



SUSTAINABLE RHEOLOGICAL ADDITIVES FOR ARCHITECTURAL PAINTS

RHEOLOGY

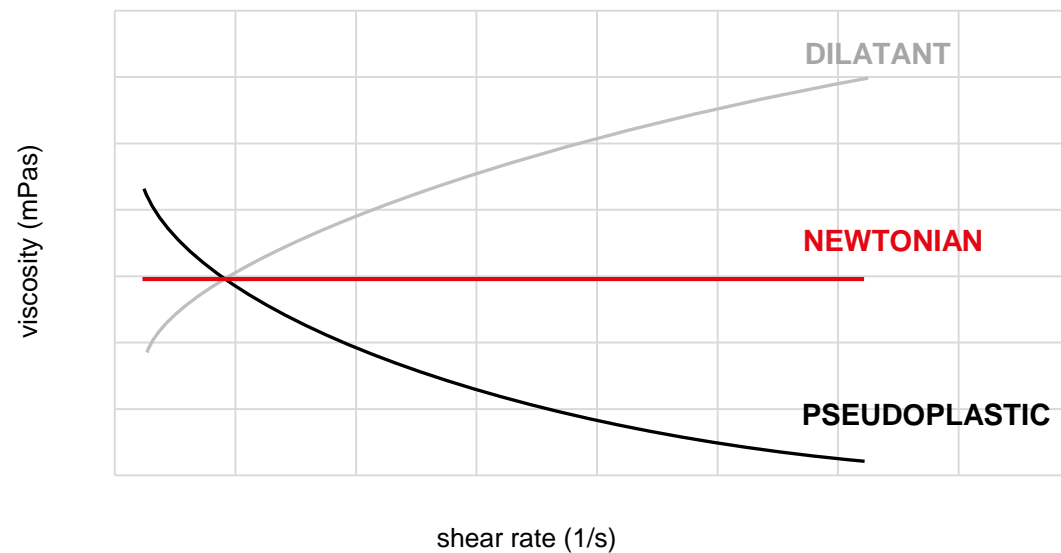
Study of the flow and deformation of materials

