



CIMSIL

Innovative Products For The Construction Sector

TOLSA range of products for construction greatly improves the rheology of mortars and pastes. Our Cimsil additives improves workability as well as anti-sag and anti-settling without impact on any other fundamental mortar characteristics.

As important as the performance properties of construction systems during their working life, are all those that guarantee the right and easy application of construction materials. Two of the most important properties with effects on applicability are workability and sag control, and both properties are closely related with the rheology of the system.

TOLSA has currently the widest clay based rheological additive portfolio for construction. The range includes milled, refined, chemically modified, and functionalized grades. TOLSA selects the best raw material and processes to offer the most suitable special clay additive for each specific application.

APPLICATIONS

- Cement based adhesives
- Resin based adhesives
- Concrete admixtures
- Projected and Hand applied mortars and plasters
- ETICS (EIFCS)
- Self-levelling mortars
- Waterproofing and repairing mortars
- Masonry mortars

TOLSA manufactures a whole range of mineral thickeners from Bentonite, Attapulgite, and Sepiolite. We choose the best raw material to give us the ideal rheological profile for each application.

- Anti-sagging properties
- Workability
- pH Stable

Special Clays

Clay based additives exhibit strong shear-thinning behaviour resulting in excellent workability and anti-sagging properties without any alteration of the chemistry of the cement or gypsum.

TOLSA, as a fully integrated special clay additive manufacturer, has chosen its unique sources of Sepiolite, Bentonite and Attapulgite to formulate the most effective additives for the construction market.

Additives derived from Sepiolite and Attapulgite are fully compatible with high electrolyte concentration and high pH, making them the ideal rheological additive for dry-mix products and admixtures.

Bentonites exhibit easy dispersion capabilities in high solids water-based systems, making them preferred option for ready-to-use paste products.

SEPIOLITE

Sepiolite is a phyllosilicate with an acicular morphology. This acicular form provides a great chemical and thermal stable structure. Systems thickened with sepiolite clay, contrary to other additives, keep stable properties at high temperatures, at a wide pH range (3-14), and have very low electrolyte sensitivity.

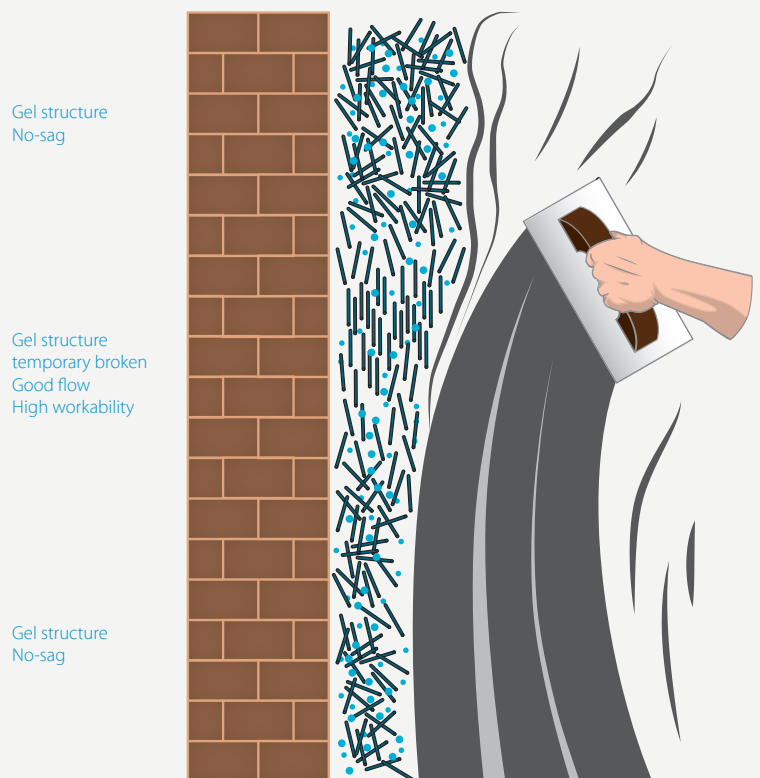
BENTONITE

Bentonite is a group of clays composed commonly by a smectite called montmorillonite. Bentonite has an extended laminar structure which holds a fairly high density of negative charge that is compensated with cations in between the layers. This is responsible for the strong interaction with water what allows them to disperse easily in high solids systems creating a fully shear thinning gel structure.

ATTAPULGITE

Attapulgite has a structure very similar to Sepiolite with the main difference being a smaller zeolitic channel. The needle has a lower aspect ratio than Sepiolite what will lead to a less efficient rheological performance but allows a less demanding energy dispersion.

