



SUSTAINABLE RHEOLOGICAL ADDITIVES FOR ARCHITECTURAL PAINTS

RHEOLOGY

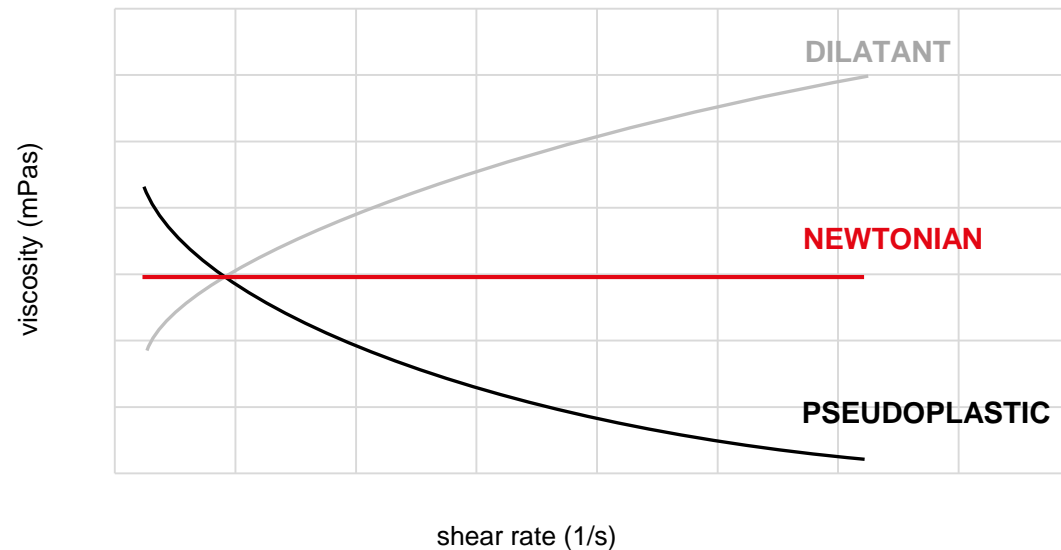
Study of the flow and deformation of materials

VISCOSITY

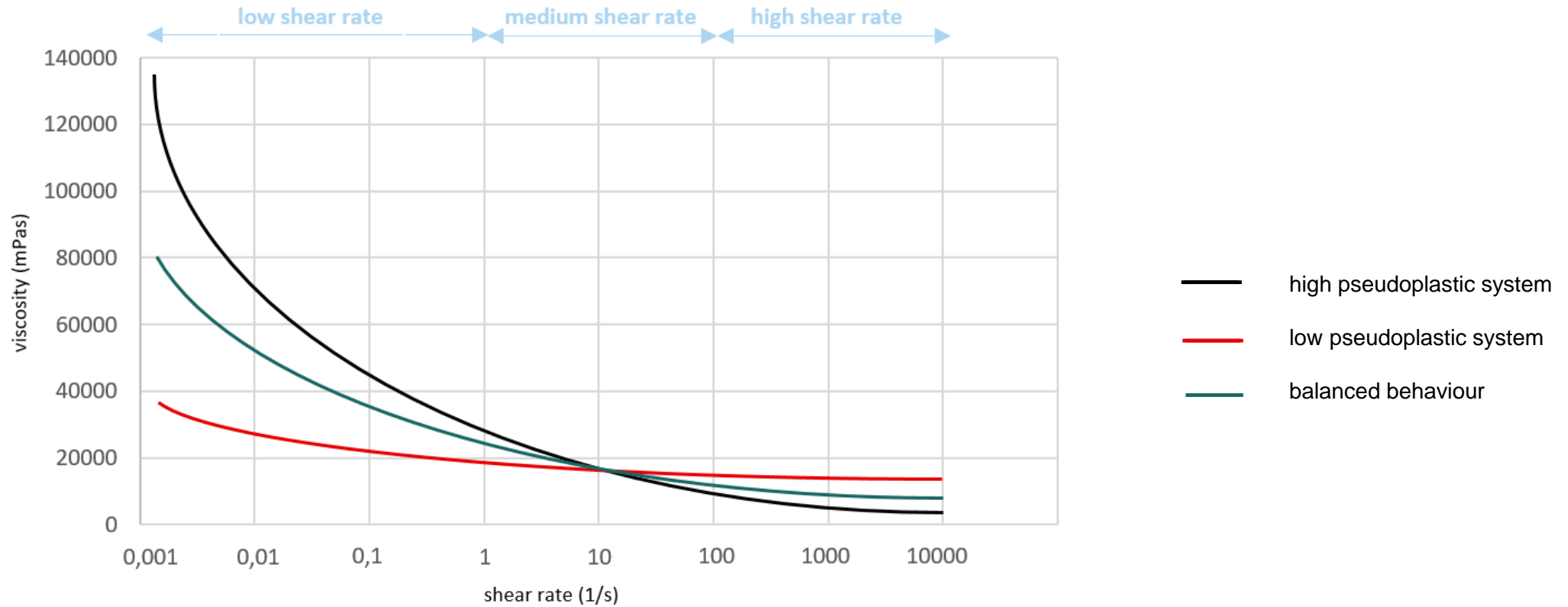
Resistance of a substance to flow after a certain force is applied to the system

