



CERAMIC GYPS[®]

**PLASTERS FOR THE CREATION OF MOLDS
FOR THE CERAMIC INDUSTRIES**



THE METAMORPHOSIS OF ALFA GYPSUM

 **GESSI
ROCCASTRADA**
CONTEMPORARY CONSTRUCTION

Gessi Roccastrada, a partner in the creation of ceramics



Roccastrada, Tuscany, is the largest deposit of gypsum in Italy. 200 million years ago here extended a tropical sea with coral reefs. This sea drying up formed large deposits of crystals of calcium sulfate. Plasters of Roccastrada are famous for high purity of the stone and their high degree of whiteness.

Gessi Roccastrada is the largest production unit of Italian plaster; its activities are diversified in the areas of construction, agricultural and industrial needs, with particular specialization in the ceramic field, dental and health care. The entire production unit covers an area of about 500 hectares, 400 of which are occupied by quarries. We address special attention to the manage-

ment of the quarries. Once its life as an area of excavation is concluded, it is upgraded and converted into a wooded area, according to strict criteria of environmental quality.

The material from the excavation, appropriately selected, crushed and screened, is sent to the plant for cooking.

The availability of all the raw materials, the strong vocation for quality, the continuous research and the experience gained over the years, allow the Gessi Roccastrada to produce plaster to meet all our clients' needs.



The metamorphosis of gypsum

In addition to producing BETA gypsum (normally used in building for the production of normal and premixed plasters), Gessi Roccastrada s.r.l. is the largest production unit in Italy of ALPHA gypsum and one of the largest in the world. Alpha Gypsum is produced from carefully selected raw material, which is loaded into autoclaves and subjected to an innovative cooking process that gives it special physical properties. These characteristics are made use of the engineers of Gessi Roccastrada to make products with high technological content, characterized by superior mechanical performance and, when necessary, with a high degree of customization to meet the needs of each client.



Plasters for the creation of casting molds, lathe and press casting, and specialty artifacts for the ceramic industries

A crucial raw material used for creating molds for the ceramic industry, gypsum has a number of features that make it the material of choice for these applications.

The porosity feature of the Gypsum allows it to quickly absorb a portion of water present in clay, which facilitates its densification. Because of its hardness it can be used to produce long lasting molds that are able to undergo several rounds of casting.

The expansion during setting is contained and constant thereby permitting a calculated reproduction of objects within the molds.

These characteristics are obtained thanks to the use of ALPHA gypsum suitably mixed with varying amounts of BETA gypsum and are guaranteed by continuous monitoring of process parameters together with strict quality control tests on the finished product.



autoclaves for the production of ALFA plaster

Products and technical characteristics

CASTING

TB 12 - For its refinement and for the excellent absorption properties it is used in the ceramic industry for the production of casting molds.

| ratio water/plaster | time casting | time setting | linear expansion | resistance bending | resistance compression |
|---------------------|--------------|--------------|------------------|---------------------|------------------------|
| 100/140 | 12 min. | 25 min. | 0,2 % | 5 N/mm ² | 12 N/mm ² |

TB 20 - For its refinement and for the excellent absorption properties it is used in the ceramic industry for the production of casting molds.

| ratio water/plaster | time casting | time setting | linear expansion | resistance bending | resistance compression |
|---------------------|--------------|--------------|------------------|---------------------|------------------------|
| 100/140 | 8 min. | 15 min. | 0,2 % | 5 N/mm ² | 12 N/mm ² |

GR Beta - For its refinement and for the excellent absorption properties it is used in the ceramic industry for the production of casting molds.

| ratio water/plaster | time casting | time setting | linear expansion | resistance bending | resistance compression |
|---------------------|--------------|--------------|------------------|---------------------|------------------------|
| 100/150 | 18 min. | 35 min. | 0,2 % | 6 N/mm ² | 14 N/mm ² |

ALFA Cast 15 - With characteristic of high absorption of water and fast drying, Alfa Cast 15 is used in the ceramics field for the realization of molds using the double-casting process.

| ratio water/plaster | time casting | time setting | linear expansion | resistance bending | resistance compression |
|---------------------|--------------|--------------|------------------|---------------------|------------------------|
| 100/150 | 15 min. | 25 min. | 0,13 % | 6 N/mm ² | 15 N/mm ² |

CASTING AND LATHE

ALFA Cast 25 - A particularly resistant plaster with an excellent absorbent quality and very low expansion during the setting process. Alfa Cast 25 is used in the ceramic field for the creation of poured and lathe molding.

