distilled mono-functional trisiloxane intermediate. Therefore **Silsurf A008-UP** is a mono-functional, water-dispersible silicone surfactant with excellent surface tension reduction, wetting and super spreading capabilities.

TYPICAL PROPERTIES

Appearance	Clear Light Yellow Liquid
Colour (Gardner)	2
Active Content %	100
Viscosity (cps)	60
Cloud Point, °C	<25

USES AND APPLICATION

Silsurf A008-UP surfactant lowers the surface tension of water to the 20-22 mN/m range at use levels around 0.01% (by weight.) This very low surface tension causes the aqueous solution to spread on or wet nearly all known surfaces.

In addition **Silsurf A008-UP** and other trisiloxane based materials exhibit the very unique property of super spreading. Super spreading occurs when the solution covers a surface area much greater than that of normal surfactant solutions. This unique behavior is believed to be driven by the forces set up when the surfactant molecules are slow to repopulate a surface that has been stretched. Contact angles on most surfaces are 0° or nearly 0° and spreading is halted only by competition with evaporation of the water. Very few surfactants can do this; even fluoroalkyl surfactants which reduce surface tension to lower values do not super spread.

These low surface tension solutions of **Silsurf A008-UP** also tend to flood through small openings which are normally protected from water penetration by high surface energy. For example, penetration of stomata on plant leaves; channels in textile fibres; biofilms; and pores on chitonous insect shells are all penetrated by these solutions. Any active ingredient dissolved in the solution is carried through as well.

These highly thin aqueous films are subject to rapid evaporation often allowing claims of quick dry on fabrics and hard surfaces.

Silsurf A008-UP is used in tank-side agricultural sprays to minimize water usage, pesticide usage, pesticide residues and overspray.

Silsurf A008-UP is also soluble in many organic solvents and many of the properties translate to those non-aqueous formulations.

Applications Data:

In the chart below **Silsurf A008-UP** surfactant and two other trisiloxane ethoxylates are compared to pure water, an SLS solution and a strongly performing organic nonionic control (nine mole ethoxylated linear alcohol). **Silsurf A008-UP** and the two other trisiloxane ethoxylates show much lower equilibrium surface tension, improved Draves wetting times, lower foam height, and extraordinary spreading on surfaces.

They also have low critical micelle concentrations (CMC) which is an indicator of minimum effective use levels.

Surfactant	0.1% ST (mN/m)	CMC (%)	5 min Foam Height of 1% (mL)	Draves Wetting (sec)	Spreading on Paraffin (mm ²)
None	74.6	NA	0	>300	2.0
LAE ¹	32.4	2x10 ⁻³	>500	37.4	4.0
SLS ²	30.9	0.04/0.06 ⁽³⁾	>500	>300	4.1
Silsurf [®] A008-UP	21.1	1x10 ⁻²	348	14.0	75.5
Silsurf [®] A008-AC-UP	21.5	6x10 ⁻³	91	22.2	55.5
Silsurf [®] A004-UP	21.2	5x10 ⁻³	15	>300	39.4

¹LAE = Rhodasurf LA-9

²SLS = Jeelate SLS-30

³dual CMCs were apparent in this experiment

When compared to a potent anionic surfactant, SLS, again one sees much lower equilibrium surface tension, dramatically improved Draves wetting times, lower foam height, and extraordinary spreading on surfaces. The CMCs are an order of magnitude lower as well.

Even though **Silsurf A008-UP** surfactant can cost more per pound than organic surfactants, the much lower use level can translate to less expensive costs and the unique properties can allow new and interesting claims.

SAFETY

Before handling, read the Material Safety Data Sheet and container label for safe use, physical and health hazard information.

THIS MATERIAL IS NOT FOR MEDICAL OR DRUG USE.

STORAGE AND SHELF LIFE

When stored in the original, unopened containers between 10 and 40°C, **Silsurf A008-UP** has a shelf life of 36 months from date of manufacture.

PACKAGING

Silsurf A008-UP is available in 20kg and 200kg containers.

LEGAL DISCLAIMER

Siltech Corporation believes that the information in this technical data sheet is an accurate description of the typical uses of the product. Siltech Corporation, however, disclaims any liability for incidental or consequential damages, which may result from the use of the product that are beyond its control. Therefore, it is the user's responsibility to thoroughly test the product in their particular application to determine its performance, efficacy and safety. Nothing contained herein is to be considered as permission or a recommendation to infringe any patent or any other intellectual property right.

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