SHEAR RATE

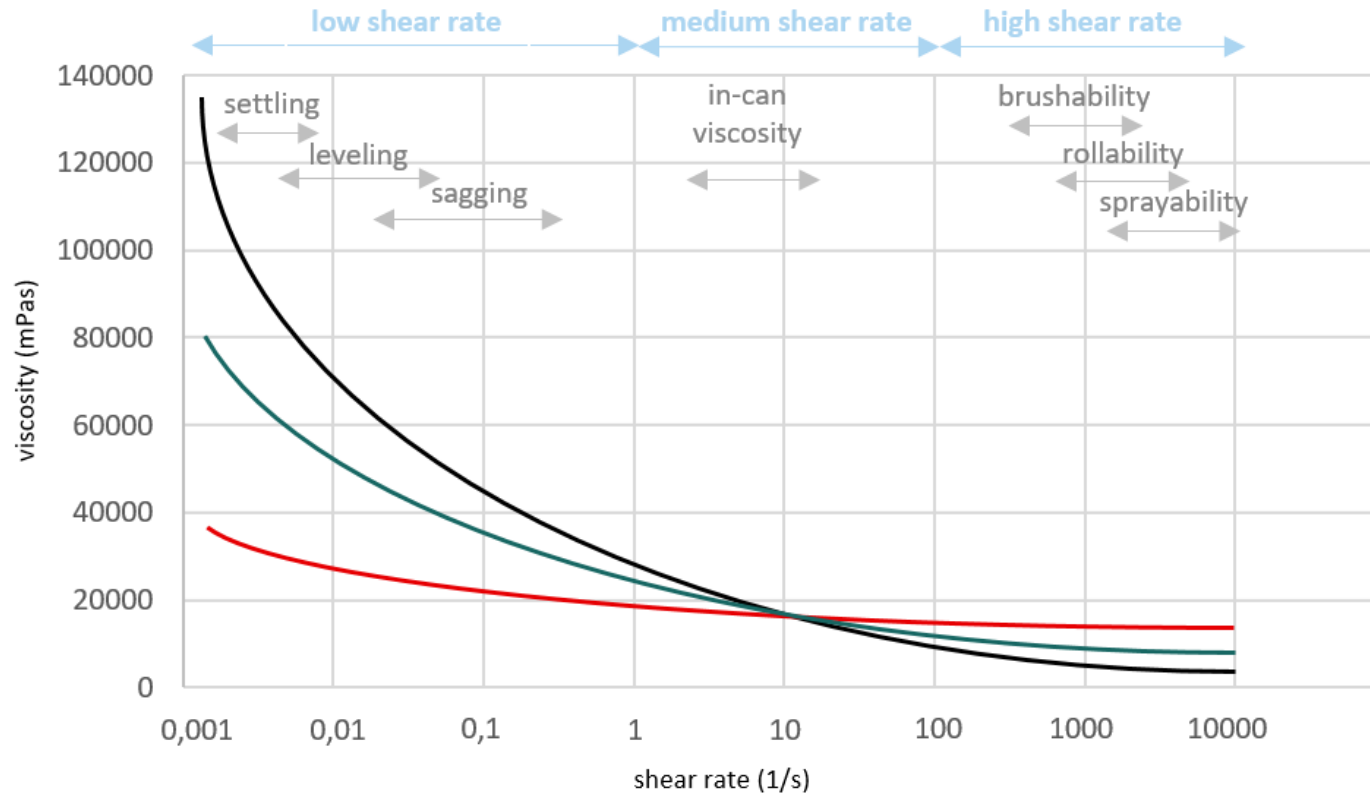
Parameter connected to the force applied to the system



