Home Care Solutions

ACUSOL™ Millennium ER

The key to unlock multi-functionality in household formulations

Consumers value multi-functional detergents as they deliver new benefits such as fragrances bursts, moisturizing properties or scrubbing properties. ACUSOL™ Millennium ER, an HASE rheology modifier allows formulators to design multi-functional cleaning products such as hand dish or liquid laundry.

ACUSOL™ Millennium ER is an efficient suspension aid that can be used in a variety of surfactant matrices including the detergents containing as high as 30% surfactant content. ACUSOL™ Millennium ER is efficient at building viscosity while maintaining a nice flow, pouring behaviour and is designed to be used over a wide range of pH ranging from 4 to 9.

ACUSOL™ Millennium ER Snapshot	
Recommended use levels	3.4% to 9.5% as is
Ionic nature	Anionic
Appearance	White liquid emulsion
Solids	30%-32%
pH	3.5-4.5

Table 1 - These are typical properties, not to be construed as specifications.

ACUSOL™ Millennium ER for liquid laundry formulations

ACUSOL™ Millennium ER can be formulated in a variety of liquid laundry formulations thanks to its excellent compatibility with surfactants (up to 30%). As the total concentration of surfactants will increase, the use level of ACUSOL™ Millennium ER required to achieve suspension will also increase whatever the agent to suspend is as illustrated in Figure 1. The need for suspension is linked with the trend to include fragrance capsules in the liquid laundry detergents to deliver the right amount of encapsulated fragrance through the wash and prolonged fragrance experience on wet and dry clothes.

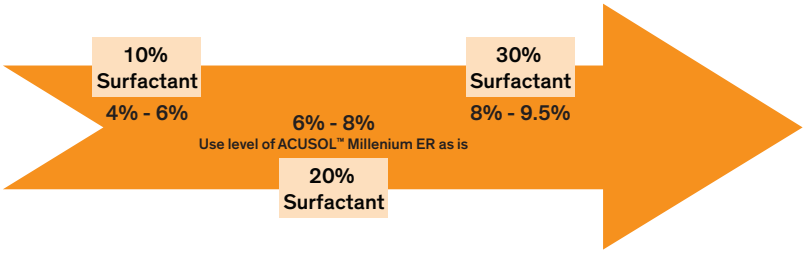


Figure 1

However, having a pseudoplastic behavior is not always a guarantee of having long term suspension capabilities as shown in the Figure 2. Indeed despite a pseudoplastic rheology profile ACUSOL™ 805S does not deliver the level of suspension expected for detergent formulations whereas ACUSOL™ Millennium ER exhibits long term suspension property.

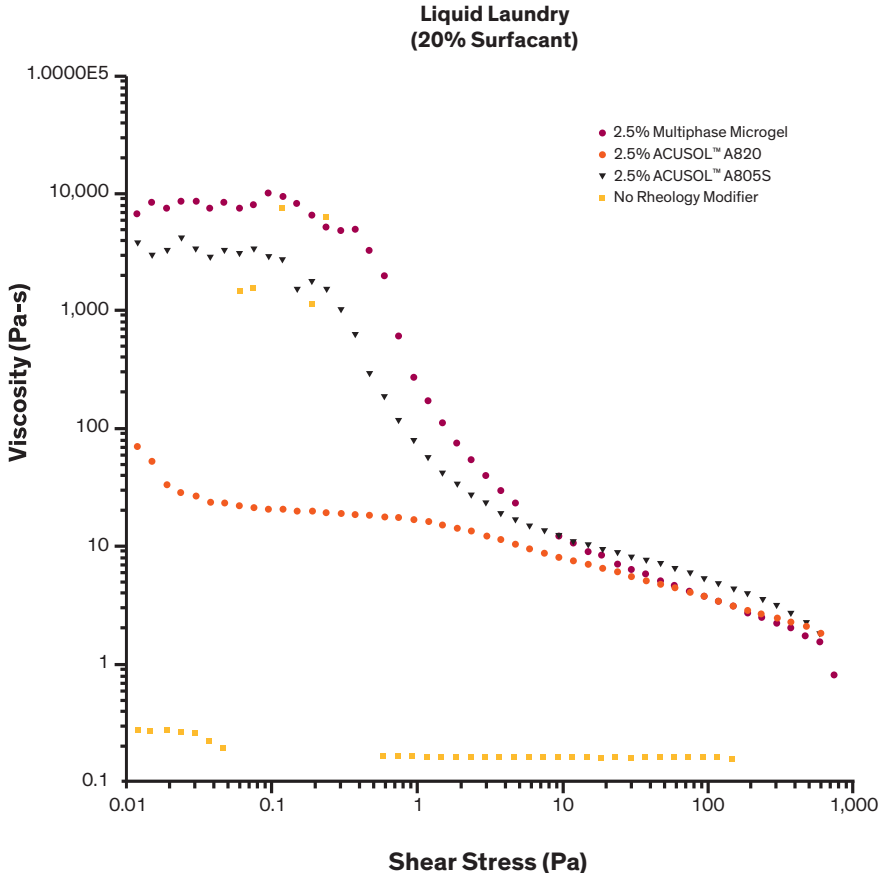
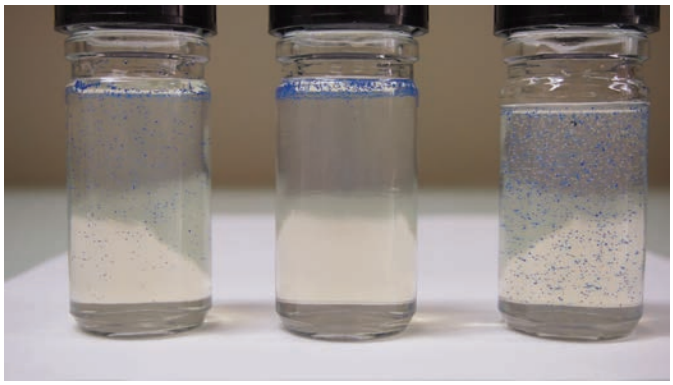


Figure 2

Associative thickener such as ACUSOL™ Millennium ER, Dow's Hydrophobically-Modified-Alkali-Swellable-Emulsion (HASE) rheology modifier, interacts with surfactants and builds appropriate structures that will impact both the apparent and the low-shear viscosity, thanks to its dual hydrophobic and hydrophilic nature.