VISCOSITY

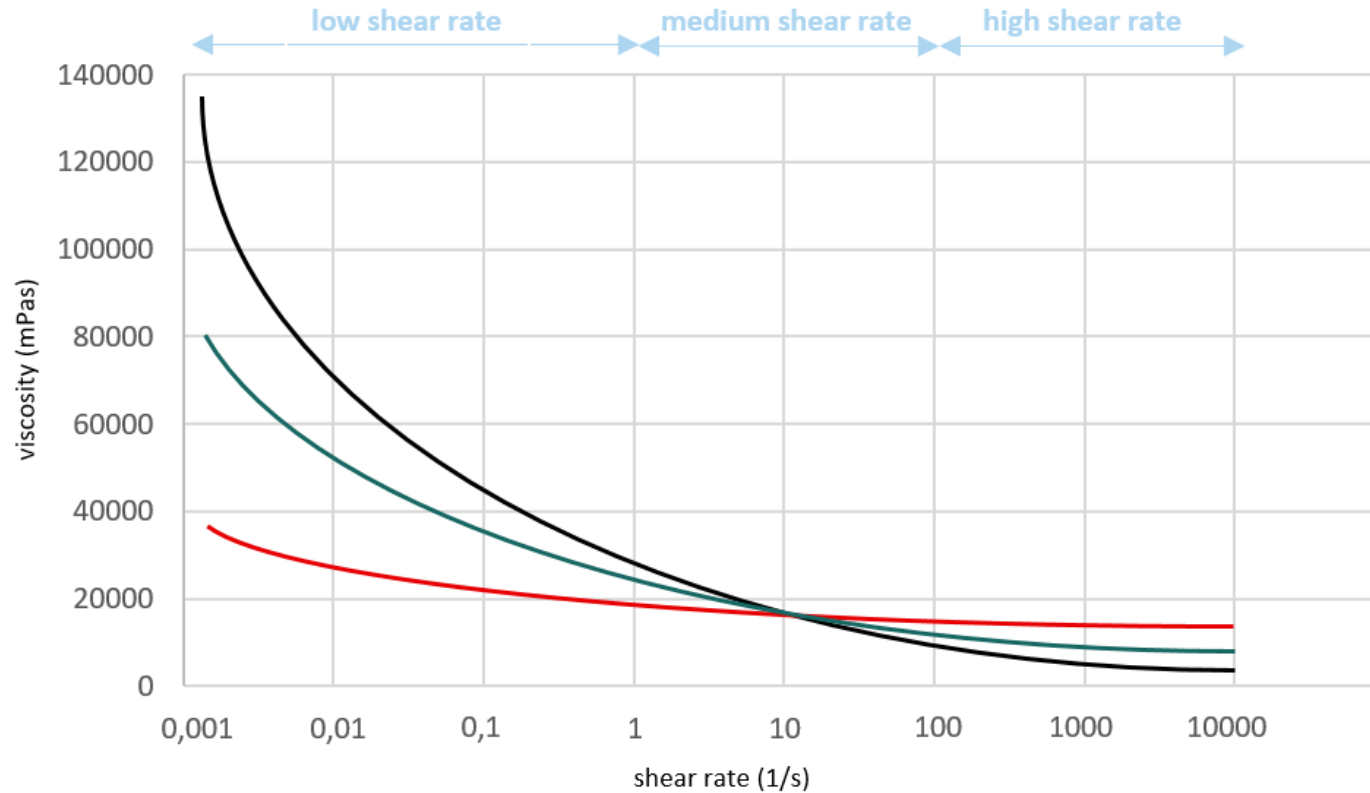
Resistance of a substance to flow after a certain force is applied to the system