RHEOLOGICAL PROFILES



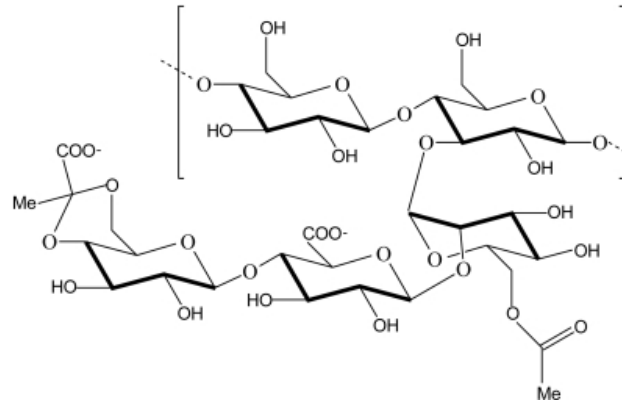
RHEOLOGICAL PROFILES



CHT SUSTAINABLE TECHNOLOGIES...



GUAR GUM



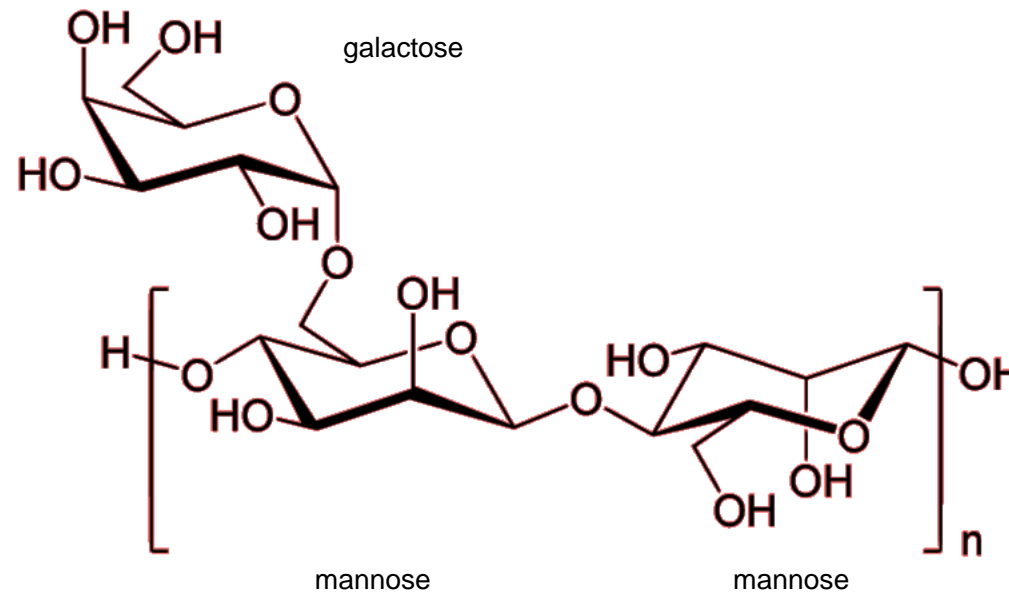
XANTHAN GUM

...TO FULFILL DIFFERENT RHEOLOGICAL DEMANDS

GUAR GUM

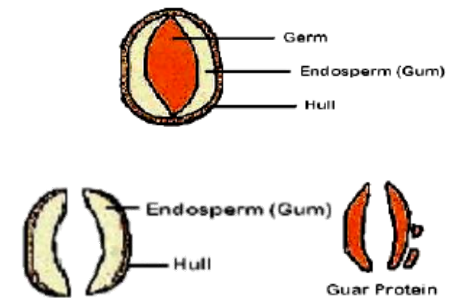
WHAT IS GUAR GUM

- ▶ Polysaccharides made of mannose backbone and galactose side groups (polygalactomannans family)
- ▶ Derivates from a natural and sustainable source
- ▶ Pure guar powder need to be modified to increase performance



