



TOLSA  GROUP

CIMSIL[®]

**ADDITIVES
FOR CONSTRUCTION**





CONSTRUCTION PAINT & BITUMEN

Rheological additives, Surface active and Spherical Fillers for Construction materials, coatings, bitumen & polymers
PANGEL PANSIL ULTRASPHERES MICROSIL FILLITE



PERFORMANCE MATERIALS

Industrial bentonites for Oil & Gas, Foundry, Civil Engineering & Paper, Waterproofing and Environmental Remediation
BERKBENT BERKSEAL HYBOND FILLITE



FEED & AGRO

Binders, carriers and Rheological additives for Animal nutrition, Fertilizers & Crop Protection
EXAL SPLF ATOX PANGEL PANSIL



ENVIRONMENTAL

Refining & Purification, Water & Waste Treatment, Spillage Prevention and Remediation
MINCLEAR ABSONET



TOLSA GROUP Raw Materials

Tolsa Group manufactures engineered mineral products based mainly in Special Clays used as absorbents carriers, binders, **thickeners**, thixotropes, suspending agents or high absorption fillers from selected:

S e p i o l i t e

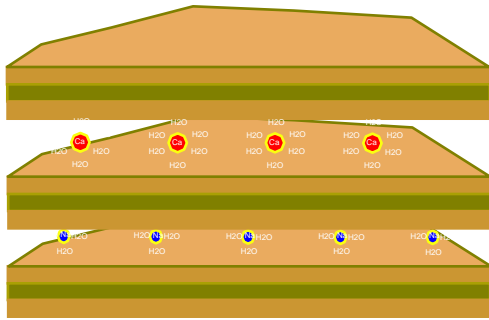
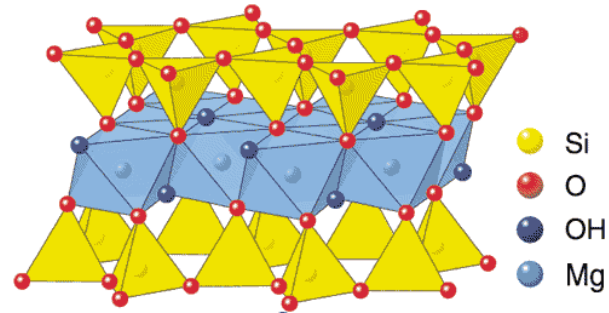
B e n t o n i t e s

