



RHEOLOGICAL
ADDITIVES
FOR COATINGS &
CONSTRUCTION



LAVIOSA ARGIMEL®
LAVIOTHIX
LAVIOKOLL

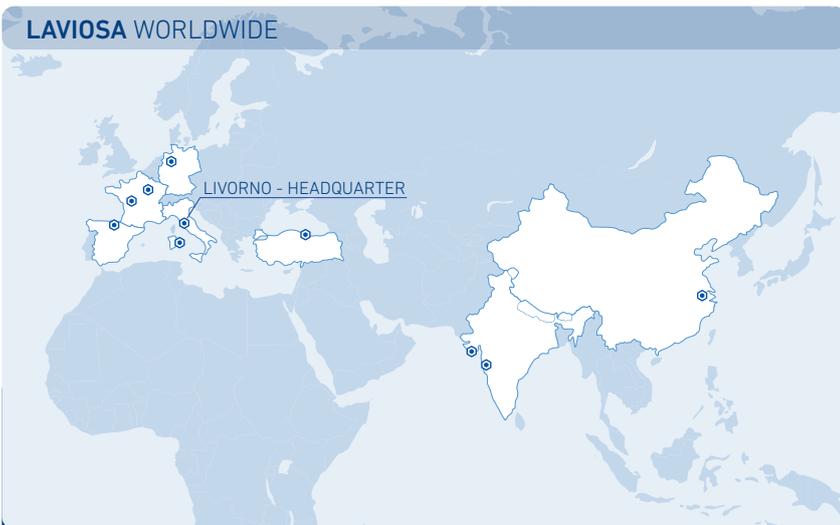


LAVIOSA



OUR COMPANY

LAVIOSA WORLDWIDE



470+

Collaborators

9

Mines

10

Plants

500k+

Processed
Materials Tons.

10+

Certifications

Our core business consists in the research and transformation of bentonites and other clay minerals into **high added-value ideas and solutions.**

Control of raw materials, process technology, production localization around the world, product applicative expertise, integrated with logistic services and a customer oriented approach are our main strengths and capabilities.

We count more than 1500 customers in over 80 countries worldwide.

Other than in **Coatings and Plastics**, our special clays are used in Lining and Waterproofing Technologies, Civil Engineering, Drilling and Tunneling, Cat Litter, Foundry, House and Personal Care, Paper, Beverage and Animal Feed, Waste Water Treatment, Ceramic and others.

The key of our success lies in our people's constant attention to innovation, integrity, sustainability in a participative work environment.



WHAT IS BENTONITE

Bentonite is a clay mineral of the smectite group and is composed mainly of **montmorillonite**.

The smectites are a group of minerals that swell as they **absorb water or organic molecules** within the structural layers; they also have considerable cationic exchange properties.

The clay mineral they are composed of in the crystalline state is derived from the devitrification, and consequent chemical change, of glass of magmatic origin, usually tufa or volcanic ash (Ross and Shannon, 1926).

The nature and **volcanic origins** of bentonite deposits give rise to varieties of the mineral that are often extremely heterogeneous. The bentonites that are thus formed can be described as **sodium, calcium and acid bentonites**.

Find out more on our websites: www.laviosa.com



SOLVENT-BORNE SYSTEMS



LAVIOSA ARGIMEL® organoclays are rheological additives that provide **thixotropy**: ie **thickening**, **anti-settling** and **anti-sagging properties** within solvent based systems. In particular they give:

- good pigment anti-settling, which allows homogeneous pigment dispersion and distribution;
- good leveling and coating thickness properties to the formulation;
- right thixotropic properties to solvent-based systems by delivering the proper viscosity control during the manufacture, storage and application processes;
- good temperature stability;
- very easy to incorporate in the formulation, they do not require heating or special equipment.

These properties depend on the effective dispersion of the LAVIOSA ARGIMEL® and the polarity of the formulation.

Our company manufactures two distinct types of LAVIOSA ARGIMEL® organoclays for solvent-borne coatings:

PREGEL ADDITION requires mechanical energy and a chemical activator to delaminate the individual platelets of each stack. The rheological behavior development is obtained through the application of shear forces and the addition of a polar substance. **The typical “pregel” technique assures** full development of product properties which means **full deagglomeration of the bentonite platelet stacks.**



It is preferred when the resin has a poor wetting capacity (epoxies, polyesters, short-oil alkyds, acrylics, etc.) and the mill base has poor thixotropy.

SELF-ACTIVATING GRADES (easy dispersible) require relatively low mechanical energy to disperse, and do not need any chemical activators to delaminate their platelets. They can be added directly as dry powders at most stages of the manufacturing process, eliminating the need of making a pregel, **greatly simplifying the incorporation procedure and reducing the possibility of mistakes.**

The “in-situ” technique implies the addition of the Laviosa Argimel® organoclay in an early stage of the paint manufacture, directly in powder form to the solvent/resin mix, before pigment addition and milling.