SHEAR RATE

Parameter connected to the force applied to the system

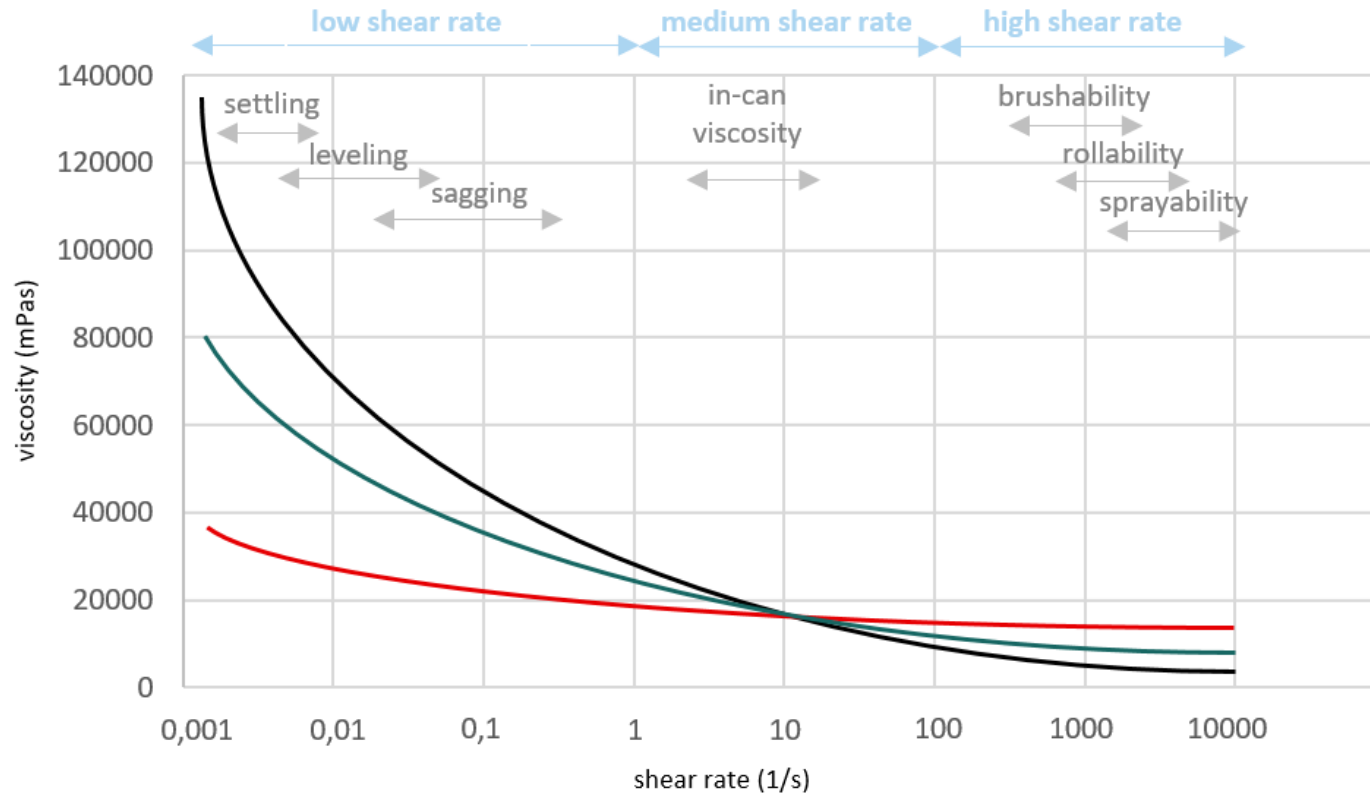


RHEOLOGICAL PROFILES



- high pseudoplastic system
- low pseudoplastic system
- balanced behaviour

RHEOLOGICAL PROFILES



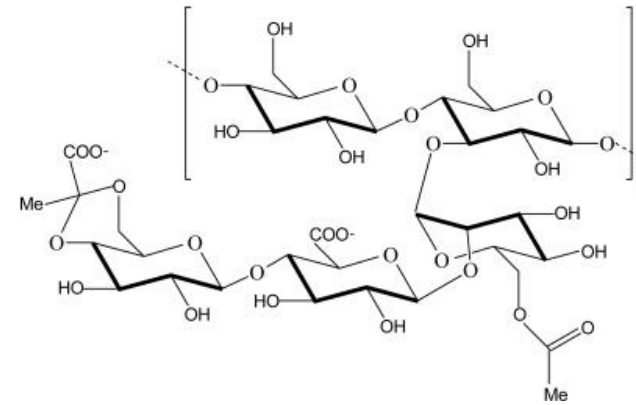
- high pseudoplastic system
- low pseudoplastic system
- balanced behaviour



CHT SUSTAINABLE TECHNOLOGIES...



