ACULYN™ F1 Polymer

Description

INCI Name: Acrylates Copolymer

ACULYN™ F1 Polymer is a hydrophobically modified alkali swellable emulsion (HASE) rheology modifier exhibiting very good suspending capabilities over a broad range of pH, including the more challenging low pH values, while offering transparent systems. ACULYN™ F1 Polymer is efficient at suspending both beads and bubbles at low pH values, offers a smooth flow, is compatible and efficient with a variety of surfactants including mild surfactants.

- Compatible with typical ingredients used in cleansing formulations
- Enables clear formulations
- Efficient at thickening and suspending in sulfate-free surfactant systems and sulfate based surfactant systems
- Effective over a broad pH range from 3 to 11
- Cold processible

Uses / Applications

- Bath, shower, and hygiene
- Hair care
- Face care

Benefits

- Low pH rheology modifier
- Texture enhancer
- Clear systems
- Suspension aid/yield
- Thickener/rheology modifier

Physical Properties

Specification Writers: These values are not intended for use in preparing specifications.

Property	Result	Unit	Comments
Chemistry	Hydrophobically modified alkali swellable emulsion		
Mechanism of action	Associative		
Appearance	Opaque, white, low viscosity liquid		
Active content	30-32	%	
Ionic nature	Anionic		
pH	4.0-5.5		
Density	1.03	g/mL	
Viscosity @ 25°C (77°F)	0-97	cSt	Brookfield, LV, Spindle 1, 60 rpm
Preservative	Sodium benzoate		
Biodegradability			Although the polymers are not biodegradable, they would likely be removed in biological wastewater treatment plants by adsorption to biosolids.

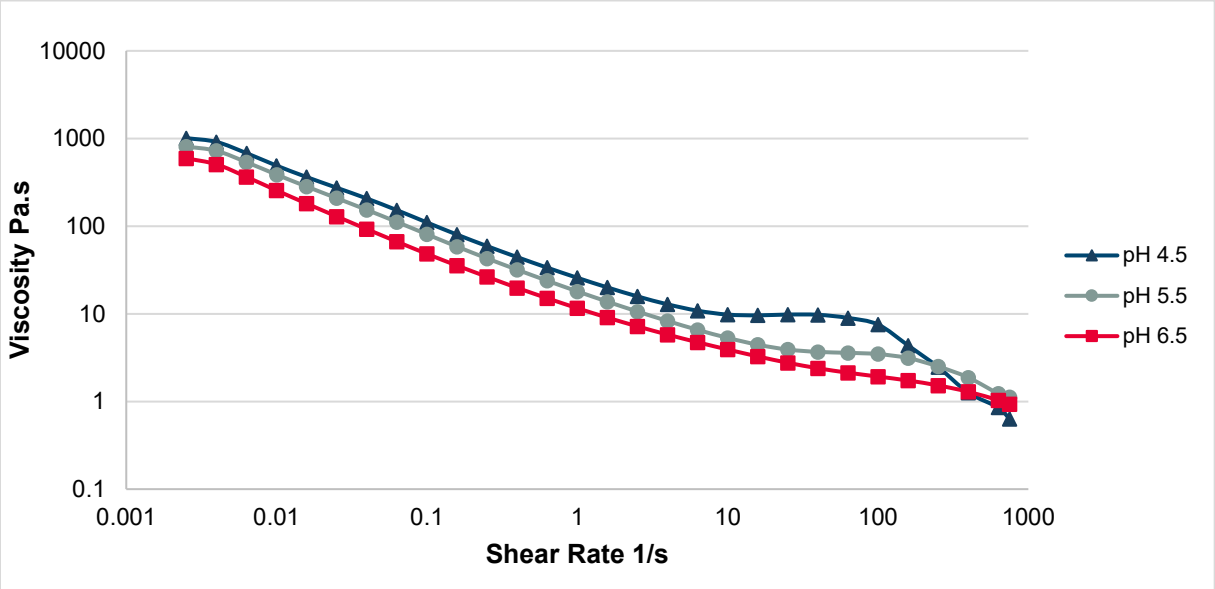
Form No. 27-3705-01-0624 S2D

Processing and Application Guidelines

ACULYN™ F1 Polymer is a HASE Rheology Modifier exhibiting very good suspending and thickening capabilities over a broad pH range (pH 3-11), while delivering transparent formulations including at low pH (pH 4-5), in a variety of cleansing systems including mild and sulfate-free surfactants as well as sulfate surfactants. Typical use levels are 4% up to 8% as is. ACULYN™ F1 Polymer is cold processible. Recommended formulation guidelines: Add water, followed by ACULYN™ F1 Polymer, surfactants, neutralize to pH >8, then add citric acid to reduce pH to desired formulation pH, add any conditioning polymers, add fragrance, preservative, colorant, etc. Alternatively, ACULYN™ F1 Polymer may be added directly after the surfactants, prior to neutralization.