PSEUDOPLASTIC AND WORKABILITY EFFECT ON MORTARS



To have the right workability makes it easier to guarantee the right application of the mortar which is critical to assure a long-term performance.

Workability is a key component related to common application techniques, hand or spray applied.

Workability

As a general rule of the thumb, a product with good workability saves time on its application, so that cost savings can be achieved. Pseudoplastic materials decrease in viscosity as the shear rate increases, improves flow at application and assists in good overall workability.

Workability is the property that defines how easy or difficult it is to apply and place a mortar.

Cimsil range of products provides an outstanding advantage in workability maintaining too high viscosities at low shear rate, which in return, gives that much improved anti-sag/anti-slip characteristic.

Cimsil products do not alter the chemistry of cement, nor the strength, setting time, adherences, nor any other structural property of the mortar.

HOW TO MEASURE WORKABILITY

Currently there is not a standardized method to test workability and is solely based upon worker opinion. TOLSA Group has developed a method based on mortar rheology to test workability.

Our standardized method, allows empirically to evaluate the workability improvement of any additive in a mortar or paste.

The method is based in comparing the "force to flow". The force to flow is the energy required to make a mortar or paste flow at different speeds of the mixer. We measure the force to flow on an specially designed and modified rheometer at different speeds.

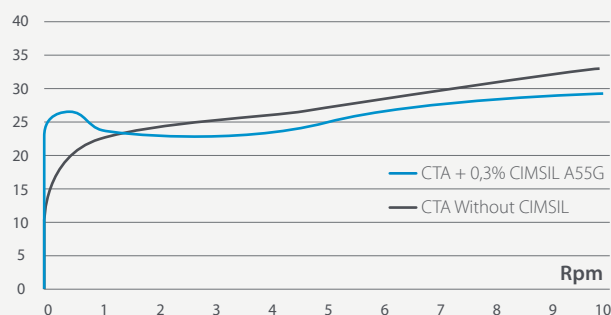
- On an unmodified mortar, the force to flow is practically linear.
- On Cimsil modified mortars, the rheological profile changes as we can see in the following chart:
 - At low speeds, force to flow increases. This is linked with anti-sagging, anti-slip properties.
 - At high speeds, force to flow decreases dramatically. This is linked with workability improvements.

This standardized comparison method between an unmodified and a modified mortar allows us to assess the improvement of both anti-sagging and workability of our additives.



CTA (Cementitious Tile Adhesive)

Torque (Nmm)



CIMSIL additives improve the overall quality of mortars, especially on those with pumpability, workability or sagging problems.