GUAR GUM



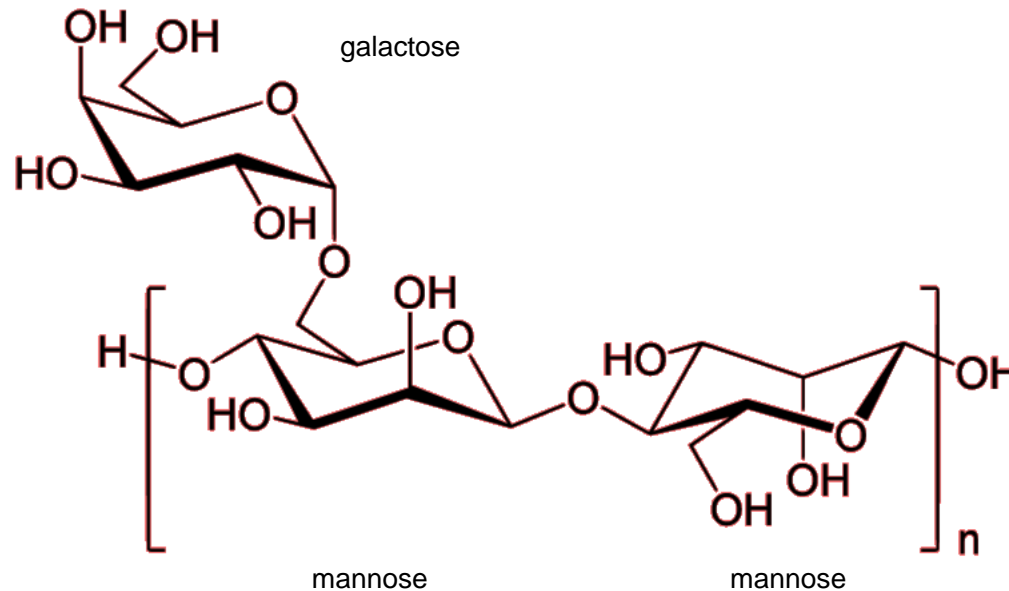
XANTHAN GUM

...TO FULFILL DIFFERENT RHEOLOGICAL DEMANDS

GUAR GUM

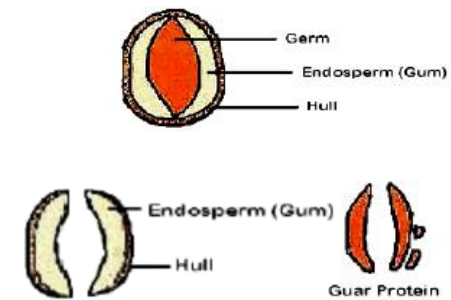
WHAT IS GUAR GUM

- ▶ 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



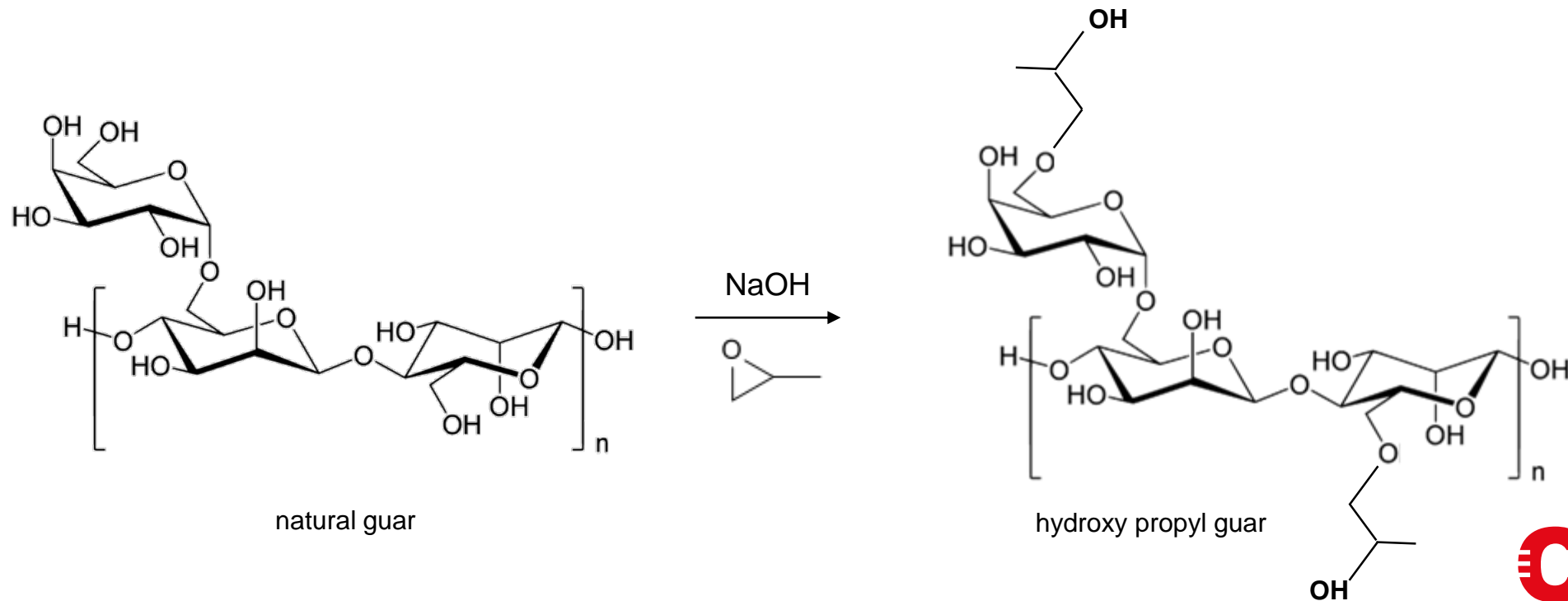
GUAR POWDER PRODUCTION

- ▶ 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.