A t t a p u l g i t e

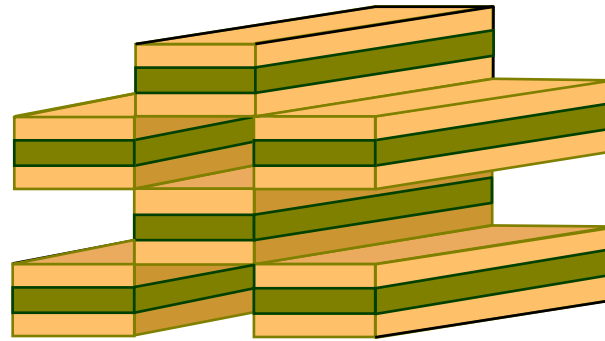




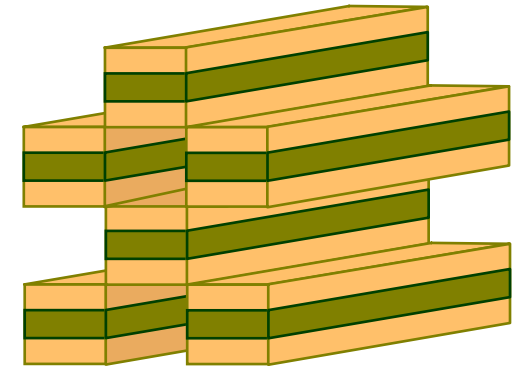
Phyllosilicates Structure



**Smectites
(Bentonites)**



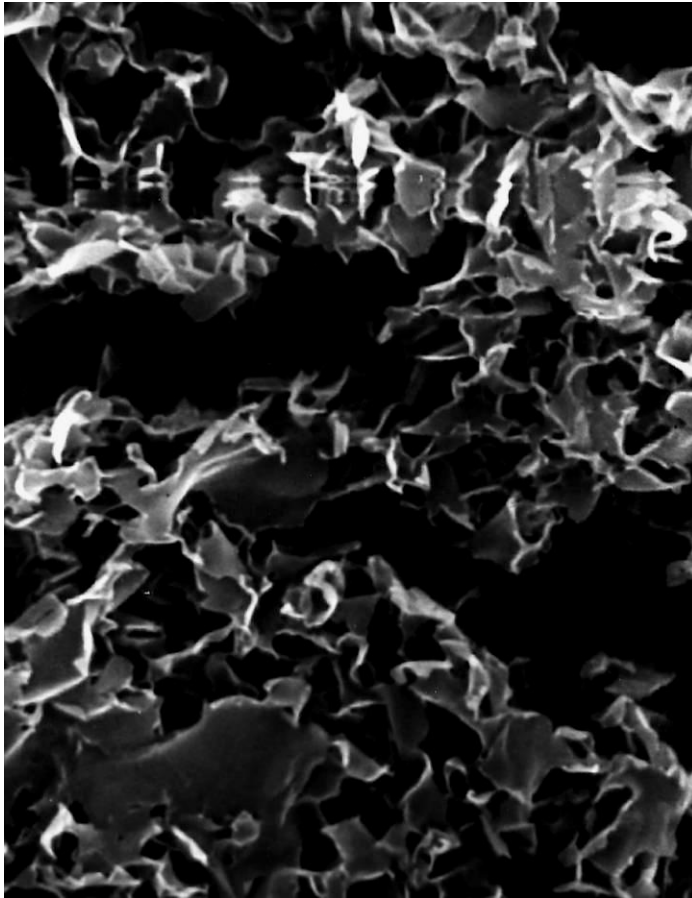
Sepiolite



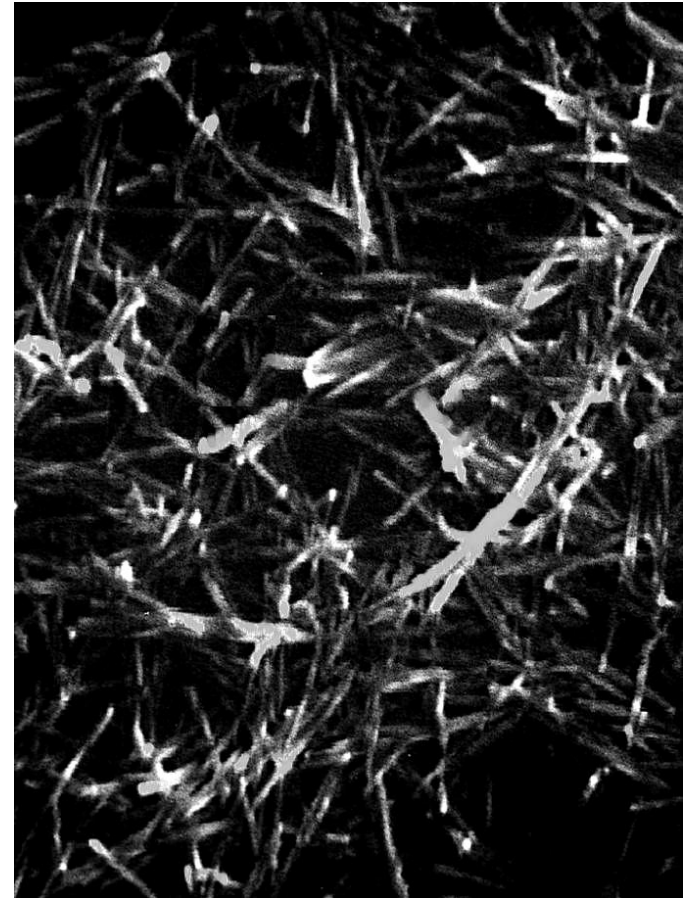
Attapulgite



Bentonite & Sepiolite



Bentonite (Smectites)



