

# Flexbond® 381 Emulsion Polymer For Architectural Coatings

## Technical Data Sheet

Last Revised: January 2009

**Flexbond 381** polymer emulsion is a high scrub, formaldehyde-free vinyl acrylic designed to give superior performance in both interior and exterior paints. Its combination of high molecular weight, good film formation, flexibility and water resistance produces paint films with excellent toughness, scrub resistance, gloss and durability.

Flexbond 381 can be used in a variety of trade sales paint formulations, as no unusual dispersants, surfactants or other paint additives are required. It can be readily formulated into semigloss paints and typically provides excellent thickening response and gloss properties when used with associative thickeners.

### Performance Comparison

Ashland has evaluated Flexbond polymer emulsion against competitive high scrub vinyl acrylics with good results.

Wet abrasion was tested in a 60% PVC interior paint and results are tabulated in Table III.

Performance of Flexbond 381 polymer emulsion was also tested in semigloss formulations using traditional HED-type thickeners. A comparison of the performance of Flexbond 381 vs. commercial vinyl acrylic lattices in various semigloss formulations is presented in Table IV.

### Formulations

A suggested starting point formulation is provided on the following Formulation Sheets. Prospective users should test formulations themselves for suitability in their own applications.

**TABLE 1: Typical Emulsion Properties**

Copolymer Type	Vinyl acetate-butyl acrylate
Solids, %	55
Viscosity, <sup>1</sup> cPs	400-1,200
pH	4.0-6.0
Average particle size, microns	0.3
Surfactant Type	Nonionic
Weight, lbs/gal	9.1
MFFT, °C	6
Reaction to Borax	Stable

<sup>1</sup> Brookfield Viscometer, Model LVF (#3 spindle, 60 rpm, 77°F)

**TABLE II: Typical Film Properties**

Flexibility	Excellent
Gloss	High
Film Clarity	Water Clear
Water Resistance	Excellent
Film Formation	Excellent
T <sub>g</sub> , °C	13

### Handling

Flexbond 381 emulsion contains ingredients which could be harmful if mishandled. Contact with skin and eyes should be avoided and necessary protective equipment and clothing should be worn. **For important health, safety and handling information, consult Ashland's Material Safety Data Sheet before using this product.**

**DOT Label Required:** Non-regulated

**Shelf Life:** 3 months from date of receipt  
(when stored under recommended conditions)

Ashland Inc., Ashland Performance Materials • PO Box 2219 • Columbus, OH 43216 • Tel: 1.614.790.3333 – Customer Service • Tel: 1.614.322.6580 • Fax: 1.614.790.3206

Ashland Inc. and its subsidiaries ("Ashland") believe that all information provided with respect to its products is accurate at the time such information is provided. All statements, information, and data presented herein are believed to be accurate and reliable, but are not to be taken as a guarantee, an express warranty, or an implied warranty of merchantability or fitness for a particular purpose, or representation, express or implied, for which Ashland assumes legal responsibility. They are offered solely for your consideration, investigation, and verification. All recommendations or suggestions contained herein must be evaluated by the user to determine their applicability or suitability for a particular application. Users are encouraged to read and understand the Material Safety Data Sheet (MSDS) and to abide by all use and safety recommendations detailed therein and on all product labeling. No freedom to use any patent owned by Ashland is to be inferred.

® Registered trademark, Ashland or its subsidiaries  
© 2008, 2009, Ashland  
\* Trademark owned by a third party



# ASHLAND

<b>Table III: Scrub Resistance of Flexbond® 381 Emulsion Polymer vs. Commercial High Scrub Vinyl Acrylics in a 60% PVC Paint</b>				
	<b>Flexbond 381</b>	<b>Commercial Product "A"</b>	<b>Commercial Product "B"</b>	<b>Commercial Product "C"</b>
Scrub Cycles to 50% Substrate Show Through (ASTM Scrub Media)	2650	2300	1600	2300
<b>Table IV: Comparison of Flexbond 381 Vinyl Acrylic Latex with Competitive Products in Semigloss Paint Formulations</b>				
	<b>Flexbond 381</b>	<b>Commercial Product "A"</b>	<b>Commercial Product "B"</b>	<b>Commercial Product "C"</b>
<b>Formulation #1</b> (Using HEC-type thickener)				
20° C Gloss	30	25	20	24
60° C Gloss	72	70	64	68
Viscosity, (KU)	89	88	81	85
ICI Viscosity	0.55	0.65	0.50	0.50
<b>Formulation #2</b> (Using Mixed Associative thickeners)				
20° C Gloss	3.3	2.3	2.2	2.5
60° C Gloss	33	31	28	33
Viscosity, (KU)	101	102	107	106
ICI Viscosity	1.05	1.00	1.05	1.05
<b>Formulation #3</b> (Using Acrysol RM-825 thickener)				
20° C Gloss	29	25	27	26
60° C Gloss	69	67	68	67
Viscosity, (KU)	83	77	78	82
ICI Viscosity	1.10	1.10	1.05	1.0