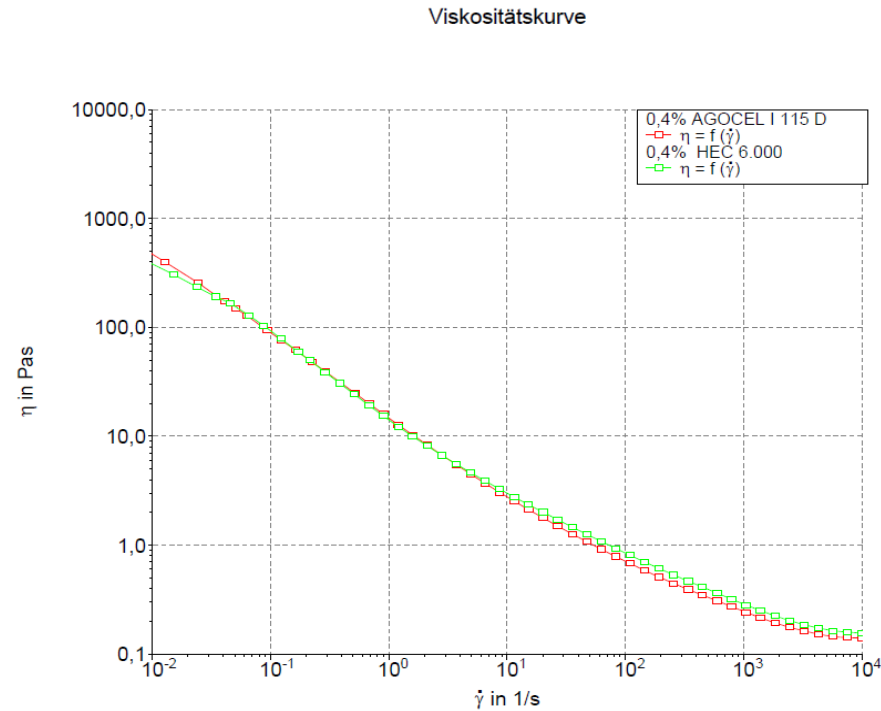
AGOCEL I 115 D VS HEC 6000

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

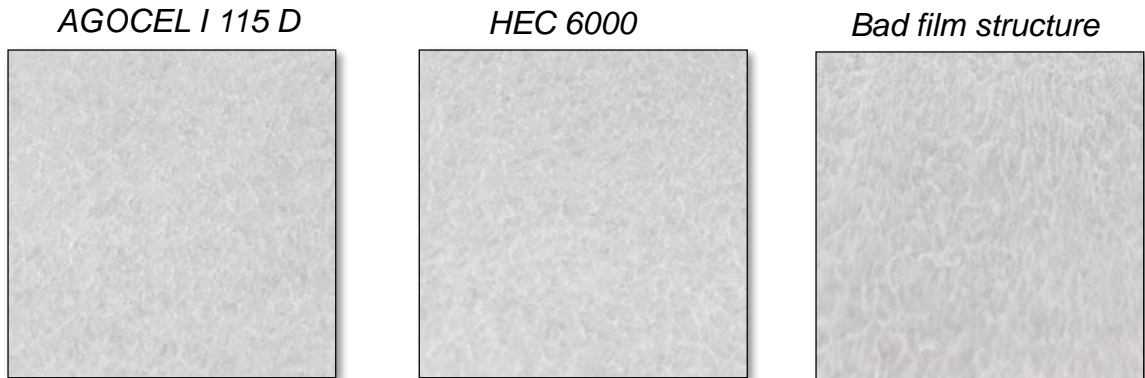


*Spattering produced
by AGOCEL I 115 D
product*

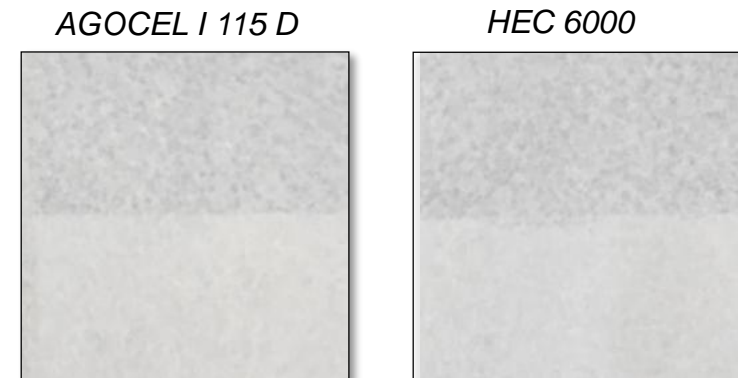


*Spattering produced