Sepiolite & Attapugite

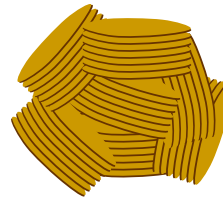
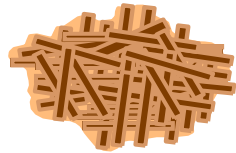


Effect of Dispersion

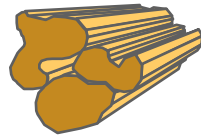
Pangel S

Pangel M

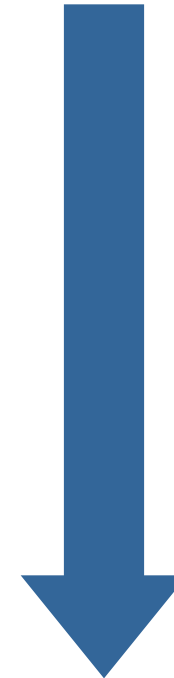
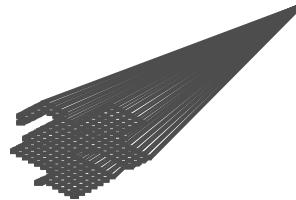
**Agglomerate
of bundles**



**Bundle of
Particles**



**Elementary
Particle**



No thickening

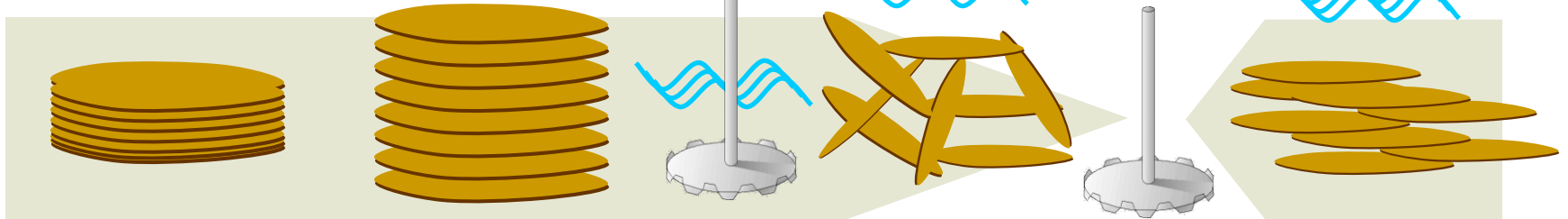
**RHEOLOGICAL
ADDITIVE**

**HIGHLY EFFICIENT
RHEOLOGICAL
ADDITIVE**



Clays Gelling Mechanism

SHEET LIKE

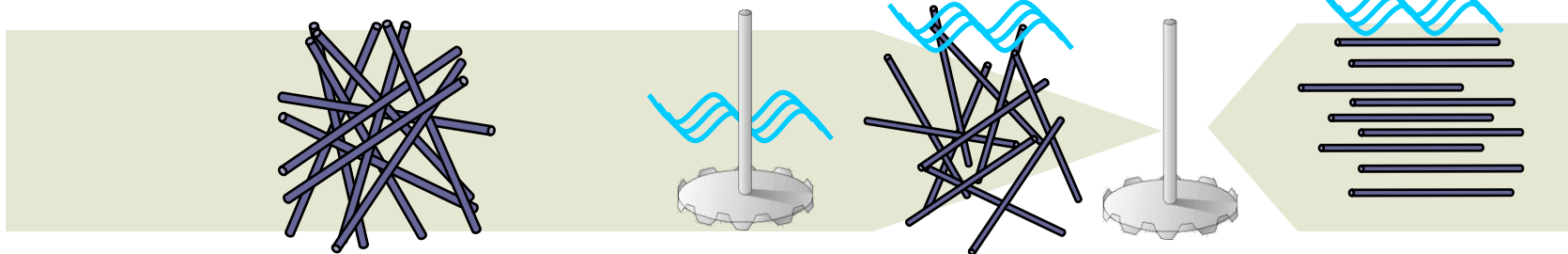


SWELLING

GEL STRUCTURE

STRUCTURE TEMPORARY DESTROYED

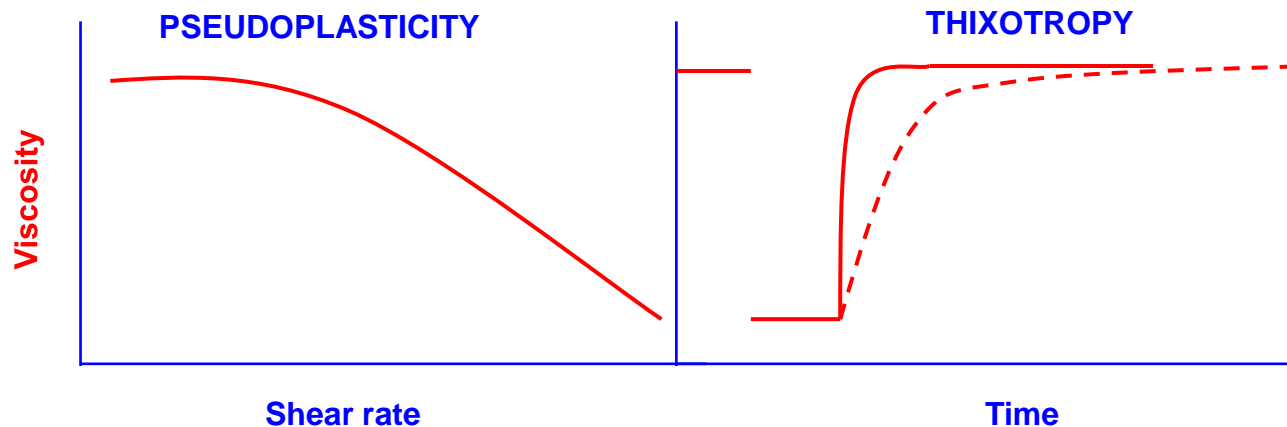
NEEDLE LIKE





PANGEL/CIMSIL Line

- PANGEL & CIMSIL additives are highly pseudoplastic products with excellent thixotropy based in different silicate minerals
 - ✓ high pseudoplastic leads to an excellent control of sedimentation
 - ✓ Excellent thixotropy allows to apply thick layer without sagging
 - ✓ For comparable consistency better levelling





Uses of CIMSIL in Construction

Rheological Additives for:

- Cement based adhesives (Tile Adhesives)
- Projected and Hand applied mortars and plasters for walls
(renders, monolayer, skim-coats, stucco)
- Self-levelling mortars
- Waterproofing and repairing mortars
- Masonry mortars

- Resin based adhesives (Tile Adhesives)
- ETICS / EIFS / Acrylic Renders
- Joint Fillers
- Concrete admixtures