ACUSOL™ Millennium ER in hand dish formulations

Typical level of ACUSOL™ Millennium ER to get a nice pouring rheology while achieving suspension of visual cues, moisturizing agents or oil based fragrances, is about 3.4% polymer as is. Crystal clear formulations can be obtained to enhance the use of visual cues even at the lower pH values. Typically there is a trend for lower pH values in hand dish formulations in order to be as neutral as possible to the skin. Formulating with ACUSOL™ Millennium ER at different pH values, the suspension capabilities are enhanced at the lower pH values of 6 and below, as shown in Figure 3 and thus will help formulators in designing multi-functional hand dish products to meet the desire from consumers for products being gentle to their skin.



ACUSOL™ 805S ACUSOL™ 820 ACUSOL™ Millennium ER

ACUSOL™ Millennium ER is an HASE rheology modifier offering exceptional suspension capabilities across a broad pH range ranging from 4 to 9 while having an outstanding compatibility with surfactants including high level of surfactants up to 30%.

Applications for ACUSOL™ Millennium ER

- Hand dish wash formulations
- Light liquid laundry
- Heavy liquid laundry

ACUSOL™ Millennium ER Features

- Excellent at suspending actives and visual cues
- Very efficient at viscosity building
- Enable clear formulations
- Compatible in high surfactant systems
- Stable in acidic media
- Compatible with glycols and surfactants

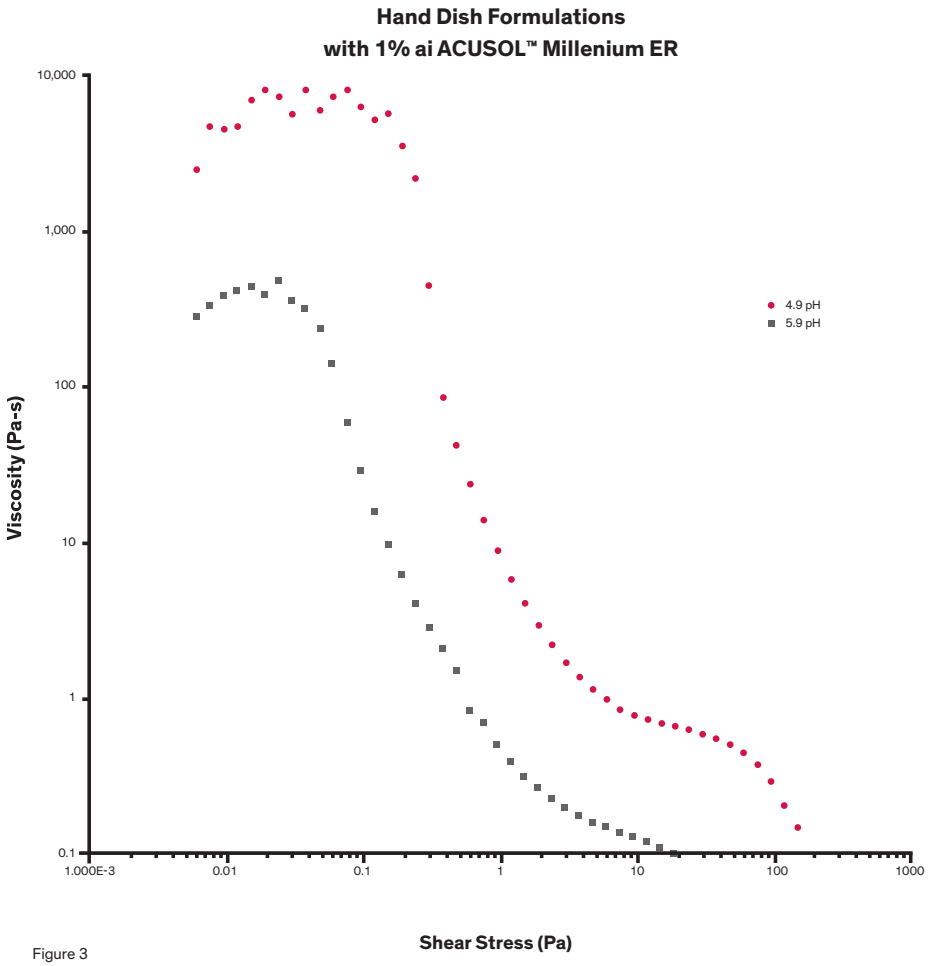


Figure 3

Interested in Learning More?

For more information on ACUSOL™ Millennium ER and how it can be used in your formulation, please contact us at the numbers listed below, or visit us online at www.dow.com/fabricandsurfacecare.

From North America

Toll-free	800-447-4369
Toll call	989-832-1542
Fax	989-832-1465

From Europe, India, Africa and the Middle East

Toll-free*	800-3-694-6367
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Toll-free fax**	+ 800-7779-7779
Toll fax	+ 60-3-7958-5598

From Latin America

Toll call	+ 55-11-5188-9000
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dow.com/fabricandsurfacecare

For access using your smartphone scan the QR code above.

* Toll-free from Austria, Belgium, Denmark, Finland (prefix 990), France, Germany, Hungary, Ireland, The Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom

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