by HEC 6000 product*

▶ **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**

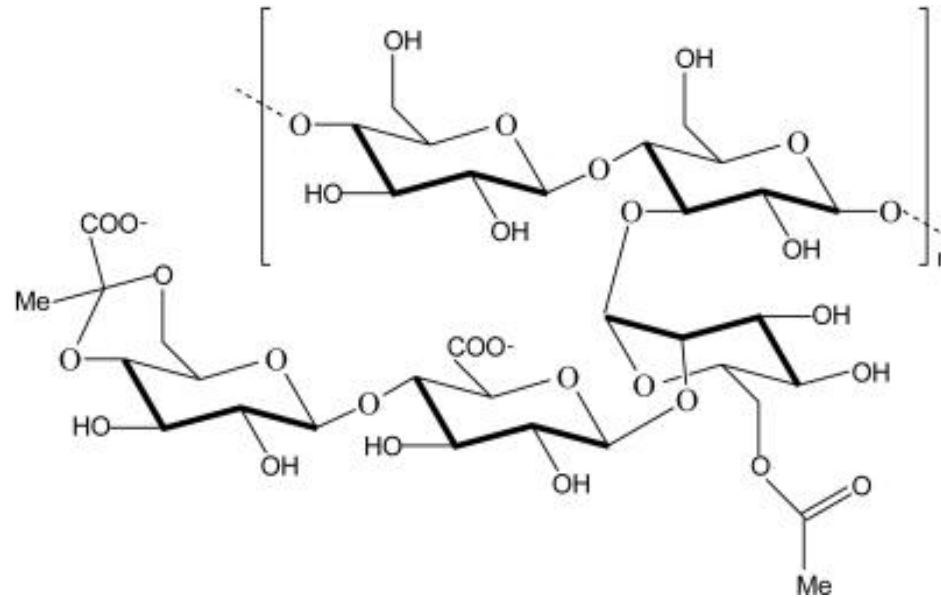
▶ **Same open time**

▶ **Price convenience**

XANTHAN GUM

XANTHAN GUM

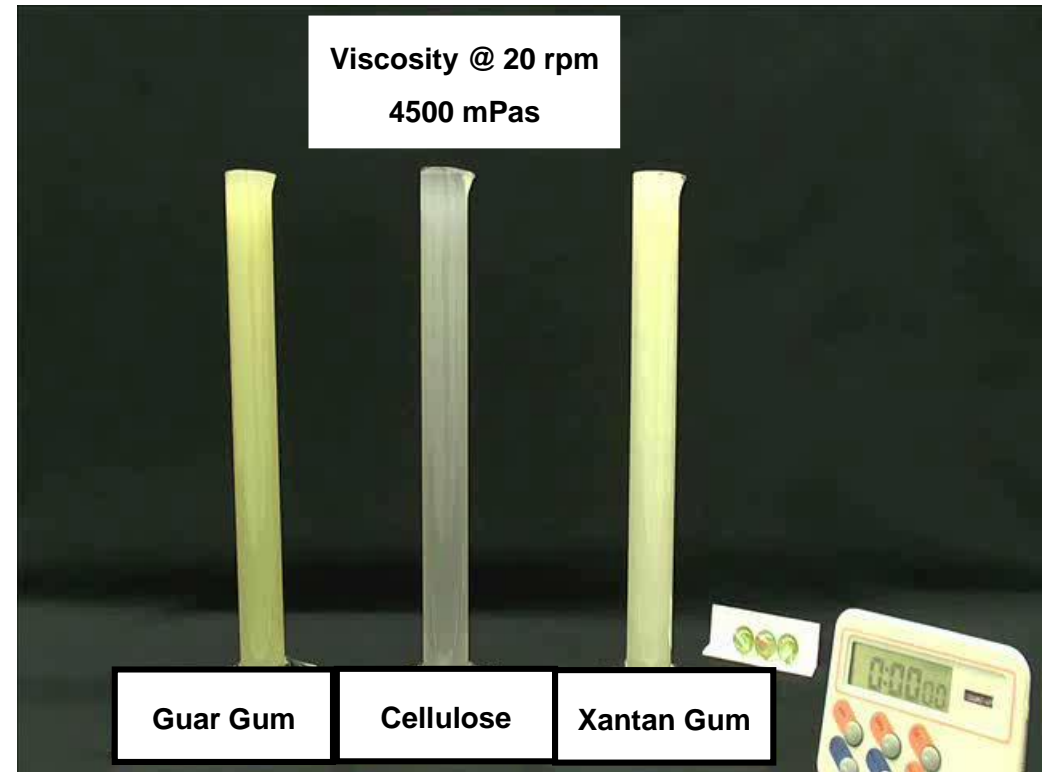
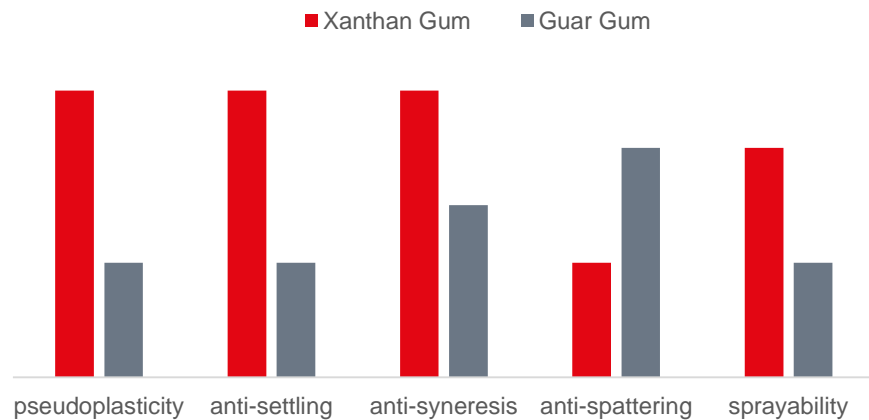