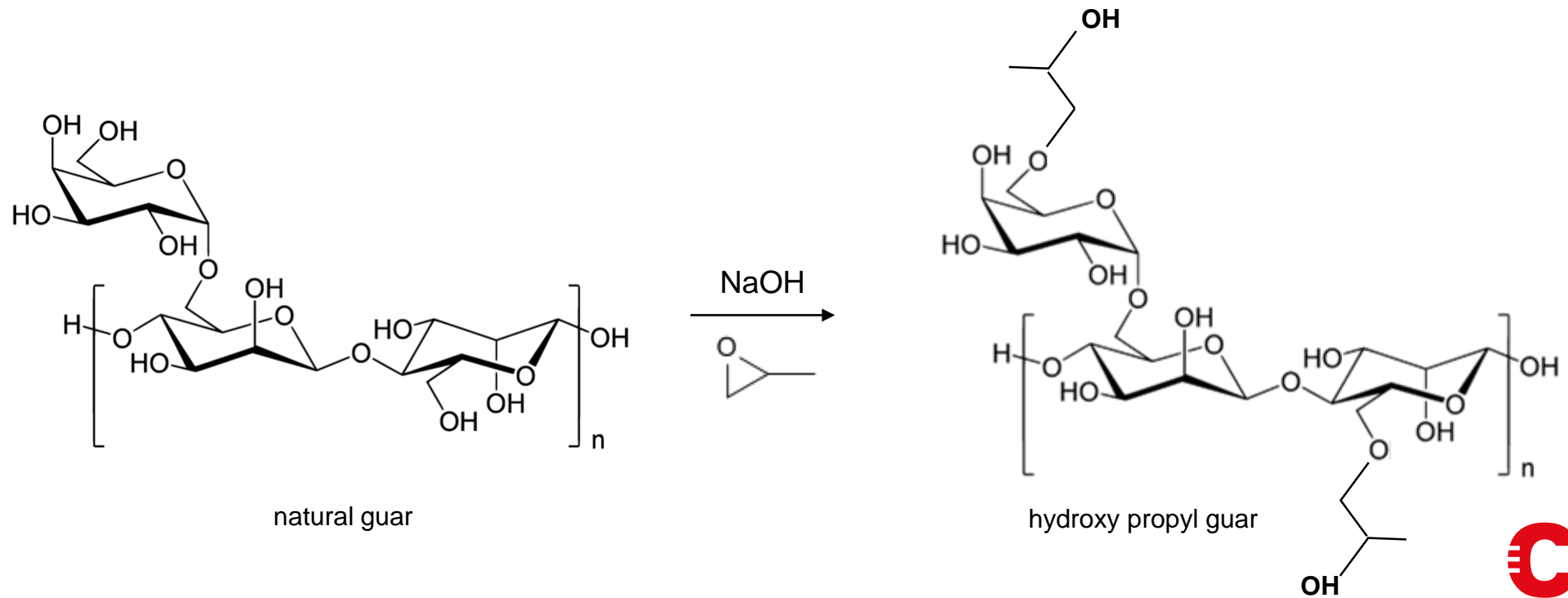
GUAR POWDER PRODUCTION

- Production from the legume *Cyamopsis Tetragonoloba* in India/Pakistan
- Simple preparation and cost-effective derivatization



FROM NATURAL GUAR TO GUAR ETHER (HPG)

- ▶ Through propoxilation guar gum increases its water retention properties
- ▶ The degree of substitution influences the properties of the final product
- ▶ All CHT guar derivates are crosslinked to have a retarded swelling time



CHT GUAR DERIVATES (HPG) – CORE RANGE

Product	Chemical basis	Viscosity level	Properties			Dosage [%]	Characteristics
			Low-shear	High-shear	Water-retention		
AGOCEL® I 115 D	HPG	Medium	++	++	++	0,3 - 1,0	All round product for architectural paints. Excellent application properties and stability.
AGOCEL® I 30 D	HPG	Medium/High	+++	++	++	0,15-0,8	Medium-high viscosity product with good application properties and stability.
AGOCEL® I 155 D	Modified HPG	High	+++	+	++	0,15 - 0,6	Improvement of anti-settling properties.