Benefits of using **CIMSIL** in Construction

CIMSIL[®]

- Improvement of the **Workability** (easier and faster application and throwelling, easier to spray)
- Control of **Sagging** (renders) , **Slidding** (in tile adhesives) and rebound (in projected mortar or concrete)
- Reduction of segregation and bleeding in mortars and stabilization of water slurries and suspensions to avoid bleeding
- Improvement of surface finishing
- Consistency control



Additives for Construction

- **Highly Purified Clays**

- Sepiolite based (Cimsil A55, A55G and A35)
- Atapulгите based (Cimsil G30)
- Bentonite based (Pangel M90, AM13, M280)

- **Organic modified Clays for specific applications**

- Cimsil C series for dry mix systems
- Cimsil D series for dispersion based systems



Additives for Construction

Powder products

Cementitious mortars, Gypsum and lime products and powder Joint fillers

- The final customer mix the product
- Normally it is mixed at low shear
- Clays easy to disperse should be used (CIMSIL A55G)

Ready to use products

Tile adhesives, Renders and Plasters and Joint filler

- The product is mixed in the factory
- Different shear mixing forces are applied depending on the application
- Different clays can be used for the best cost/efficiency (Pangel M clays , Cimsil A35 or G30)



Applications Powder Products

*Dentro de la tierra. Dentro de nuestras vidas.
Inside the earth. Within our lives.*