| ratio water/plaster | time casting | time setting | linear expansion | resistance bending | resistance compression |
|---------------------|--------------|--------------|------------------|---------------------|------------------------|
| 100/190 | 15 min. | 25 min. | 0,07 % | 9 N/mm ² | 28 N/mm ² |

ALFA Cast 30 - A particularly resistant plaster with an excellent absorbent quality, which is used in the ceramic field for the creation of poured and lathe molding.

| ratio water/plaster | time casting | time setting | linear expansion | resistance bending | resistance compression |
|---------------------|--------------|--------------|------------------|---------------------|------------------------|
| 100/195 | 15 min. | 25 min. | 0,11 % | 8 N/mm ² | 20 N/mm ² |

ALFA Cast 40 - A particularly resistant plaster with an excellent absorbent quality, which is used in the ceramic field for the creation of poured and lathe molding.

| ratio water/plaster | time casting | time setting | linear expansion | resistance bending | resistance compression |
|---------------------|--------------|--------------|------------------|---------------------|------------------------|
| 100/200 | 15 min. | 25 min. | 0,12 % | 7 N/mm ² | 20 N/mm ² |

MODELS AND MATRICES

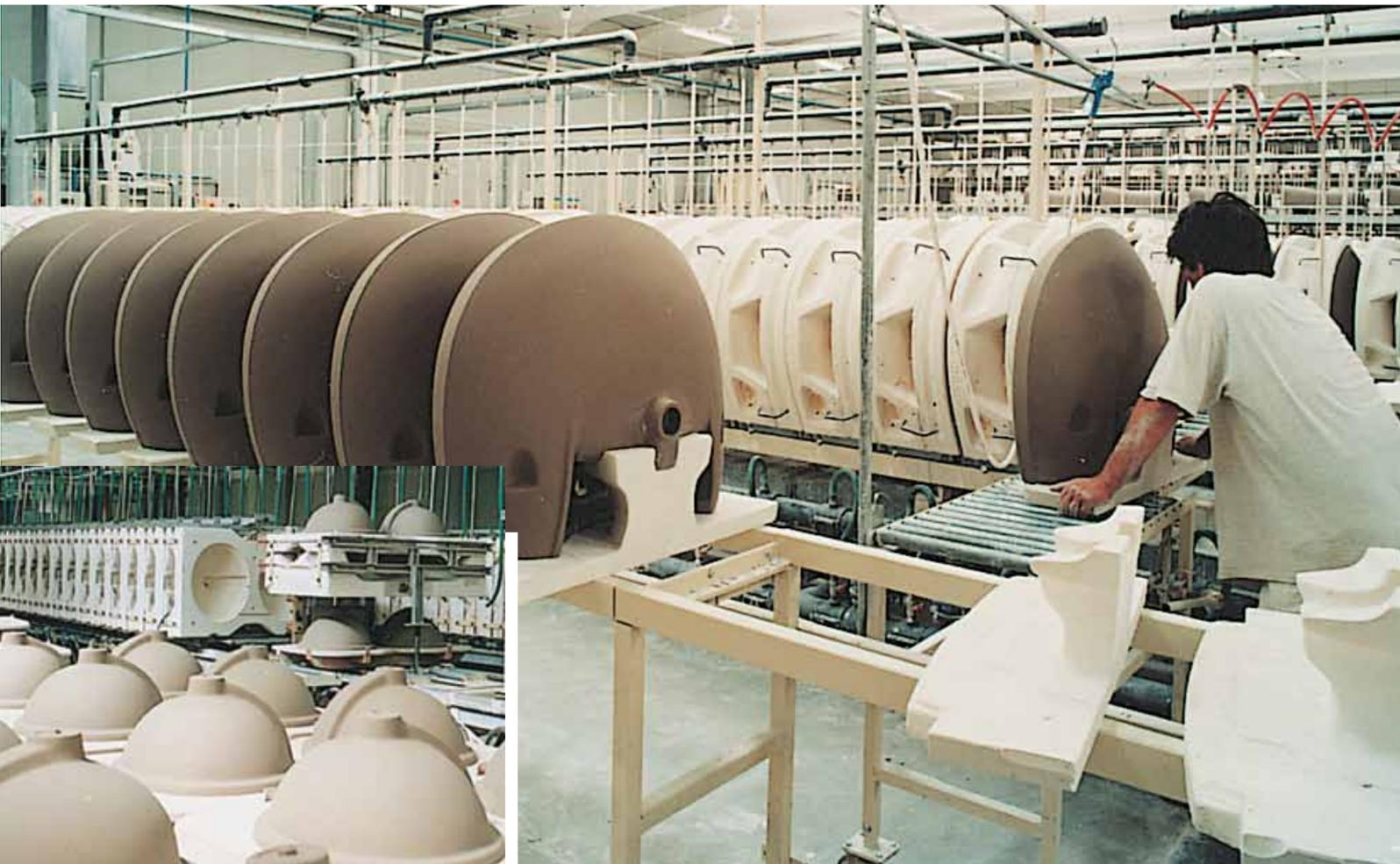
ALFA Cast 100 - A very resistant plaster, thanks to its characteristics, ALFA Cast 100 is used for the realization of models and matrices.