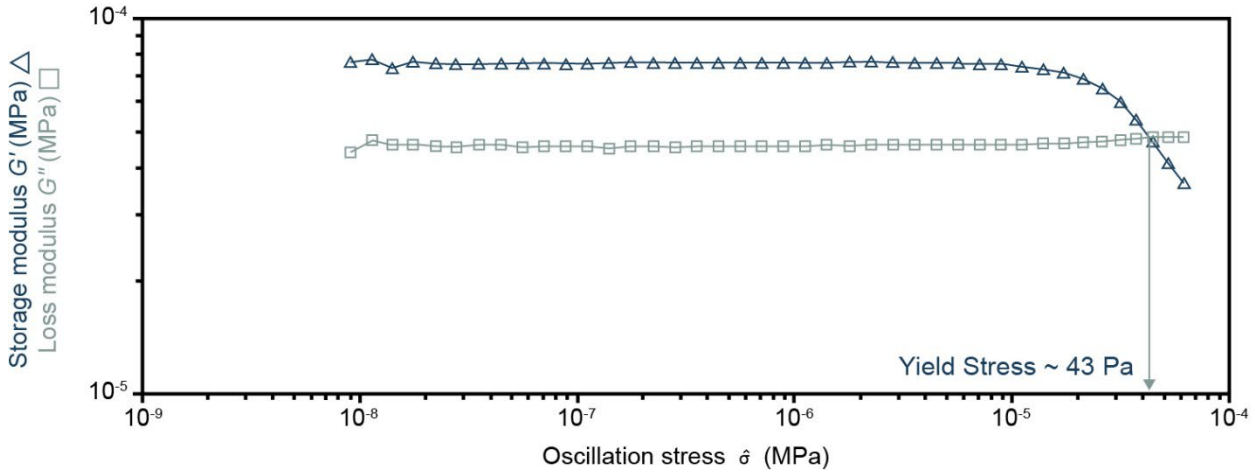
The rheological profile of ACULYN™ F1 Polymer is described in Figure 1 (Viscosity vs. shear rate) and Figures 2-4 (Storage Modulus, G' & Loss Modulus, G'' vs Oscillation Stress). The surfactant formulation tested contains 12.5% SLES / 2.5% CAPB and 2.2% solids ACULYN™ F1 Polymer and have been characterized at various pH values from pH 4.5 to 6.5. Although the thickening and suspension behavior will vary with the surfactant system and the polymer concentration, these graphs demonstrate the shear thinning behavior and suspending properties of ACULYN™ F1 Polymer, across different formulation pH's.

Figure 1: Viscosity vs. Shear Rate



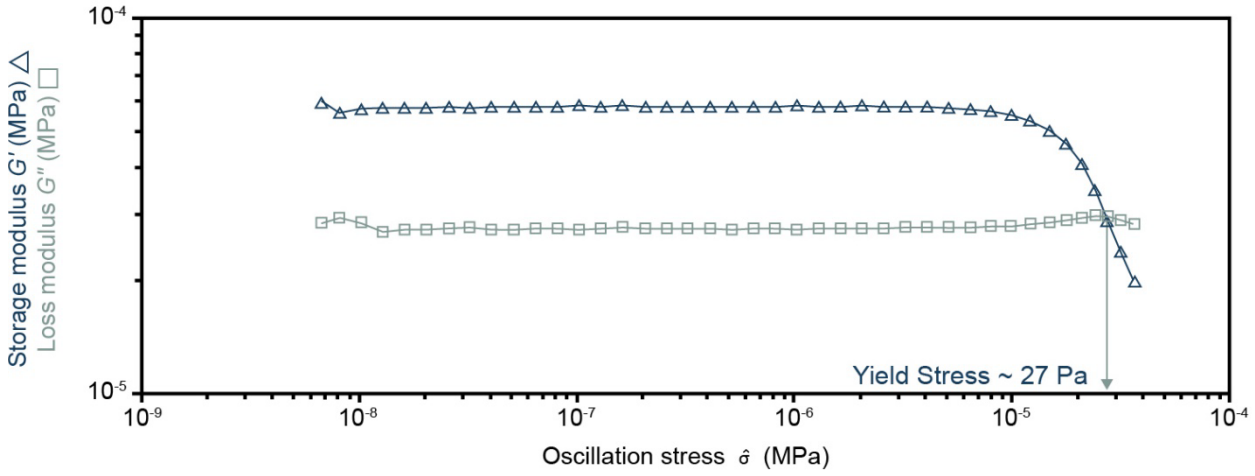
These are typical properties, not to be construed as specifications.

