

COMPANY PRESENTATION

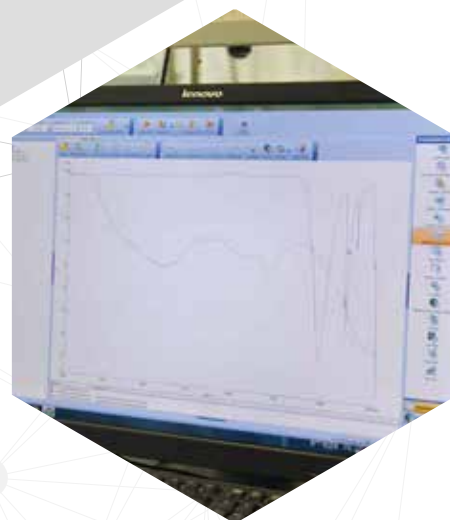
Mistral was born in 2002 and today it is the reference company in the chemical auxiliaries sector for the ceramic sector.

During 2019, following a reorganization of the corporate structure and its consolidation with the entry of Certech, Mistral has become Mistral Italia SRL, which today continues its growth.

To characterize our company is the creation of formulas created on the basis of the needs of the individual customer, using expert and qualified staff. Our production sites are certified and have been operating for years in incoming quality control and on the finished product.



**CHEMICAL ADDITIVE
FOR CERAMIC**



OUR PRODUCTS:

- LIQUID / SOLID FLUIDIFIERS FOR MIXTURE
- ADDITIVES FOR INCREASING THE BREAKING LOAD "IN GREEN AND DRIED"
- ADDITIVES FOR ELIMINATING OR REDUCING THE BLACK CORE OF OXY 587®
- SUB-BRAND ENGOBES
- SURFACTANTS AND LEVELING AGENTS
- ADDITIVES FOR THE GLAZE AND ENGOBES APPLICATION FOR DIGITAL MACHINES WITH WATER SYSTEM
- ANTI-SETTLING AGENTS FOR GRITS
- GLUE FOR THE DRY APPLICATION OF GRITS
- ADDITIVES FOR THE DECORATION IN THIRD FIRING
- CHEMICAL AUXILIARIES
- ANTI-STAIN PRODUCTS

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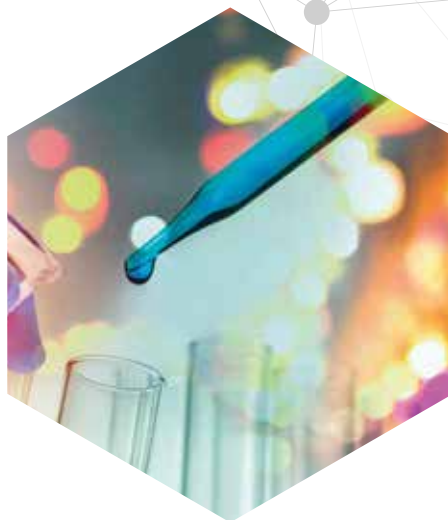
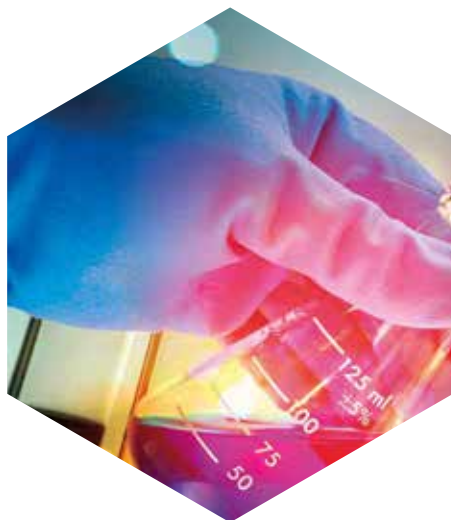
The work carried out from Mistral Italia Srl has allowed to reach important results in terms of market penetration with products strictly **MADE IN ITALY**.

Our catalog includes all the chemicals used in ceramic production with a particular attention to processes innovation and product formulations.

The current focuses on which we focus our research are the **ENERGY EFFICIENCY** of the processes, the **REDUCTION OF EMISSIONS** into the atmosphere and the **PRODUCTIVE OPTIMIZATION OF THE LARGE CERAMIC SLABS**.

Constant investments in research and innovation are aimed at improving the products quality, the speed of response and the competitiveness. Furthermore, the ability to offer customized products based on the needs of the single production line makes us an authentic customer's partner.