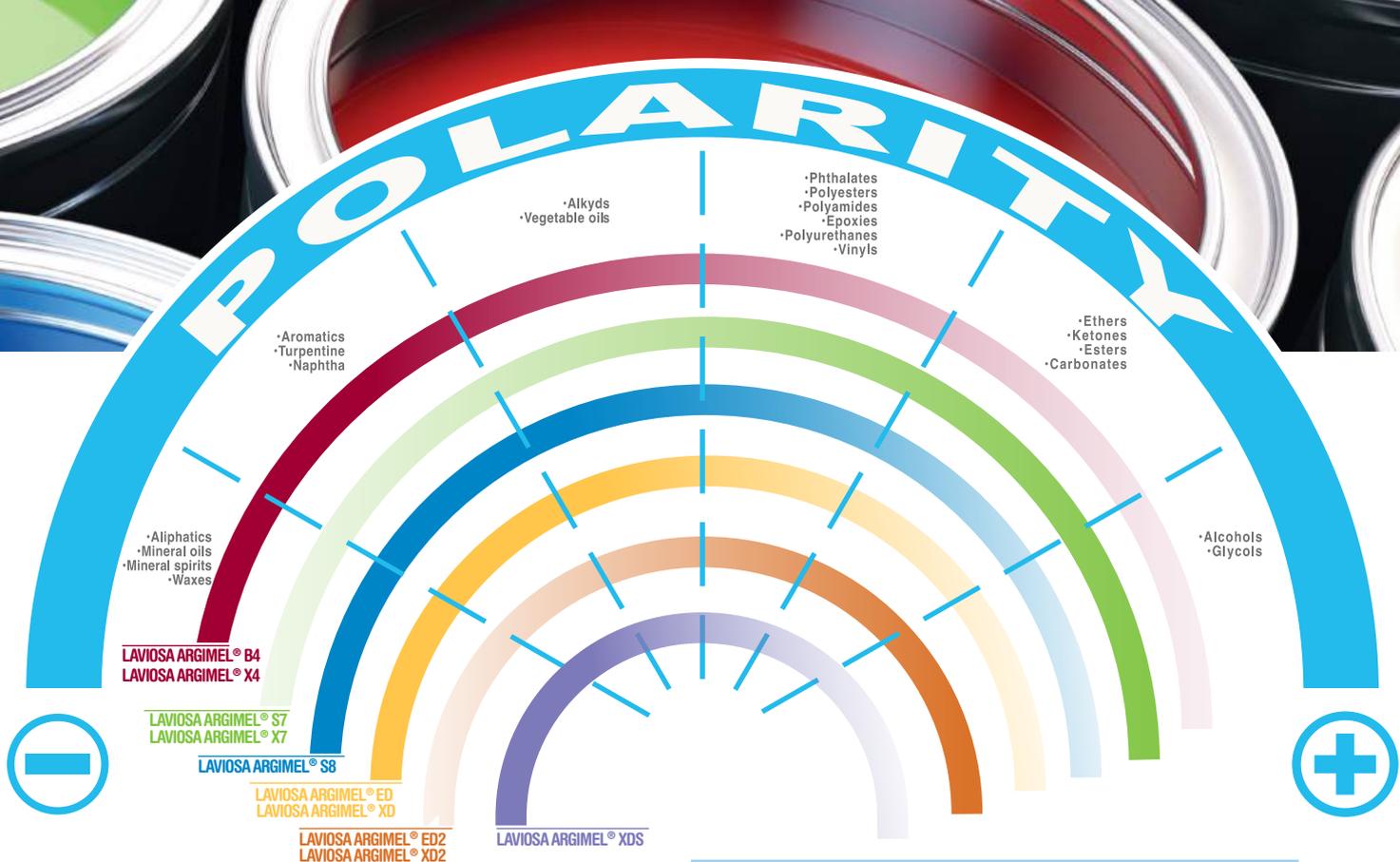
This procedure is advisable when resins with good wetting characteristics are used and/or the mill base has acceptable thixotropy. It might become useful also when the “pregel” technique is too much time consuming and/or solvent addition has to be avoided.

CUSTOMER TECHNICAL ASSISTANCE

To provide our customers with the desired performances in the final paint or ink, the following properties are evaluated for each lot number in our laboratories: **moisture, particle size, loss on ignition, viscosity in different polar solvents and dispersibility.**

The **viscosity** is measured with different pieces of equipment (Brookfield, Krebs Viscosimeters and Ford Cup 4) in order to forecast the **settling behavior** (during the permanence in the warehouse) and the **sagging performance** (soon after the disposal on the vertical wall). The **dispersibility** is checked by Hegman test and by the disposal on the glass of a thin film. These tests provide a forecast of the **levelling properties**. These tests are carried out in **White Spirit, Xilene, Toluene** and **short and long oil resins**. The organoclay concentration is included in the following range: 3-10% in order to stress at maximum the potential drawbacks or underperformance of every lot number.