Figure 2: Storage (Elastic) Modulus (G') & Loss (Viscous) Modulus (G") vs. Oscillation Stress (formulation pH 4.5)



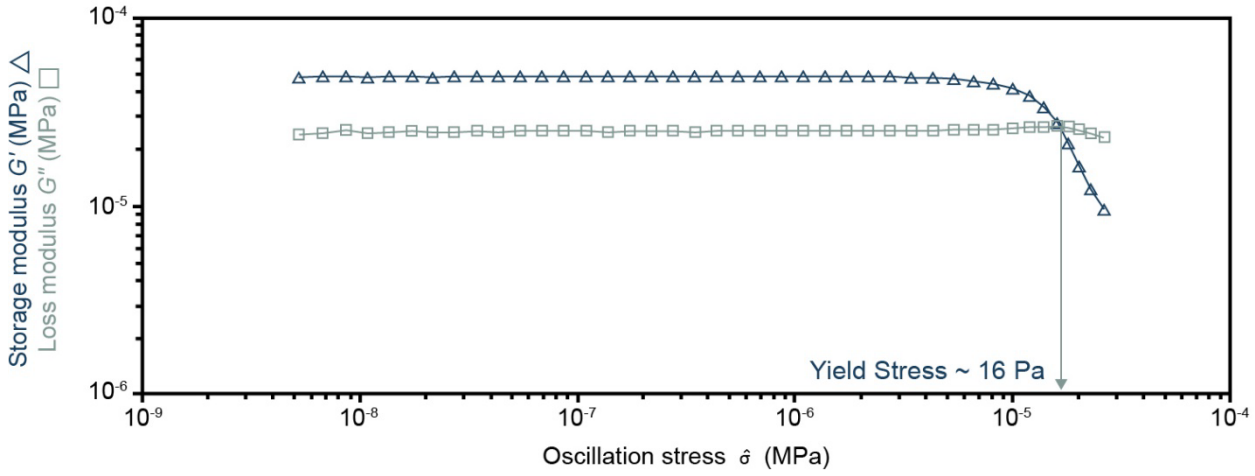
These are typical properties, not to be construed as specifications.

Figure 3: Storage (Elastic) Modulus (G') & Loss (Viscous) Modulus (G") vs. Oscillation Stress (formulation pH 5.5)



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

Figure 4: Storage (Elastic) Modulus (G') & Loss (Viscous) Modulus (G") vs. Oscillation Stress (formulation pH 6.5)



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

Handling Precautions

PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED IN THIS DOCUMENT. BEFORE HANDLING, READ PRODUCT AND SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL AND HEALTH HAZARD INFORMATION. THE SAFETY DATA SHEET IS AVAILABLE ON THE DOW WEBSITE AT DOW.COM, OR FROM YOUR DOW SALES APPLICATION ENGINEER, OR DISTRIBUTOR, OR BY CALLING DOW CUSTOMER SERVICE

Limitations

This product is neither tested nor represented as suitable for medical or pharmaceutical uses.

Health and Environmental Information

To support customers in their product safety needs, Dow has an extensive Product Stewardship organization and a team of product safety and regulatory compliance specialists available in each area.
For further information, please see our website, dow.com or consult your local Dow representative.

Disposal Considerations

Dispose in accordance with all local, state (provincial) and federal regulations. Empty containers may contain hazardous residues. This material and its container must be disposed in a safe and legal manner.
It is the user's responsibility to verify that treatment and disposal procedures comply with local, state (provincial) and federal regulations. Contact your Dow Technical Representative for more information.

Product Stewardship

Dow has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with Dow products - from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

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