BENEFITS

- Improves workability
- Avoid sagging
- Provide excellent surface finishing

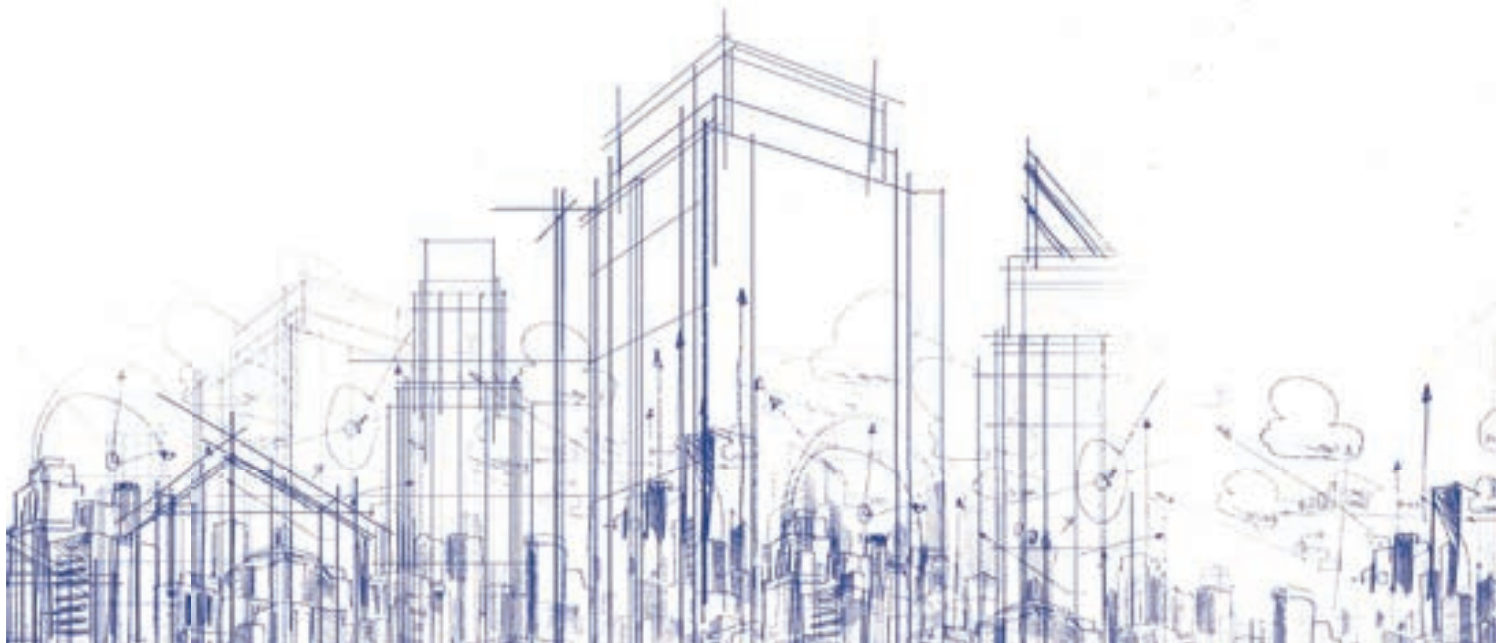
Monocoats, renders & plasters

Our additives, thanks to its high shear thinning properties, improve workability while reduce the stickiness of the tools, providing excellent surface finishes.

Cimsil products generate a strong randomly oriented, tridimensional network that provides an increase in green strength and a fast recovery of the viscosity after application, which imparts improvemen of the sag resistance. They can be used both in hand or machine applied. The high shear forces developed during spraying applications will provide outstanding results in the additive performance.



Product	Product Description	Function
Cimsil A	Highly purified Sepiolite based additives	Workability with sag control for machine and hand application Synergistic behavior with cellulose ethers
Cimsil C	Modified clay additives	Workability and sag control. Higher water demand and open time It provides clear surface finishing improvements Partial replacement of cellulose ethers



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

BENEFITS

- Provides better workability
- Avoid sliding
- Provides excellent stability to unexpected variations in water dosage
- Do not affect: open time, water immersion or heat aging requirements

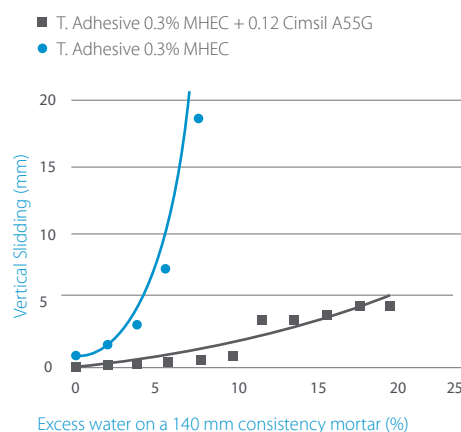
Tile adhesives

Thanks to its high shear thinning properties, our additives reduce the viscosity during application, improving workability, final appearance, and reducing stickiness on the tools while slip is prevented.

Cimsil products generate strong tri-dimensional networks in the binder-aggregate matrix, increasing the yield value and thus increasing the sag resistance and consistency of tile adhesives without deteriorating open/correction times.

Cimsil range of products increases the consistency of cement-based tile adhesives, without negative consequence on the tensile adhesion. It is possible to increase the water demand of a tile adhesive formulation with the aid of Cimsil without reducing the slip resistance and not deteriorating the tensile adhesion.

Cimsil is an excellent anti-slip, workability additive. Additionally, it improves performance with unexpectedly high water dosages allowing more flexibility of the workers with the water mix.



Product	Product Description	Function
Cimsil A	Highly purified Sepiolite based additives	Workability with slip control Synergistic behavior with cellulose ethers in cement based tile adhesives
Cimsil AM	Special Bentonite additives	Workability and slip control in cement based tile adhesives
Cimsil C	Modified clay additives	Slip control in cement based tile adhesives with open time Water demand increase
Cimsil CT	Functionalized Sepiolite clay	Total or partial replacement of cellulose derivative in cement based CTA
Pangel M	Bentonite additives	Workability with slip control Synergistic behavior with cellulose ethers in polymer dispersion based CTA
Cimsil D	Funtionalized modified clay	Total or partial replacement of cellulose derivative in polymer dispersion based CTA

Special clay products are a perfect solution to provide the right workability and sag characteristics to the ready-to-use products based in synthetic binders.