Our main goal is to meet our customers' needs and for this reason a huge number of **tests** have been selected **for each field of application** (wood coating, industrial paints, road marking, inks, greases, etc). Together with the high quality of Laviosa Argimel® grades, we offer technical assistance and comparison tests with competitors' products avoiding time consuming activities for the customers.



HIGHLY PURIFIED LAVIOSA ARGIMEL® X RANGE

Our line of **high-quality, high performing, highly effective rheological additives** for solvent-borne systems, **LAVIOSA ARGIMEL® B** and **LAVIOSA ARGIMEL® X** range, gives the following **advantages**:

- higher pseudoplastic and thixotropic effect;
- better anti-sagging control;
- excellent levelling;
- higher anti-settling effect in long-term storage.

Compared to traditional organowclays, **LAVIOSA ARGIMEL® X** range, thanks to their higher purity, minimally affect the gloss and can be used at lower levels of addition.



		PREGEL grades		EASY DISPERSIBLE grades	
		Standard	Highly Purified	Standard	Highly Purified
Low to medium polarity	Performances	Laviosa Argimel® B4	Laviosa Argimel® X4 Laviosa Argimel® S8	Laviosa Argimel® ED	Laviosa Argimel® XD Laviosa Argimel® XDS
	Sagging	●◐	●●●	●◐	●●●
	Settling / Storage durability	●◐	●●●	●◐	●●●
	Leveling and flowability	◐	●	●	●●
	Dispersibility	◐	●	●	●●●

		PREGEL grades		EASY DISPERSIBLE grades	
		Highly Purified			
Medium to high polarity	Performances	Laviosa Argimel® S7	Laviosa Argimel® X7	Laviosa Argimel® ED2	Laviosa Argimel® XD2
	Sagging	●●◐	●●●	●●	●●●
	Settling / Storage durability	●●◐	●●●	●●	●●●
	Leveling and flowability	●◐	●●	●●	●●●
	Dispersibility	●◐	●●●	●●	●●●

● Recommended
◐ Suitable

GREASES AND LUBRICANTS



Organoclay Thickeners for Lubricating Grease Manufacture



Beside the application in a wide range of manufacturing processes, LAVIOSA ARGIMEL® are used as Thickeners for Clay Base Grease to give the desired rheological control to the lubricating system.

LAVIOSA ARGIMEL® grease gellant are based on very highly purified bentonite clay reacted with a quaternary ammonium salts through a cation exchange reaction and exhibit high performance efficiency for thickening medium-to high-viscosity-index mineral oils, synthetic oils and other organic fluids. The NLGI consistency number expresses a measure of the relative hardness of a grease used for lubrication as specified by the standard classification of lubricating grease established by the National Lubricating Grease Institute (NLGI).



Belonging to the Conventional Grade, **LAVIOSA ARGIMEL®GM** is a pregel type organoclay and usually requires a polar activator. The concentration of the polar activator will affect the consistency and shear stability of the grease. The optimum concentration varies according to the base oil and additives used in the formulation.

LAVIOSA ARGIMEL®XGM is a Self-activating grade and being an easydispersible organoclay do not require high shear and chemical activation to achieve full dispersion of organoclay platelets:

- **No need to be homogenized;**
- **No high pressure process;**
- **No chemical activation required**, therefore eliminates:
 - expensive chemical activators,
 - low-flash point flammable materials.

Product	Grade	Polar Activator
Laviosa Argimel® GM	Conventional	Required
Laviosa Argimel® SGM	Conventional / Self-activating	Required*
Laviosa Argimel® XGM	Self-activating	Not required

* may not require if combined with homogenizer

WATER BORNE SYSTEMS

LAVIOTHIX AND LAVIOKOLL



LAVIOTHIX and LAVIOKOLL is a range of clay-based rheological additives suitable for water-borne coatings and contructions systems: these products are inorganic, based on a **selected, purified and activated clay** with a **very high montmorillonite content** and a high specific surface area. They provide enhanced thickening, thixotropic and antisetling properties, preventing sedimentation of suspended particles; also sag control and storage stability are increased.

LAVIOTHIX and LAVIOKOLL are suitable for a wide range application: **emulsion paint, ceramics glazed, latex paint, sealants, inks** and other water-borne paint systems. They are also suitable for dry-mix compounds, gyptum renders, mortars and other contruction systems.

