

MAGNASOFT* SiQ

textile enhancer

SPECIALTY FLUIDS - TEXTILES & LEATHER



The globalization of the textile markets has had significant repercussions for the industry, not the least of which is the ever-increasing number of new lines that are being launched annually by retailers. This has affected textile mills and dye houses as much as anyone else. As a result, they are seeking multifunctional products and developing forgiving processes in order to reduce costs and to market fabrics with long-term appeal to consumers. Textile enhancer Magnasoft SiQ was developed and patented by Momentive Performance Materials' laboratories in response to such market needs.

Magnasoft SiQ textile enhancer is part of our prestigious line of textile enhancers, which includes such world-known grades as Magnasoft SRS and Magnasoft DerMa NT. Magnasoft SiQ textile enhancer is a linear, non-reactive, high molecular weight quaternary aminosilicone polymer with the various components having been carefully engineered to meet strict performance requirements.

Magnasoft SiQ textile enhancer can deliver a luxuriously soft and flexible hand feel to most types of cellulosic, regenerated cellulosic and cellulosic blends of fabrics and garments. This typically is further enhanced by a deep, voluminous and smooth softness that is not usually associated with silicone materials.

Fabrics treated with Magnasoft SiQ textile enhancer typically are hydrophilic and, remarkably, retain hydrophilicity even after high temperature dry/cure conditions as well as on ageing of the fabric.

Though Magnasoft SiQ textile enhancer is easily dispersible in water in the presence of certain emulsifiers, its affinity for the fiber surface is such that it largely remains on the fabric even after repeated home laundry cycles.

Emulsions of Magnasoft SiQ textile enhancer have exhibited outstanding shear stability and low yellowing at extremes of pH and temperature in tests conducted in our laboratories. As a result, Magnasoft SiQ textile enhancer may be applied onto fabrics using most types of finishing equipment, including high speed padding, kiss rolls, exhaustion, jet finishing and others.

Typical Physical Properties

Property	Unit	Value
Appearance	—	Light yellow liquid
Flash Point	°C	> 100
Viscosity at 25°C	CSt	15,000
Density at 25°C	gr/cm ⁻³	0.980

The data values of typical physical properties should not be used as specifications.

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Key Features and Typical Benefits

- slippery, voluminous and in-depth softness on virtually all types of fabrics as opposed to a greasy hand feel
- due to excellent exhaustibility and affinity with fibers, exhibits unique and unusually powerful softness effect at low use levels
- quickly absorbs water and perspiration; minimal impact on the hydrophilic nature of cotton and cotton blends
- fabrics and garments treated with Magnasoft SilQ textile enhancer remain hydrophilic on aging
- provides stretch recovery with bouncy and drapable effect, particularly on knits
- almost self-emulsifiable; can generate emulsions that possess high shear and pH stability (acid & alkaline)
- exhibits durable softness to home laundry washes, particularly on cellulose based fabrics
- causes virtually no yellowing of white and light shade fabrics
- typically does not affect the shade of dark color fabrics

Potential Applications

Magnasoft SilQ textile enhancer is a textile softener that can deliver a rich range of advantages to virtually all types of knit and woven fabrics. Magnasoft SilQ textile enhancer can be particularly effective on cotton knits and woven fabrics where it provides slippery, voluminous and pliable hand-feel as well as quick water/perspiration absorption in addition to typical silicone softener effects.

Magnasoft SilQ textile enhancer is normally applied as a water emulsion. Because of its polar nature, Magnasoft SilQ textile enhancer is easily dispersed in water using emulsifiers in simple mixing devices and containers widely available throughout the industry. There is typically no need for homogenization or colloid milling to emulsify Magnasoft SilQ textile enhancer. Table 1 shows a typical guide formulation and procedure to prepare a 20% silicone actives emulsion of Magnasoft SilQ textile enhancer. If such emulsions are intended to be stored for extended periods, it is recommended that a biocide be added to retain sterility.

Emulsions of Magnasoft SilQ textile enhancer possess extraordinary shear stability in a wide pH range (3~12), at high temperatures and in the presence of salts in tests conducted in our laboratories. Therefore, Magnasoft SilQ textile enhancer may be applied under very demanding conditions such as high speed continuous pad-bath finishing, jet finishing, foam and spraying finishing, processes that are typically designed for mass textile finishing potentially resulting in considerable costs savings to the textile mills.

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Potential Applications (continued)

Optimum dose levels of Magnasoft SilQ textile enhancer are subject to type of fabric and level of softness required, but 10~30 g/l (for 0.2~0.6% silicone pick-up) of 20% silicone actives emulsion is typically recommended.