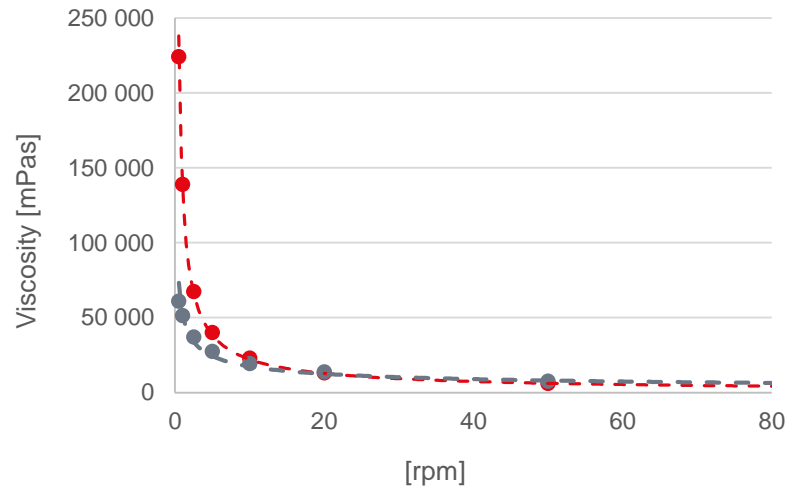
- ▶ Natural high molecular weight polysaccharide
- ▶ Produced by the action of bacterium *Xanthomonas Campestris* in sugars
- ▶ Pentasaccharide biopolymer made by two mannose back bone units and glucuronic acid side chains