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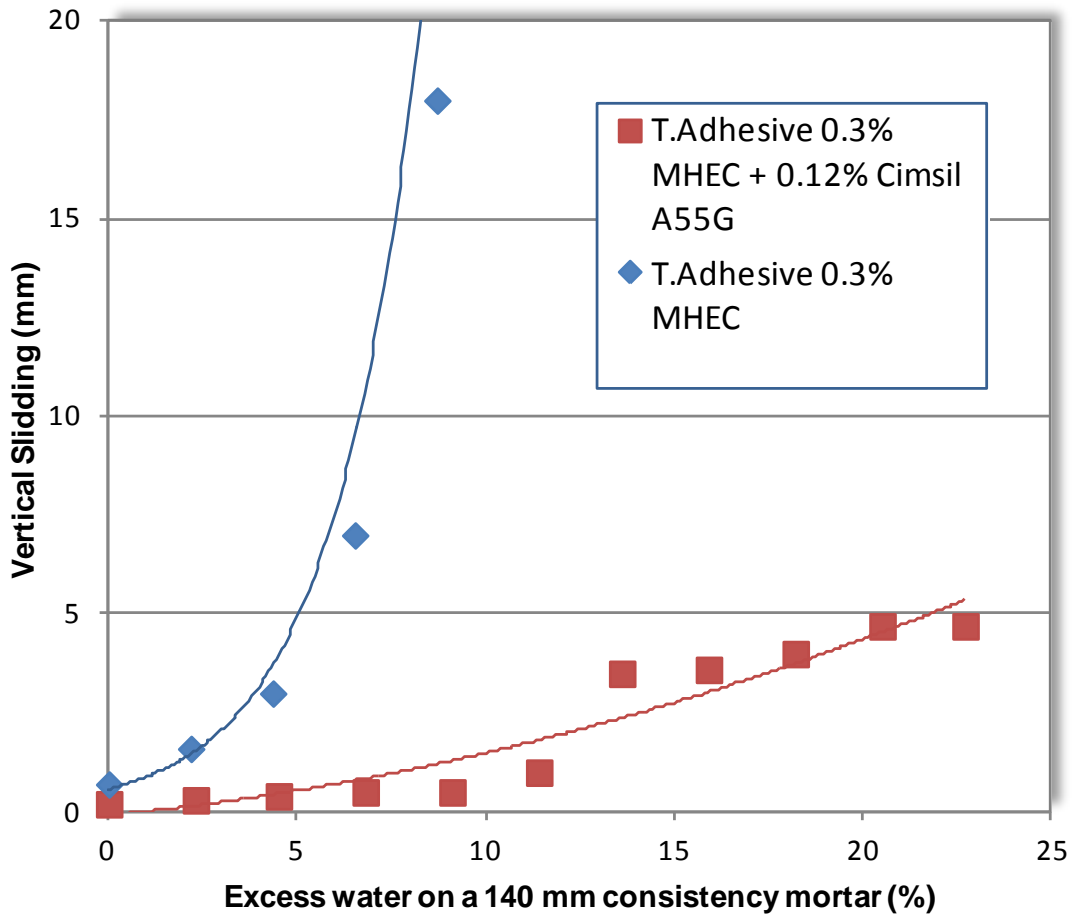


Cimsil A55G improves CTA workability while enhances slip resistance





TILE ADHESIVES



CIMSIL A55G is an excellent anti-slip additive. In addition the joint use of CIMSIL A55G and Cellulose Derivative improves slip resistance even with unexpectedly high water dosages allowing **more flexibility for the workers** with the water mix

C1 tile adhesive mortar under an excess of water addition.



Cimsil A55 also improves slip resistance of cellulose ethers





Special clays as antislip additives in CTA under EN12004

Components		Formulation 14	Formulation 15	Formulation 16	Formulation 17
Steidle sand	Wt.-%	60	60	60	60
CEM I 42.5	Wt.-%	40	40	40	40
XCS 41120.00	Wt.-%	0.4	0.4	0.4	0.4
DLP 210	Wt.-%	4.0	4.0	4.0	4.0
Bentone GS	Wt.-%	1.0			
Minugel 200*	Wt.-%		1.0		
Optibent CP+	Wt.-%			1.0	
Pangel S-9	Wt.-%				0.5
Water	Wt.-%	28	28	28	28