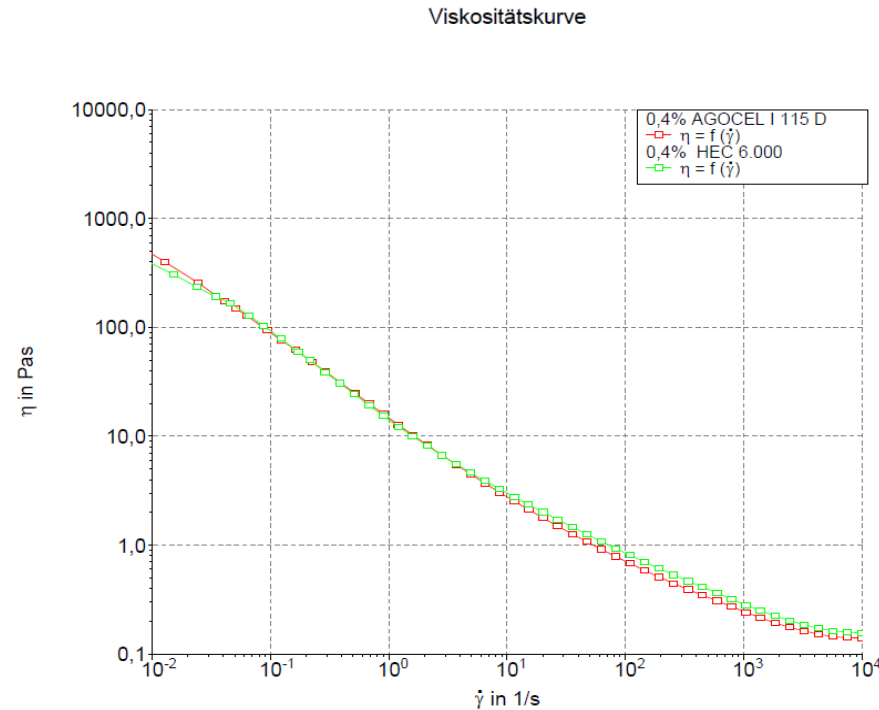
AGOCCEL I 115 D VS HEC 6000

AGOCEL I 115 D VS HEC 6000 IN ARCHITECTURAL PAINT

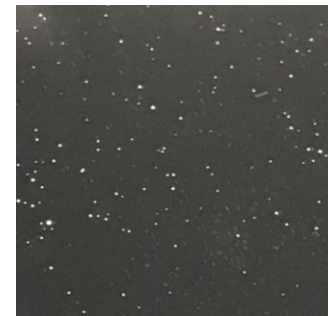
Guar Gum

► Similar rheological profile

*Styrene-acrylic formulation PVC 80
0,4% thickener*



► Comparable spatter resistance by roller application

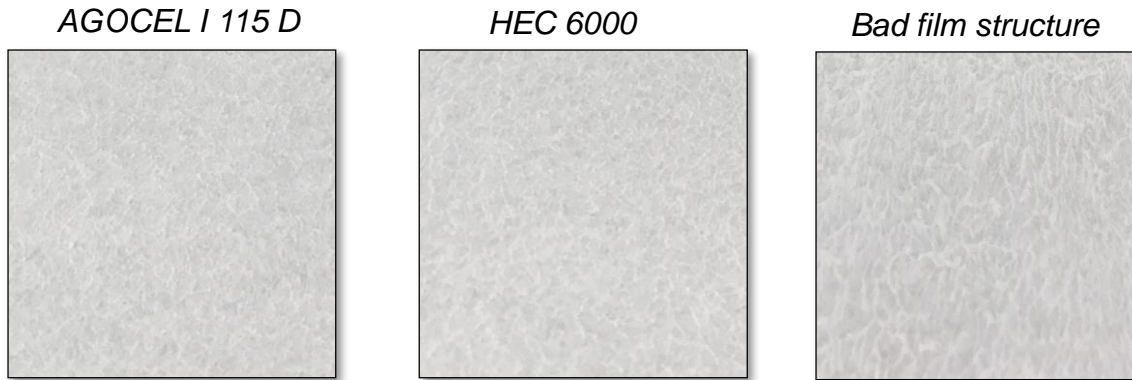


*Spattering produced
by AGOCEL I 115 D
product*

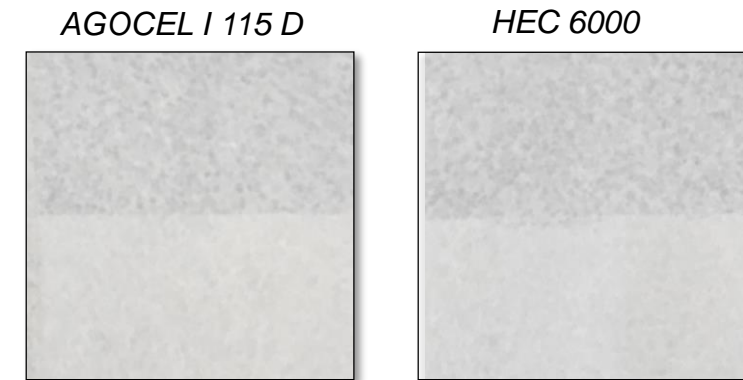


*Spattering produced
by HEC 6000 product*

► **Similar film structure**



► **Similar coverage**



► **Good storage stability**

	AGOCEL I 115 D	HEC 6000
<i>Change in viscosity after 2 weeks at 50°C</i>	+ 20%	+ 33%