Behind the quality of our products lives and works a proudly Italian company, recognized by the German Institute of Quality and Finance among the 300 Italian companies "Champion of Growth 2018".



CONTACTS

President:
Laura Palladini - laura.palladini@mistralsrl.com

Director of Development and Research Laboratory:
Mauro Tognetti - mauro.tognetti@mistralsrl.com

Technical/commercial manager:
Valentina Grasselli - valentina.grasselli@mistralsrl.com

Technical/commercial manager:
Silvia Ori - silvia.ori@mistralsrl.com

Orders receiving:
Francesca Villani - info@mistralsrl.net



MISTRAL ITALIA srl
Via Tiziano, 12 Castellarano
42014 Reggio Emilia



Ph. (+0039) 0536 813066



Customer for the order transmission
customer@mistralsrl.com



www.mistralsrl.net

LIQUID / SOLID FLUIDIFIERS FOR MIXTURE

The proposal of a **FLUIDIFIER** for liquid or solid mixture must necessarily go through an accurate **rheological study** that requires specialized and highly experienced staff, who is able to develop a large and organic work that takes into account the specific peculiarities of the mixture and the waters that are intended to be used in the process. **Mistral** has been on the market for 20 years and it is able to propose the best offers both from a professional and quality point of view of the finished product.

For a correct study of the fluidification, the following materials are required:

- 5 kgs of mixture (for each type of mixture)
- 3 lts of grinding water (the water that goes directly to the mill)
- 0,5 kgs of fluidifying agent currently used.

The data of fluidification also are required:

- Type of mill (continuous or batch)
- Density of the slip at the exit of the mill
- Viscosity at the exit of the mill
- Residual (specifying how it is calculated and at what value of μm).

ADDITIVES FOR INCREASING THE BREAKING LOAD "IN GREEN AND DRIED"

The choice of a **BINDER**, like a fluidization study, requires scrupulous research in the laboratory, the development of a performing product depends on a careful measurement and an evaluation of different variables that can't be quantified priorly. Only a statistical analysis on many samples is able to provide a series of reliable data on which studying and developing the mixtures of raw materials able to provide the best performance with a view to the best cost / benefit ratio.

Mistral has a fully equipped laboratory and has the skills to guarantee effective and reproducible results for its customers.

For the study, the following material is required:

- 10 kgs of liquid or spray-dried slip (without addition of binders).

ADDITIVES FOR ELIMINATING OR REDUCING THE BLACK CORE OF OXY 587®

OXY 587® is an excellent solution to the recurring problem of black core. This typical flaw occurs when the organic material present in the raw materials does not meet a sufficient quantity of oxidizing substances, in these conditions the carbon plays a reducing action towards various elements, among which the sulfur that remains trapped inside the ceramic product originating the classic central swelling of dark gray color.

OXY 587® looks like a very fine powder which can be easily mixed with the spray-dried product, before the pressing, exactly as for a normal coloring oxide. The use of the powdered product avoids any rheological problems with the ground mixture (slip) and allows it to be used in an extremely targeted way on the most problematic mixtures. We are willing to verify the correct % of use in our laboratories.

The following material is required:

- 5 kgs of spray-dried product with % indications of humidity.

SUB-BRAND ENGObes

Mistral has gained a valuable experience in the **SUB-BRAND ENGObes** sector and has contributed to examine in depth and to solve the various problem arising on these products. **Mistral** is able to offer diversified and targeted solutions, based on the different production needs and based on the different choices of the sintering process of the ceramic material. We are able to offer specific formulations for in medium grinding or solutions for grinding directly in the water. The various options are generally related to the type of application system and related design features.

The main characteristics of our products are:

- DO NOT contain calcium sulphate (chalk) or magnesium carbonate (magnesite)
- They are chemically neutral
- They do not dust
- They have high thermal stability
- They have high sintering temperatures.

SURFACTANTS AND LEVELING

The applications in digital require a perfect surface. Our **SURFACTANTS** help to reduce the surface tension of the glazes, favoring the elimination of air bubbles and favoring the application. To deal with the various application issues, **Mistral** proposes two different series of surfactants.

The first series has been developed to optimize the application of glazes applied with airless, their use allows to obtain perfectly leveled surfaces and free from typical defects such as glaze putting and cissing. The use of these additives allows to optimize the flatness of the glazes, preparing them in the best way for the next digital decoration.

The second series of surfactants has been developed for end-of-line airless applications. They are very energetic surfactants and their use allows you to wet very difficult surfaces such as those originating from digital decorations.