Magnasoft SilQ textile enhancer may be combined, blended or formulated with a broad range of cationic and/or nonionic textile auxiliaries as well as other silicone materials, so as to differentiate the performance. Typically, these may include organic quats, amphoteric (betaines) or imidazolines, alkylamine ester, fatty acid amide, ethoxylated/propoxylated surfactants, polyethylene wax emulsions, starch, other water soluble or emulsifiable polymers, amino silicones, amino/polyether silicones or other silicone emulsions. Such formulations may be developed for use in specific applications such as textile finishing, spinfinishes, thread lubrication etc.

Table 1: Guide Formulation for Microemulsion of Magnasoft SilQ Textile Enhancer[†]

Ingredients	20% Silicone Active Formulation [weight%]	Function	Notes
Magnasoft SilQ textile enhancer	23.5	Silicone Active	
Tridecyl Alcohol 6EO Ethoxylate	4.2	Emulsifier	HLB 11.5
Tridecyl Alcohol 12EO Ethoxylate	8.8	Emulsifier	HLB 14.6
Glacial Acetic Acid	0.3		
Sodium Acetate	0.3		
Water	62.9		

[†] Product formulations are included as illustrative examples only. Momentive makes no representation or warranty of any kind with respect to any such formulations, including, without limitation, concerning the efficacy or safety of any product manufactured using such formulations.

Procedure

1. Charge Magnasoft SilQ textile enhancer and emulsifiers. Mix well till fully homogeneous
2. Dissolve sodium acetate and acetic acid into water
3. Slowly add the water solution to silicone/emulsifiers blend while mixing. Avoid stirring too much air into the mixture
4. Filter into the containers

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Potential Applications (continued)

Table 2: Silicone Residue % on 100% Cotton Knits After Home Launderings

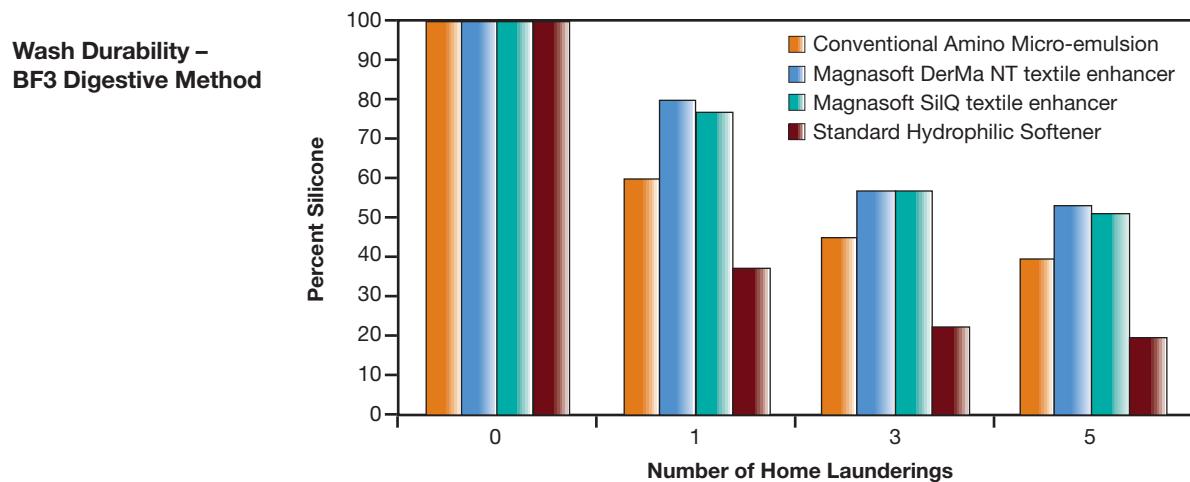


Table 3: Stability of 20% Actives Emulsion of Magnasoft SilQ

Shear Stability



Test Condition:

Stirring 100g/l of 20% actives microemulsion
Magnasoft SilQ textile enhancer in homo-mixer at 2000rpm,
70°C and pH12

Observation Results:

No silicone oil droplets or silicone residue are observed

Note: Test results. Actual results may vary.

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Potential Applications (continued)

High Temperature Stability at Acidic and Alkaline

pH Stability at 80°C

Bath pH	Emulsion of Magnasoft SiQ textile enhancer (20% actives)	Amino microemulsion (15% actives)	Benchmark I	Benchmark II
pH 3	Clear & Stable	Unstable, Silicone oil droplets	Clear & Stable	Clear & Stable
pH 7	Clear & Stable	Unstable, Silicone oil droplets	Clear & Stable	Clear & Stable
pH 10	Clear & Stable	Unstable, Silicone oil droplets	Unstable, Some silicone oil droplets	Unstable, Some silicone oil droplets
pH 12	Clear & Stable	Unstable, Many silicone oil droplets	Unstable, Silicone oil droplets	Unstable, Many silicone oil droplets

Note: Test results. 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. 7,217,777. Other U.S. and foreign patents and/or patent applications not listed covering the subject matter may be relevant.

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