► **Same whiteness**

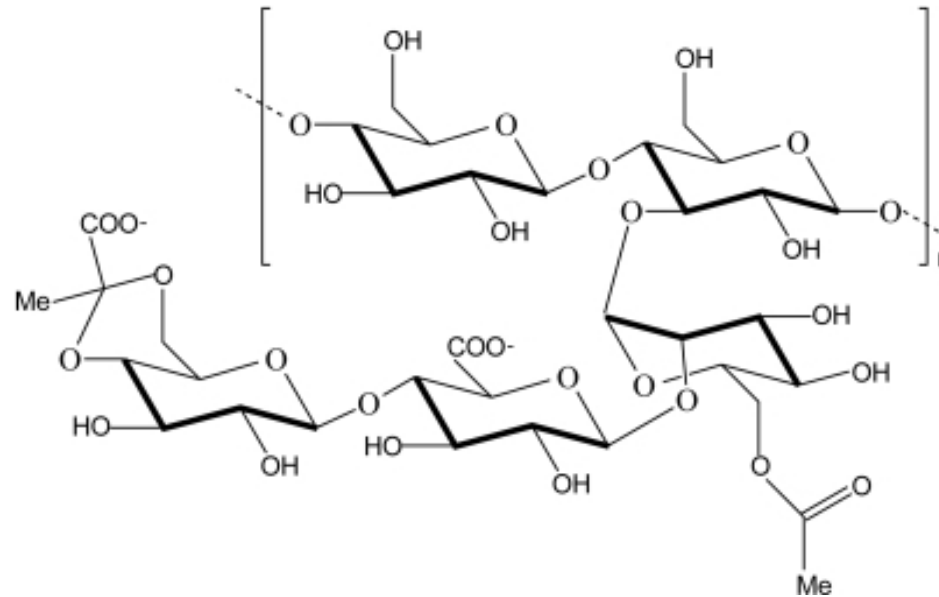
► **Same open time**

► **Price convenience**

