

# Aquaflow™ nonionic synthetic associative thickeners selection guide

North America product line



**ASHLAND**®

With good chemistry great things happen.™

# Premium performance in paints and coatings

Aquaflow™ rheology modifiers are unique, high-performance, nonionic synthetic associative thickeners (NSATs) from Ashland Specialty Ingredients. These easy-to-handle, liquid thickeners are designed to provide exceptional in-can and application properties for waterborne coatings—including alkyd emulsions—by allowing precise control of rheology profiles.

Aquaflow rheology modifiers have been developed for robust performance across an extensive range of latex resin chemistries, paint PVC ranges, and tinting levels. Aquaflow products are typically effective at independently driving either low-shear (Brookfield and Stormer KU) or high-shear (ICI) viscosity. Other mid-shear or hybrid Aquaflow products build high- and low-shear viscosity simultaneously, depending on resin system.

## Aquaflow rheology modifiers for industrial wood coating applications

Aquaflow NLS, NHS, NMS and XLS series rheology modifiers have proven to be highly suitable for formulating sprayable topcoats for interior wood applications and for high-build exterior coating systems. Select Aquaflow products can provide an optimal rate of viscosity recovery that allows high film build with sufficient flow to obtain a perfect finish.

**Using a combination of low-shear effective (LSE) and high-shear effective (HSE) Aquaflow NSATs, formulators can achieve superior flow and leveling and efficient high-shear viscosity build for precise, customized rheology control.**

### Key benefits:

- Low-, mid- and high-shear rheology control
- Exceptional flow properties
- Good gloss development
- Performance independent of paint pH
- Superior film build
- Liquid handling

# Aquaflow XLS series - the next generation of rheology control

Aquaflow XLS-series NSATs are highly efficient, second generation, low-shear effective liquid thickeners. The Aquaflow XLS chemistry provides an optimized balance of leveling with exceptional sag-resistance through a unique engineered structure recovery behavior. This balance of properties means that painters will appreciate a virtually drip-free application resulting in beautiful finished painted surfaces free of brush marks, which is particularly desirable in semi-gloss and high-gloss paints.

Aquaflow XLS-series rheology modifiers also deliver improved viscosity retention upon point-of-sale tinting with universal colorants. XLS technology works well in whites, ready-mix colors and tint bases, including deep bases, which often present a challenge for other synthetic thickeners.

Three Aquaflow XLS grades are available and are optimized according to tint base and resin type. All grades of Aquaflow XLS rheology modifiers are supplied as low-viscosity, APEO-free and solvent-free liquids for a cost-effective designed rheology solution in an environmentally responsible package, ideal for your next generation of "greener" paints.

## Key benefits:

- Exceptional balance of leveling and sag resistance
- Drip-resistant application
- Superior thickening efficiency
- Improved viscosity retention on tinting with universal colorants
- Improved brush loading
- Improved applied hiding



**Aquaflow**<sup>™</sup>  
rheology modifier

# Aquaflow nonionic synthetic associative thickeners

	XLS-500	XLS-525	XLS-530	NLS-210	NLS-220	NLS-200	NMS-450	NHS-355	NHS-350	NHS-310	NHS-300
<b>Product Properties</b>											
<b>Rheology Profile</b>											
Low-Shear (Brookfield)	★	★	●	●	●	●					
Low-Shear (Stormer)	●	★	★	★	★	★					
Mid-Shear (Stormer-ICI)							★	●	●		
High-Shear (ICI/Cone and Plate)							●	★	★	★	★
<b>Product Features</b>											
Solvent-Free <sup>1</sup>	✓	✓	✓		✓		✓	✓	✓	✓	✓
APEO-Free	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Balance of Sag Resistance and Leveling	★	★	★				●				
Improved Viscosity Retention on Tinting	★	★	★								
High Efficiency in Effective Shear Range	★	★	●	★	●	●	●	★	★	●	●
Active Solids (%)	25.0	20.0	20.0	25.0	20.0	25.0	19.0	14.0	17.5	20.0	20.0
Viscosity, Maximum As-Supplied (mPa·s)	2,000	2,000	4,500	5,000	2,000	5,500	6,000	3,000	3,500	2,000	6,500
<b>Starting-Point Application Recommendations<sup>2</sup></b>											
<b>Architectural Paints by Interaction with Latex</b>											
Styrene-Acrylic	★	★	★	★	★	★	●	★	★	★	★
Acrylic	★	★	★	★	★	★	●	★	★	★	★
Vinyl-Acrylic		●	★	●	★	●	★	●	★	●	●
Vinyl Acetate-Ethylene			★	●	★	●	★	●	★	●	●
<b>Wood Coatings</b>											
Parquet Lacquer	●	●	★				★	●	●		●
Primer and Topcoat	★	●	★				●	★	★		★
High-Build Topcoat (Spray Applied)	●	★	★	●	●		●				