| ratio water/plaster | time casting | time setting | linear expansion | resistance bending | resistance compression |
|---------------------|--------------|--------------|------------------|----------------------|------------------------|
| 100/250 | 15 min. | 25 min. | 0,08 % | 11 N/mm ² | 32 N/mm ² |

PRESS

TB Press - With characteristics of hardness and porosity, TB PRESS plaster is used in the ceramics field for the realization of high performance molds using the press process.

| ratio water/plaster | time casting | time setting | linear expansion | resistance bending | resistance compression |
|---------------------|--------------|--------------|------------------|----------------------|------------------------|
| 100/300 | 20 min. | 30 min. | 0,1 % | 12 N/mm ² | 35 N/mm ² |

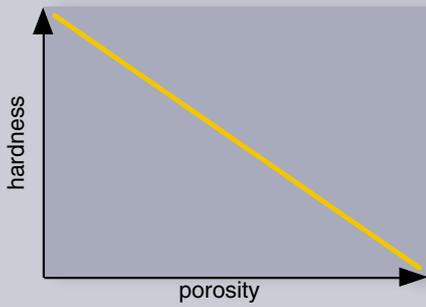


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DETACHING EMULSION

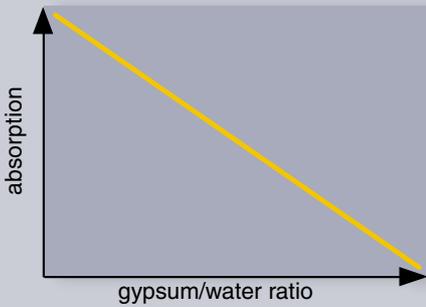
ISOL – A ready-to-use detaching emulsion for the production of gypsum molds and models. The emulsion makes the detaching process easier, when there is contact between two plaster surfaces, or plaster and resin, leaving clean surfaces with no residues. ISOL may be applied both by brush and by spraying. For the application by brush it can be used pure as well as diluted with a small quantity of water. Spread the product on the mold and let it rest for a few minutes. Then remove the excess quantity with the same brush. For the spray application it is necessary to dilute the product with about 50% of water. Packaging is in tubs of 10 and 50 kg.

Gessi Roccastrada, a partner in the ceramic industry



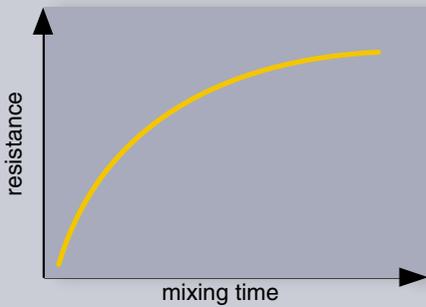
gypsum alfa/beta ratio

Gessi Roccastrada prepares a series of premixed plasters with alpha/beta ratios which determine the main characteristics of porosity and hardness. The characteristics of each product are guaranteed over time by careful mixing and constant quality control.



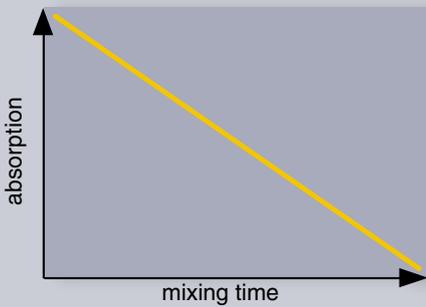
gypsum/water ratio

Variations in the gypsum/water ratio affect the main features of the mold. With a high ratio, the mold will be harder but it will absorb less water.



mixing time/resistance ratio

By increasing the mixing time, the resistance properties of the final mold increase.



mixing time/water absorption capacity ratio

Lengthening the mixing time reduces the capacity of absorption.



mixing time/setting time ratio

Increasing the mixing time reduces the setting time.



temperature/setting time ratio

Increasing the temperature slows down the setting time.