The use of these surfactants allows to obtain a correct application and a good leveling of the glazes and crystallines, which for production needs we go to superimpose on the decorations obtained with inkjet machines.



OUR PRO



ADDITIVES FOR THE GLAZE AND ENGOBES APPLICATION FOR DIGITAL MACHINES WITH WATER SYSTEM

This revolutionary application technology is becoming an increasingly present reality in the ceramic sector thanks to the numerous advantages it is capable of offer, including: elimination of waste, no change in the preparation of glazes, reduction of environmental pollution, drastic reduction in washing water consumption. The design / application specifications of digital glazing, to ensure performances in line with current application standards, require glazes with specific chemical-physical parameters, which only the use of an adequate additive system can guarantee.

Mistral is among the few companies in the world able to offer a complete range of products, called Tecno S, which ensure an excellent and constant production yield. Before proceeding to the industrial phase it is always advisable to carry out laboratory tests on the glazes that you intend "digitize" to check which is the best performing solution among those available.

It is necessary:

- 5 kgs of glaze at the mill discharge + dilution water.

ANTI-SETTLING AGENTS FOR GRITS

The current production standards of porcelain stoneware provide for the frequent use of glossy finishes that are obtained by wet application of microgrits.

To ensure correct yield, the choice of suitable medium assumes a fundamental importance. This particular type of products must ensure both excellent leveling of the glass component and, at the same time, adequate suspension.

Mistral considers essential to carry out preliminary laboratory tests, calibrated directly on the compound that you intend to apply in order to maximize each component.

It is necessary:

- 3 kgs of grit with technical information on its application.

GLUE FOR THE APPLICATION OF DRY GRITS

A valid alternative to suspension in medium, are **DRY APPLICATION** of micro-grits on a bed of previously applied glue. It is an old technology recently repropose as it allows to reduce the water supply with the same weight of grit applied and given the ever faster firing cycles or the very specific needs of large slabs is a type of application that is taking more and more space within the sector.

ADDITIVES FOR THE DECORATION IN THIRD FIRING

Mistral is able to offer products aimed at different specific production situations of the third fire, with materials made for both ceramic decoration and glass decoration. Screen printing mediums, for high thicknesses for white glazes and crystallines, screen printing mediums for high definition for colors, adhesives for glass and grits in general, gels for the application of metallized and mediums for airbrush.

CHEMICAL AUXILIARIES

Our range of products is completed by **ADDITIVES** of various uses, such as:

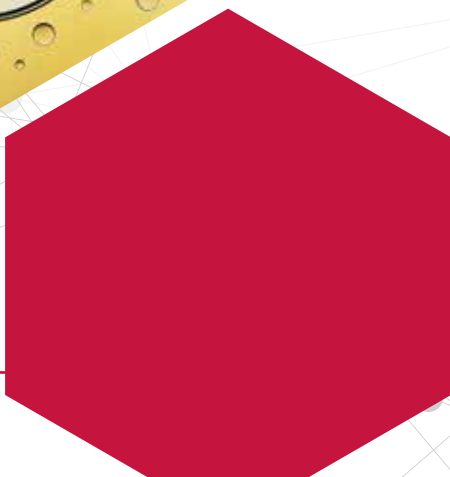
- Carboxy methyl cellulose for glazes and engobes, purified or technical
- Fluidifying and sequestering agents, polycarboxylates, phosphates and phosphonates
- Anti-dusting products, liquid adhesives based on natural polymers and synthetic polymers
- Anti-packaging for powders, pyrogenic silicas or hydrophilic and hydrophobic precipitates
- Anti-sedimentants for glassy suspensions, based on natural and synthetic polymers
- Water-repellent and waterproofing, latex in emulsion with different degree of water repellency
- Antifoam for glazes and antifoam for purification plants, based on mineral oil or silicone.

ANTI-STAIN PRODUCTS

Products studied to reduce the surface microporosity that originates after the smoothing and lapping treatments, generally used to improve the appearance of ceramic materials.

The application of these products allows easier removal of cement residues (materials for joints, concrete splashes...) and dirt due to the resulting trampling from implementation.

PRODUCTS:





Mistral ITALIA s.r.l.

Via Tiziano, 12 - C.P. 42014 Castellarano (RE) - Italy

Ph. +39 0536 813066 - Fax +39 0536 813073 - P.IVA e C.F. 03854670365

info@mistralsrl.net - www.mistralsrl.net

—CERTECH GROUP—