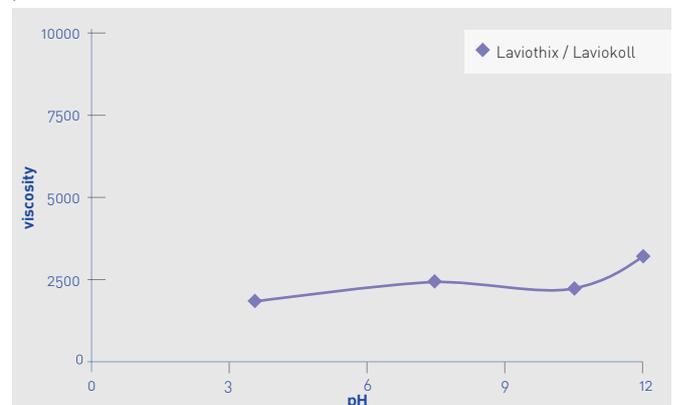


LAVIOTHIX ADVANTAGES:

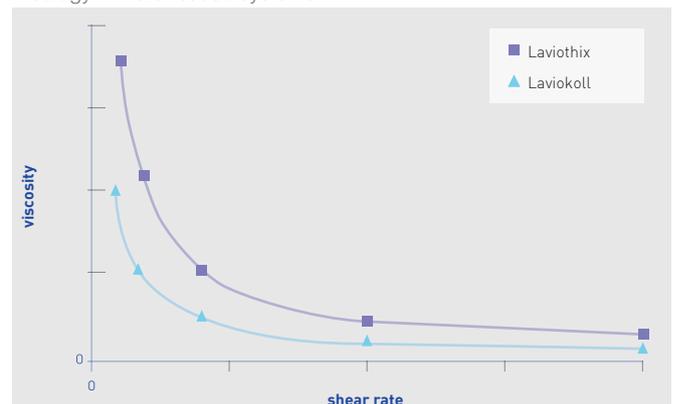
- Reduce of current cellulosic thixotropic agents
- Totally replace of current mineral thixotropic agents
- Enzyme resistance
- Temperature resistance
- pH resistance until very high value
- Very white powder product



LAVIOTHIX, LAVIOKOLL additives show a stability of pre-gel at different pH values



All LAVIOTHIX and LAVIOKOLL products develop a pseudoplastic rheology in water based systems



LAVIOTHIX AND LAVIOKOLL



● Recommended
◐ Suitable

LAVIOTHIX and LAVIOKOLL range are powerful rheological additives developed to meet the demands of construction systems. The product advantages can be found in **improving workability, waterproofing and free-flowing characteristics**. This is due to thixotropic, antisetling and sag resistance given by processed bentonite that prevents the sedimentation of the aggregates and the bleeding of the surface.

LAVIOTHIX and LAVIOKOLL range are suitable for use in all mineral-based systems as **mortars, plasters, tile adhesives, renders**. They are also suitable for different water-based coating systems. In construction systems such as mortars, renderings, stuccos, flooring systems and building adhesives, **flow control** is very important and the main additive used to provide **thickening and water retention** is cellulose ether. However, the system performance and application behaviour can be significantly improved by using clay based thickeners in combination with cellulose ethers.

Economic considerations also play an increasingly important role and using bentonite clays you can also have a **reduction in the cost formula**.

Thanks to the unique characteristics of bentonite clays with Laviothix and Laviokoll you can have:

LUBRICANT EFFECT: the clay platelets, slipping one on the other, can reduce stickiness on tools caused by cellulose ethers or redispersion powders and also improve the application behaviour concerning the surface quality and application speed

ANTISAGGING EFFECT: thanks to its yield point (the minimum shear stress applied to a system to induce flow) bentonite clay builds a network with a high yield value which can improve sag and slump resistance and controls settling and bleeding

ANTISETTLING EFFECT: bentonite clays are used as a stabiliser to prevent settling of coarse particles and reduce bleeding of water on the surface, leading to smoother finishes

WORKABILITY IMPROVEMENT: the clay network breaks down when a shear is applied to the system (pumping, mixing, tooling), and the resulting viscosity is lower than that from cellulose ethers, improving the workability

	LAVIOTHIX				LAVIOKOLL					
	P0	P100	PH50	PH30	CE	C1	C4	C100	C400	C10
Architectural coatings		●	●●	●			●	◐	◐	
Silicone exterior renders	◐							●		●
Floor coatings	●							◐		
Epoxy resin systems	●	●						●		
Acrylate resin systems		●	●●	●						
Alkyd resin systems	●	●						●		
Polyvinil acetate systems	●					●		●		
Printing inks		●	●●	●						
Bituminous emulsion					●		●			
Cement tile adhesives							◐	◐	●	
EIFS (Exterior Insulation and Finishing Systems)	◐					●		●	●	
Self levelling mortars	●				◐			●	●	
Joint compound						●	●	●		◐
Gypsum renders	●					◐		●		
Dry mix mortars	●				●	◐		●		◐



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Find out more about our
certification standards on
our web site.