<sup>1</sup> Excluding water

<sup>2</sup> Recommendations are initially based on single use of a particular additive.

★ Highly Recommended

● Possible Use

# Meeting the environmental demands of today . . . and tomorrow

Ashland believes delivering sustainable chemistry and offering environmentally responsible alternatives is important to customers. As a Responsible Care\* company, Ashland is committed to pursuing advancements toward creating sustainable chemistries, which are essential to meeting environmental standards when developing new products.

Specific grades of Aquaflow products allow paint manufacturers to design and produce the next generation of paints and coatings complying with the latest environmental directives and standards without sacrificing performance.

- Free of alkylphenol ethoxylates (APEOs)
- Free of heavy metals
- Positive eco-labeling
- Easy liquid handling in a production environment
- Ease of incorporation resulting in energy savings



# Reliable service and support

As the global leader in additives for improved performance of paint and coatings, including rheology, wetting, stabilization, and foam control, Ashland Specialty Ingredients has offices, production facilities, laboratories and applications specialists across North America, Europe and Asia dedicated to supporting new product development, technical assistance and customer service. We use our state-of-the-art analytical and testing resources to constantly assess market trends and develop next-generation additives to help you improve the performance and value of your paint and coatings products.



## Manufacturing Facilities

### North America

- Calvert City, Kentucky      Synthetics
- Freetown, Massachusetts      Synthetics
- Chatham, New Jersey      Biocides
- Parlin, New Jersey      HEC & HMHEC
- Kenedy, Texas      Aquaflow™ rheology modifiers, Guar
- Texas City, Texas      Synthetics
- Hopewell, Virginia      EC, CMC, HEC, HPC
- Leaside, Canada      Biocides

### Latin America

- Cabreuva, Brazil      Synthetics

### Europe

- Doel-Beveren, Belgium      MC
- Alizay, France      CMC, Aquaflow products (Coming Spring 2012)
- Horhausen, Germany      Biocides
- Memmingen, Germany      Biocides
- Zwijndrecht, Netherlands      HEC

### Asia Pacific

- Jiangmen, China      CMC
- Nanjing, China      HEC
- Luzhou, China (Joint Venture)      MC
- Suzhou, China (Joint Venture)      MC

## Research and Development/ Technical Service Centers

### North America

- Wilmington, Delaware\*
- Wayne, New Jersey\*

### Latin America

- São Paulo, Brazil
- Mexico City, Mexico

### Europe

- Paris, France
- Memmingen, Germany
- Zwijndrecht, Netherlands\*
- Istanbul, Turkey
- Bradford, United Kingdom\*

### Asia Pacific

- Nanjing, China
- Shanghai, China\*
- Mumbai, India\*
- Pantech, Singapore

\* Center of Excellence



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# Ashland Specialty Ingredients

Ashland Specialty Ingredients, a commercial unit of Ashland Inc., is a global leader in the development and manufacturing of products that manage the physical properties of aqueous and non-aqueous systems. Our products perform in a variety of applications providing functional properties including thickening and rheology control, water retention, adhesive strength, binding power, film formation, conditioning and deposition, colloid stabilization, suspending, and emulsifying action.

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