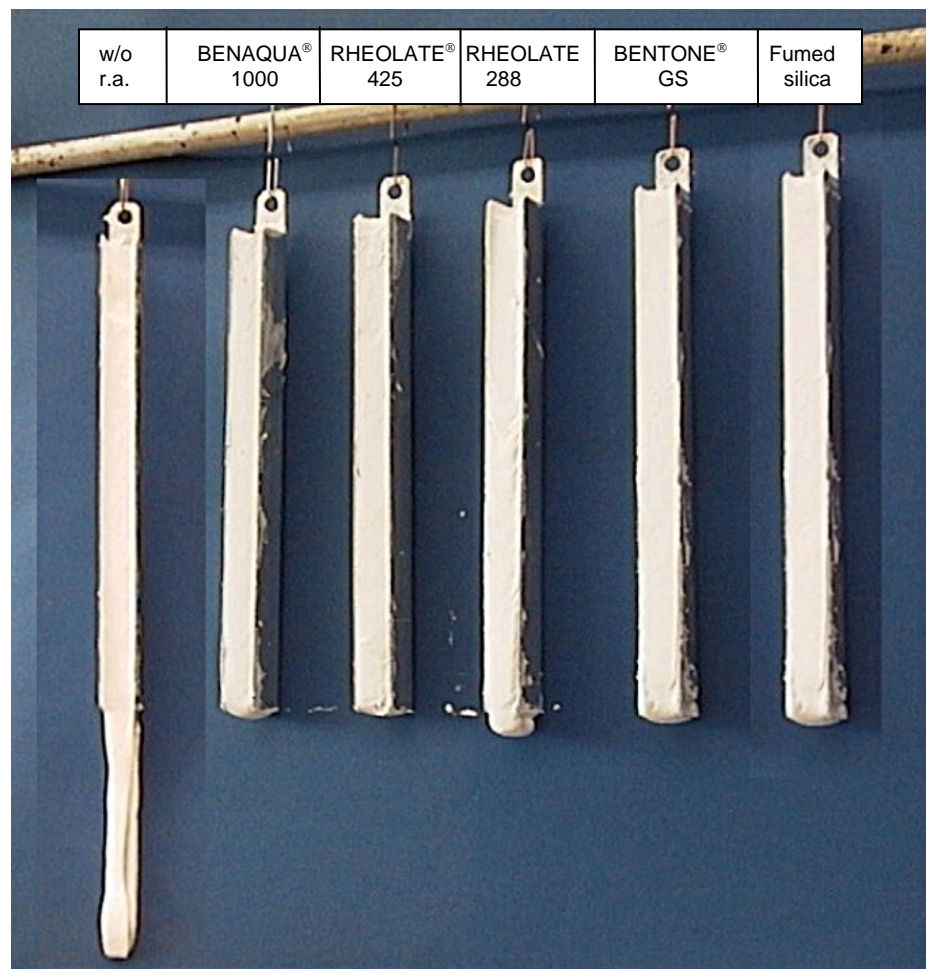


APPLICATION GUIDE

Use of Elementis rheological additives in acrylic based sealant

Usually fumed silica is used as rheological additive in acrylic based sealants. Elementis Specialties provides rheological additives based on polyurethane, hectorite clay, HASE, and modified polysaccharide for this applications.

Image:



Slump test¹ of acrylic based sealants with different rheological additives. The use of Elementis rheological additives lead to excellent viscosity and application properties.

BENTONE®

BENAQUA®

RHEOLATE®

NUOSPERSE®

DAPRO®

THIXATROL®

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Result table:

	Slump ¹ [mm]	Workability ²	Water pick up after 24 h storage in water ³ [%]	Loss on drying after 3 days [%]
w/o additives	50	good	39.0	6.78
0.5% Fumed silica	3	good	39.1	4.64
0.5% BENTONE® GS	3	good	40.1	5.27
0.3% BENAQUA® 1000	0	even good	57.9	4.71
0.5% RHEOLATE® 425	1	good	77.8	6.45
0.5% RHEOLATE 288	8	good	28.6	6.04

Conclusion

BENTONE GS (99% active hectorite clay) shows the same technical properties than fumed silica but it is more cost effective. It gives a good viscosity built, excellent sag resistance and good workability.

BENAQUA 1000 (modified polysaccharide) shows highest efficiency but strong water pick up.

RHEOLATE 288 (polyurethane thickener) shows good viscosity built and low water pick up, but allows strongest sagging. Incorporation is very easy, because it is a liquid product.

RHEOLATE 425 (HASE) shows good rheological efficiency and sag resistance, but strongest water pick up.

Products

BENAQUA 1000 is a rheological additive based on modified polysaccharide. BENTONE GS is a 99% active hectorite clay. RHEOLATE 288 are low viscosity associative thickeners containing 25% active material. RHEOLATE 425 is an acrylic thickener (HASE) with 30% active material.

Test system

	Test formulation	Purpose	Supplier
1. Acronal 81 D	31.50	Binder	BASF
2. Plastilit 3060	3.80	Plasticiser	BASF
3. Pigment paste, Plastilit 3060/Kronos 2056 1:1	9.60	Pigment paste	BASF/Kronos
4. Lumiten N-OG	0.30	Tenside	BASF
5. Water	4.00 - X		
6. Pigmentverteiler N	0.05	Dispersing agent	BASF
7. Lumiten E-L	0.05	Defoamer	BASF
8. Microtalc AT-1	7.60	Extender	Omya
9. Omya BLP 3	42.60	Extender	Omya
10. Rheological additive	X		
	100.00		

Preparation

10 Minutes at 10 m/s with the dissolver.

Test methods

¹ Slumping

Tested sealant was applied in metal channel. After 24 h vertical storing the slump was measured.

² Workability

A spatula was used to apply and smooth the sealant in a metal channel. The stickiness on the tool and the force required for smoothing were compared and the surface assessed visually.

³ Water pick up

The sealant was applied with pattern (70 mm * 300 mm * 2 mm) on glass panels. After 1 week drying at 50°C, the sealant was removed from the glass panel. The sealant was stored for 24 hours in water. Directly after taking out of the water, 0.5 h, 2 h, 24 h, 48 h and 120 h after removing the weight was measured.

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