Instructions for use

● vacuum preparation

To obtain a mold with high technical characteristics it is critical to control all the production phases.

● mixing ratio

The mixing ratio is controlled weighing the necessary quantities of gypsum and water to obtain an ideal consistency for usage. Changing this ratio also changes the characteristics of the mold like the absorption capacity, the hardness, the setting time and the expansion. Keeping the ratio under control it is possible to maintain a consistent performance of the mold.

● water

Use only clean water. The presence of substances organic or a high concentration of sulfates, reduce the setting time and the quality of the mold. Excessive amounts of soluble salts can cause efflorescence during the drying process.

● temperatures

The temperature of the water and the gypsum influence directly the setting time. Increasing the temperature reduces the setting time.

For a good result, the temperature must be between 15 and 25 ° C.

● spreading

Spread the gypsum in a time ranging between 1 to 3 minutes (depending on the size of the mold) on the entire surface of the water, so as to permit an even absorption of the water and avoid the formation of dry lumps of gypsum that are difficult to eliminate even during the mixing process.

● absorption

Leave the mixture for 1-2 minutes before the mixing phase, so that all the crystals of gypsum are hydrated

and any air within the material can exit the surface.

Waiting too long can result in a significant reduction of the setting time.

● mixing

The mixing phase is a very important part of the production of plaster molds. The time required depends on the mass of the material and the type of mixer used it.

If the mixing is done too quickly it can create a dishomogeneous and low quality mold, while if the mixing is done for too long it can cause problems with the moldability of the mix.

A high speed mixing, easily verifiable by the formation of a cone of air around the rod agitator, will produce air bubbles within the dough.

Please avoid using agitators with a high speed setting. An ideal mixture has no lumps and has a creamy consistency from the beginning to the end while it is being poured.

The mixing time should not be less than a minute.

● vacuum mixing

Mixing the plaster under vacuum reduces the ability of absorption and setting expansion, increasing the strength and the durability of the mold.

● drying the molds

In order to make a product with optimum physical characteristics, pay careful attention to the process of drying the molds. We recommend that you use a temperature of 40/50°C with relative humidity of 40%. This allows for a good mechanical resistance, a regular capacity of absorption, a longer-lasting mold and finally, reduced demolding time. If you interrupt the production for a long time, we advise moistening the molds every two days in order to avoid the clogging of the micro holes.

TB Press - Instructions for use

for the gypsum TB PRESS apply the same precautions used for other gypsum except in the following two processes

● mixing the plaster

Slowly sprinkle the gypsum powder evenly on the water surface. Let the mixture rest for about 2 minutes so that the mineral crystals will absorb the water without forming air bubbles. Mix with a mechanical mixer for approx. 10' at a speed which will not cause air bubbles to form. Mix more slowly during the last 2 minutes to allow the air to escape. The mixture must be poured within the time indicated for workability.

● ventilating the molds

The structure and dimensions of the micro holes are defined beginning at the moment when you start blowing in air. After casting and smoothing the mixture, measure the temperature by inserting a thermometer. Generally, the temperature gap between the start of the

mixing and the start of the ventilation must be 10-14°C (using a mixing ratio of 3.0 Kg/Lt.). Once you get the right temperature you must start blowing compressed air at 0.5 bar into the mold. Every 40 seconds increase the pressure by 0.5 bar, until you get 2 bars. Then wait for 2 minutes before you start again increasing the pressure by 0.5 bar every 30 seconds until you get 4.5-5 atm. Once you have reached the maximum level, continue that pressure at least until reaching the maximum temperature.



www.gessiroccastrada.com

PACKAGING

paper bags - 25 kg
pallets with n° 50 kg sacks
pallet weight: 1250; 90 x 110 h 130 cm.
On request – Big Bags, 1000 kg.

STORAGE PROCEDURES

Store the product in a dry place away from moisture. Bags must be stored without any direct contact with the ground and protected from humidity.

TECHNICAL SUPPORT

Any features of the plasters can be changed according to customer needs. For more information contact the technical service, Gessi Roccastrada.

VIVO SYSTEM

interior partition system

LATER BLOC

blocks for interior walls

GYPS BLOC

blocks for interior walls

SKY PANEL

suspended ceilings in lightened plaster

GREEN GYPS

gypsum, glues, stuccos, plasters and finishings

CERAMIC GYPS

plasters for the ceramic industries

ART ROC

gypsum for artists



COSTRUIRE CONTEMPORANEO



certifyd company



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