Properties					
Rheology					
BF 0.5 rpm	mPa·s	3,600,000	3,974,000	2,690,000	3,290,000
BF 5.0 rpm	mPa·s	528,000	598,000	478,000	440,000
BF 50 rpm	mPa·s	93,000	100,000	85,000	77,000
Slip	mm	1.0	1.0	1.0	0.5
Tensile adhesion strength					
20 minutes open time	N/mm ²	1.95	1.41	1.90	1.32
30 minutes open time	N/mm ²	0.99	0.48	1.07	0.94
Water immersion	N/mm ²	0.84	0.74	0.85	0.81
Heat aging	N/mm ²	0.90	0.64	0.94	0.79

In a technical report elaborated by DOW Construction sepiolite was compared with a hectorite (Bentone GS), a bentonite (Optibent CP) and an attapulgite (Minugel 200). Only half dosage of sepiolite compared to the other clays was needed to have the same viscosity and still the CTA formulated with sepiolite has showed to have less slip.

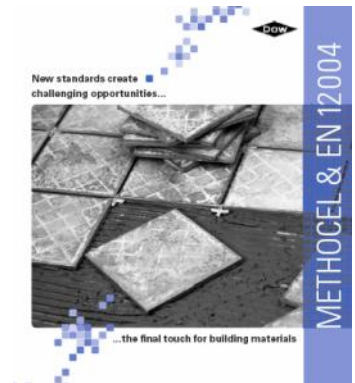


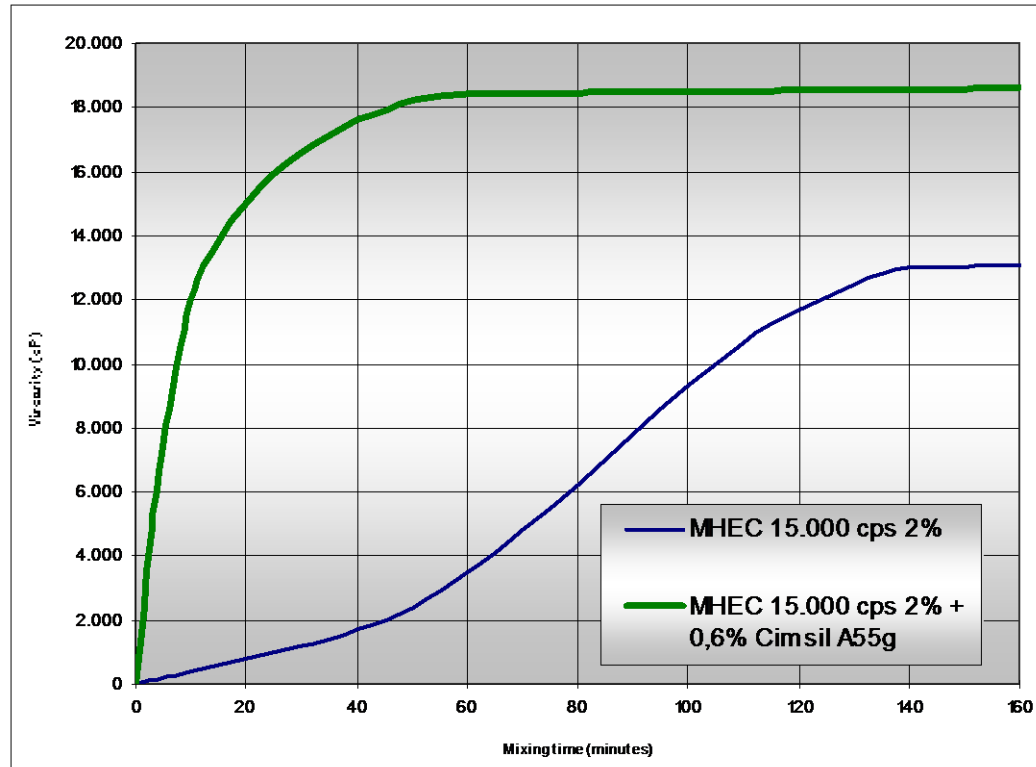
Table 7
The effects of different sheet silicates on the properties of a tile adhesive.