XANTHAN GUM

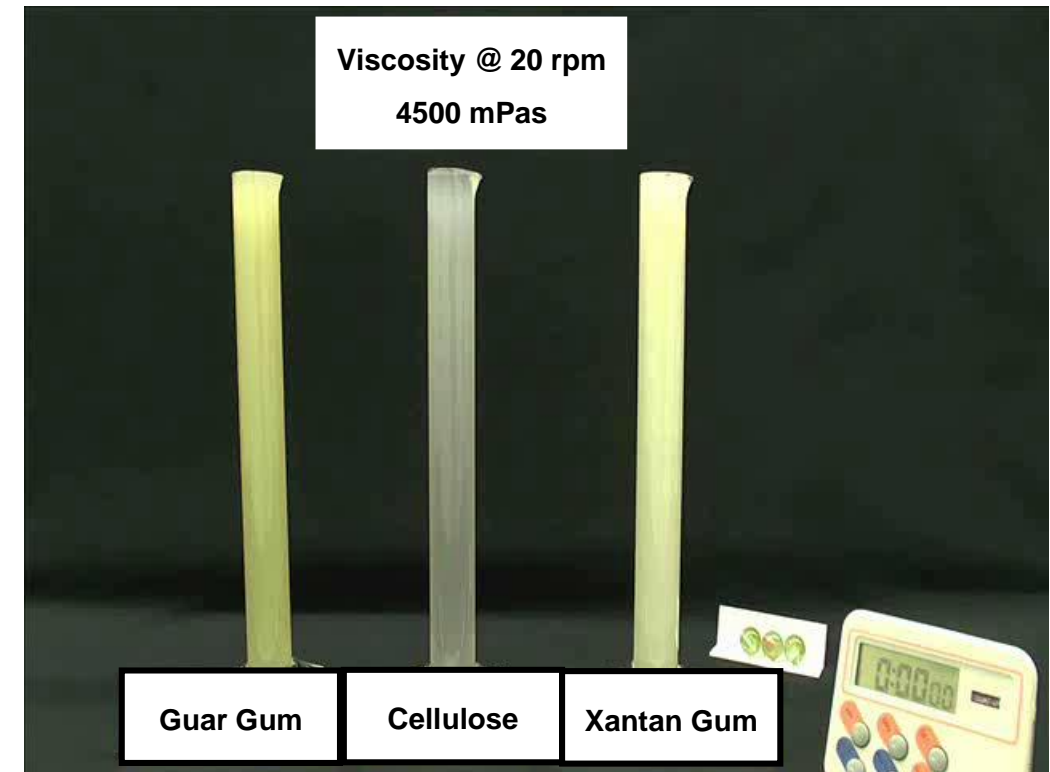
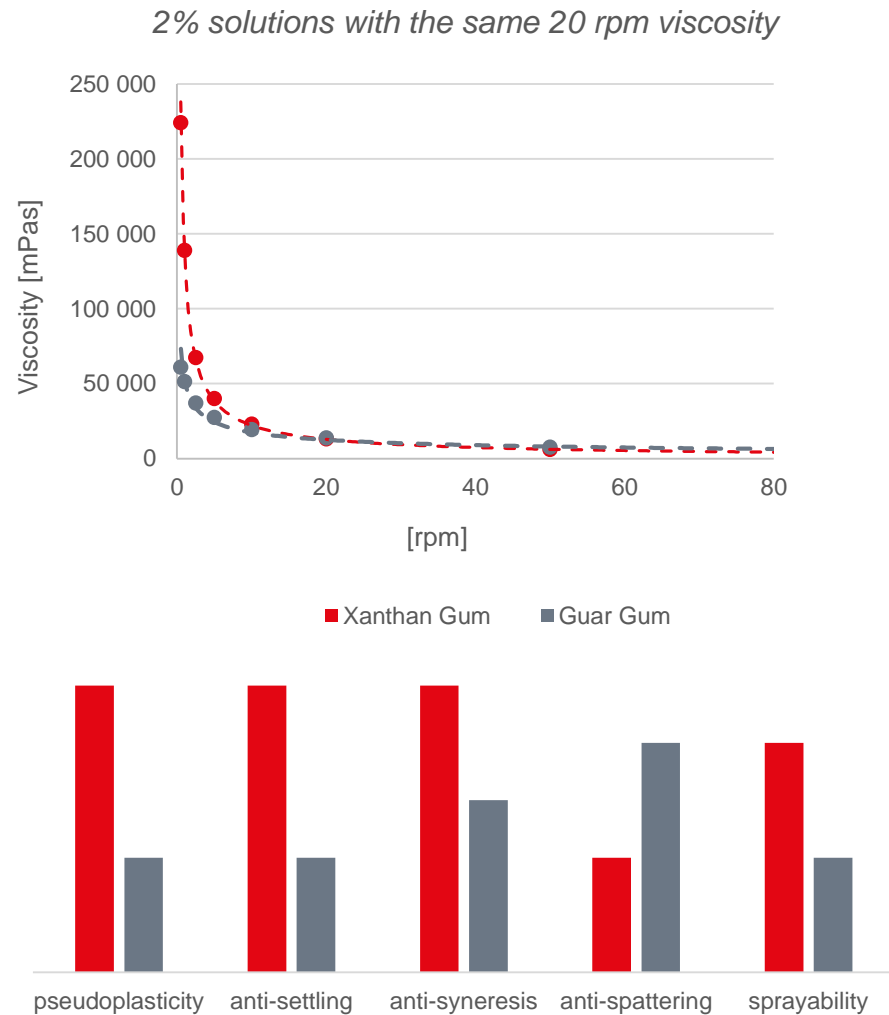
XANTHAN GUM