BENEFITS

- Improves workability
- Avoid sagging
- Increases consistency
- Provide excellent surface finishing

Ready-to-use and paste products

Refined Bentonite, Sepiolite and Attapulgit, provide the right complementary rheology to a variety of construction and decorative products. They can also provide benefits in applications like resin based renders, ready-to-use plasters and stuccos, joint fillers, spackles and finishing coatings for EIFS.

The key role of these additives is to optimize the rheology of the organic thickeners, improving workability of the paste, reducing trowel sticking and sagging effects on vertical surfaces. The varying nature and performance of our products allow us to provide the best rheology depending on the application.

In addition to rheological additives, TOLSA offers a range of lightweight fillers specifically designed for ready-to-use and paste products. Our Microsil range, a microsphere made out of expanded perlite, has the lowest bulk density of all microspheres family of fillers. It is ideal to reduce weight, shrinkage, crack formation and binder requirements.



Product	Product Description	Function
Pangel M	Highly purified Bentonite based additives	Workability with sag control Synergistic behavior with cellulose ethers in polymer dispersion based CTA Designed to work under low-medium shear mixing conditions in the plant
Cimsil A	Highly purified Sepiolite based additives	Workability with slip control Synergistic behavior with cellulose ethers Specially designed to be dispersed at high shear
Pangel C	Highly purified Sepiolite based additives	Workability improving additives designed to work under low-medium shear mixing conditions in the plant
Microsil	Perlite Microspheres	Reduction of shrinkage, removing also crack formation Decrease of compound weight and thermal conductivity

Cimsil A55G is a universal rheology modifier for an infinity of construction systems. It improves anti-settling and anti-sagging properties while maintaining or improving workability and pumpability.

APPLICATIONS

- ETICS/EIFS
- Self Leveling Mortars
- Wet and Dry Shotcrete
- Filling mortars
- Concrete Admixtures
- Carriers for liquid additives

Other applications

Our Cimsil can be used in the following applications:

ETICS/EIFS

Sag control additive that also improves workability of base adhesive, renders, and finishing render.

Self-leveling mortars

Cimsil A55G eliminates water bleeding and generates an homogeneous mix during pumping, application and setting.

Shotcrete

Thixotropic additive. Reduces rebound, avoids sagging and improves fresh adherence, as it works using a physical mechanism. Excellent surface finish and homogeneity.

Filling mortars

Cimsil AM assist in good aggregates transportation without segregation during pumping operations while improves considerably the waterproofing characteristics of the mortar at a low cost. Cimsil A once dispersed in water will allow a physical fast consistency recovery of the mortar when injected in tunnels behind the concrete blocks.

Concrete admixtures

Antisettling agent. Cimsil provides long-term stability for liquid admixtures maintaining inorganic solids in suspension while it reduces salting out and sticky undispersable sediments.

Carrier for liquid mortar additives

Some Sepiolite based products can be used to transform liquid additives into solid compounds avoiding caking effects during storage and reduction of the additive activity.



Selection tool

Building Materials



		Tile Adhesives	Tile Grouts	Rendering Mortars	Monolayer	Plasters & Stuccos	Filling Mortars	ETICS/EIFS	Shotcrete	Self Leveling	Joint Fillers	Ready-to-use Joint Fillers	Ready-to-use Tile Adhesives	Ready-to-use Plasters	Concrete Admixtures	Liquid Mortar Additives	
		DRY PRODUCTS										WET PRODUCTS					
Rheological Additives	Cimsil A35	○	○	○	○	○	○	○	○	○	○		◐	◐	◐	◐	
	Cimsil A55G	◐	◐	◐	◐	◐	◐	◐	◐	◐					◐	◐	
	Cimsil AM13	◐					◐										
	Cimsil CT1	◐															
	Cimsil CT2	◐															
	Cimsil D10												◐				
	Cimsil G30											◐	◐				
	Cimsil G50					◐						◐					
	Pangel C150													◐	◐		
	Pangel C200												◐	◐	◐		
	Pangel C250													◐	◐		
	Pangel M200													◐	◐		
	Pangel M280													◐	◐		
	Pangel M90F											◐	◐				
Fillers	Microsil 200 S										◐	◐					
	Microsil 325S										◐	◐	◐	◐			

◐ Recommended - ○ It can be used

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Greases Bitumen&Asphalt
Sepiolite Microsil Pangel
 Polymers **Cimsil** Esmegel
 Construction Additives **Pansil** PANSILUltraSpheres
 Paints&Coatings