Results: Bentone GS, a hectorite and Optibent CP, a bentonite, have nearly the same effect on the tensile adhesion properties. Optibent CP increases the viscosity to a lesser degree than Bentone GS. Attapulgites, such as Minugel 200 increase the consistency, but they have a negative influence on tensile adhesion properties. In particular, the open time and the adhesion after the heat aging deteriorate. Pangel S-9, a sepiolite has proven to be most effective. The thickening effect is twice as efficient as hectorite or bentonite. In practice this means that only half the dosage level is required to reach the same viscosity. The tensile adhesion is not influenced and remains high.



Synergy with Cellulose Derivatives

Synergistic effect between CD and sepiolite reduces gelling time and increases thickening capacity





TILE ADHESIVES

Main effects of CIMSIL additives on the mortar:

- ✓ CIMSIL additives provide better workability
- ✓ CIMSIL additives avoid sliding
- ✓ CIMSIL additives provide excellent stability to unexpected variations in water dosage
- ✓ CIMSIL additives does not affect: open time, water immersion or heat aging requirements, fulfilling the Standards.

CIMSIL additives improve the overall quality of CTA's, especially those with sliding problems and/or those based on unmodified CE.



MONOCOAT & RENDERS





MONOCOAT & RENDERS

Renders general composition:

- Cement and/or lime
- Agregattes/Fillers (Silica or limestone sand)
- Cellulose derivatives: Water retention additive
- Other (waterproffing additives, redispersable polymers, fibers, air entrained additives ...)



MONOCOAT & RENDERS

Main effects of CIMSIL additives on the mortar:

- CIMSIL additives provide better workability
- CIMSIL additives avoid sagging
- CIMSIL additives provide excellent surface finishing

CIMSIL additives improve the overall quality of mortars, specially on those with pumpability, workability or sagging problems. It improves performance of mortars based upon unmodified CD.



Other Applications

- **ETICS** (External Thermal Insulation Composite System) / A35
- **Self Leveling Mortars (SLU)** / A55G
- **Gypsum Plasters** / A55, G30
- **Joint Fillers** / G30, M90F and A35
- **Dry Shotcrete** (reduce the rebound) / A55G



Applications Ready to use or Pastes

*Dentro de la tierra. Dentro de nuestras vidas.
Inside the earth. Within our lives.*

TOLSA  GROUP



RESIN BASED MORTARS

PANGEL/CIMSIL improve workability, sag and sliding control, thixotropy, segregation and bleeding in:

1- JOINT FILLERS

2- TILE ADHESIVES

3- RENDERS & PLASTERS

Products recommended:

1- Bentonite: M90F and M280

2- Attapulgate: CIMSIL G30

3- Sepiolite: CIMSIL A35



RESIN BASED MORTARS

The higher the viscosity of the final product is profitable the use of bentonites in this application, because easier is the clay dispersion compare with a sepiolite





Construction Product Line & Application

APPLICATION	PRODUCT	Recommendations
Tile Adhesives & Tile grouts	Cimsil A55G	Additive to combine with cellulose derivatives
Resin Based Tile Adhesives and plasters	Pangel M90 Pangel M280 Cimsil G30 Cimsil A35	Thickener to combine with organic thickeners
Monolayer & projected mortars Rendering Mortars	Cimsil A55G	Additive to combine with cellulose derivatives
Self Leveling	Cimsil A55G	Additive to combine with cellulose derivatives



Construction Product Line & Application

APPLICATION	PRODUCT	Recommendations.
Shotcrete	Cimsil A55G Cimsil L25	Powder thixotropic agent Liquid high performance additive
Filling mortars for Tunneling	Cimsil L25 Cimsil AM13	Liquid high performance additive For immediate consistency recovery Powder additive for improving waterproofing characteristics, reduction of cement & water and consistency control
Gypsum: Dry Joint Fillers	Cimsil G30	Low cost thixotropic additive
Gypsum: Resin Based Joint Fillers	Cimsil G30 Pangel M90F Cimsil A35	Low cost thixotropic additives for improving workability & Sag resistance High performance additive
Gypsum Plasters	Cimsil A55 Cimsil G30	Additives to combine with cellulose derivatives



Thanks for your attention