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

XANTHAN GUM – DIFFERENCE WITH GUAR GUM

2% solutions with the same 20 rpm viscosity



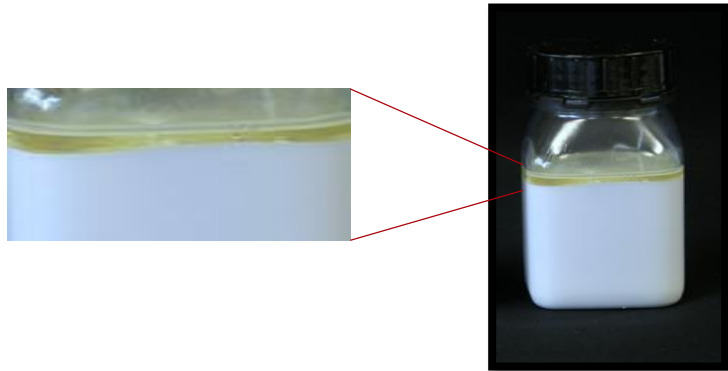
XANTHAN GUM DERIVATES – CORE RANGE

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.

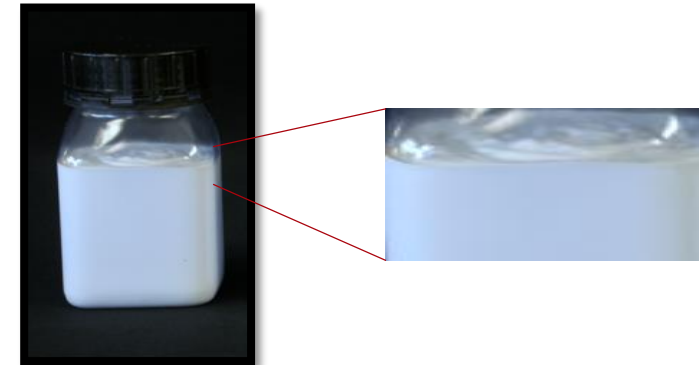
AGOCEL V 500 D - HIGHLIGHTS

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


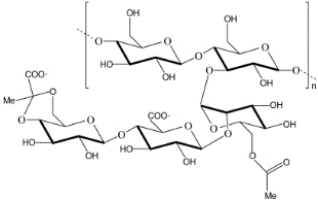
Designed to provide excellent stability

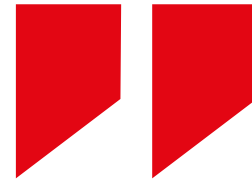
- ▶ at different pH levels, temperatures and presence of salts

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
<p>GUAR GUM</p> 	<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
<p>XANTHAN GUM</p> 	<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

CHT
SMART CHEMISTRY
WITH CHARACTER.