- ▶ Natural high molecular weight polysaccharide
- ▶ Produced by the action of bacterium *Xanthomonas Campestris* in sugars
- ▶ Pentasaccharide biopolymer made by two mannose back bone units and glucuronic acid side chains



** may be crosslinked to get a retarded swelling time (D types)*

XANTHAN GUM – DIFFERENCE WITH GUAR GUM



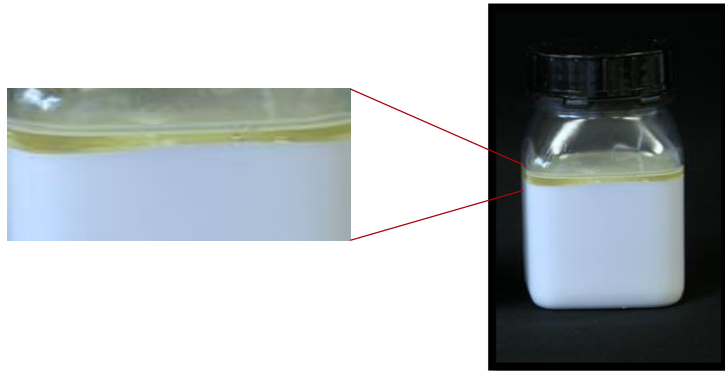
XANTHAN GUM DERIVATES – CORE RANGE

Product	Chemical basis	Retarded Swelling Time	Viscosity Level	Properties		Dosage [%]	Characteristics
				Low-shear	High-shear		
AGOCEL® V 500 D	Xanthan	Yes	High	+++	+	0,01 - 0,5	Very efficient in the low-shear rate. Positive influence on the anti-settling behavior.
AGOCEL® V 600	Xanthan	No	Medium/High	++	+	0,01 - 0,5	Good stability in silicate systems . High transparency.

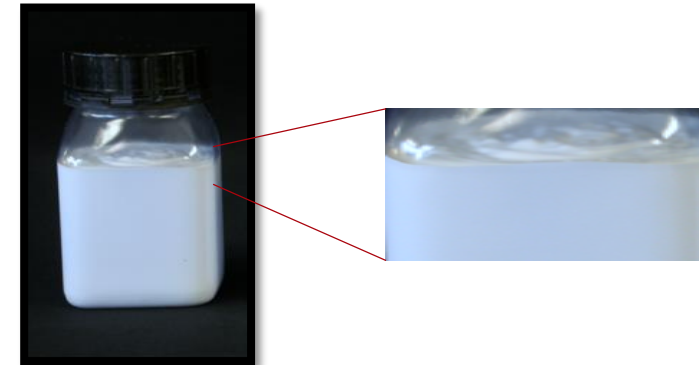
AGOCEL V 500 D - HIGHLIGHTS

Xanthan Gum

- ▶ Excellent co-thickener to avoid serum formation (syneresis) in architectural paints



Common thickening system



Common thickening system + 0,05% Agocel V 500 D

- ▶ Decorative metal paints



- ▶ Pigment Pastes



- ▶ Decorative plasters/putties



AGOCEL V 600 - HIGHLIGHTS


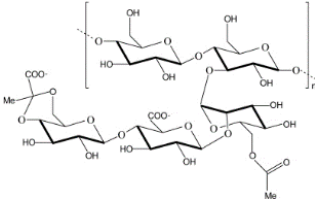
Designed to provide excellent stability

- ▶ at different pH levels, temperatures and presence of salts

System	Product with	Change in Vx after 2 weeks 40°C
Alkaline (silicates)	Agocel V 600	+15-25 %
	Standard Thickeners	+30-70 %
Acidic	Agocel V 600	-10 %
	Standard Thickeners	-30/50 %

- ▶ Providing transparent solutions if compared with other standards in the market

CONCLUSIONS

	ADVANTAGES	RECOMMENDED IN
GUAR GUM 	<ul style="list-style-type: none"> ▶ Cost effective and sustainable HEC alternative 	<ul style="list-style-type: none"> ▶ Architectural Paints with medium-high PVC ▶ DIY products
XANTHAN GUM 	<ul style="list-style-type: none"> ▶ Excellent anti-settling behaviour ▶ Effective at low dosages 	<ul style="list-style-type: none"> ▶ Architectural Paints ▶ Plasters & Putties ▶ Pigment Pastes



WE STAND FOR

„SMART CHEMISTRY WITH CHARACTER“

Thank you very much for your attention

