

SPECIAL REFRACTORIES MANUFACTURER

Custom-made refractories



GAMMA

ERECOS[®]

Electroporcelana GAMMA S.A. is a Colombian company with more than 55 years of experience that owns the ERECOS® brand. It is part of the CORONA Group, a Latin-American industrial conglomerate with more than 135 years of experience in manufacturing processes, which employs more than 18,000 people and has 25 production plants. The CORONA Group is recognized for having a huge environmental and social commitment.

GAMMA|ERECOS® manufactures and markets the following refractory products: bricks, concrete, mortars, ramming mixes, plastics and thermal insulation. Our refractory materials solutions are offered to different industries in Latin America. We have two refractory production plants (At Sogamoso-Boyacá and Itagüí-Antioquia) and four commercial offices, all of them in Colombia.

Since 2000 pre-cast refractories are manufactured by casting into molds at the Itagüí production plant. These bricks are used when shorter installation times are required or also when it is difficult to install unshaped refractories on site.

Pre-cast bricks can be made with different qualities, sizes and, geometries, from small pieces to pieces of several tons. This allows for a fairly broad portfolio, adapted to the specific needs of each client. Some of the sectors we serve are: cement and lime, ceramic, chemical and petrochemical, ferronickel, metal-mechanic, non-ferrous, environmental services and, iron and steel.

For quotation and development of these special pieces, we have qualified teams that are selected according to product and technology requirements, ensuring compliance with the specifications defined by furnace designers, manufacturers of refractory, and the requirements of the installation.

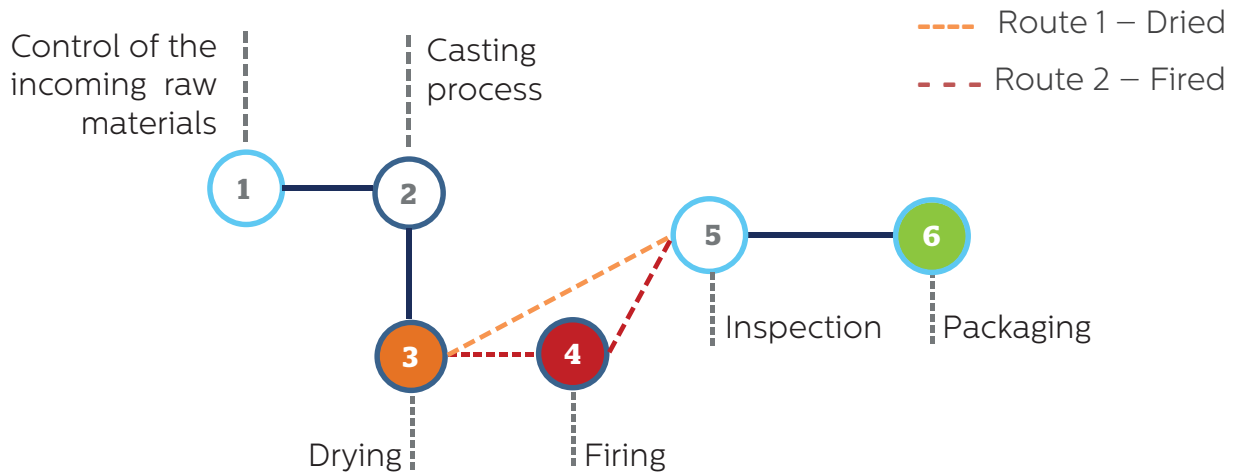


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AVAILABLE TECHNOLOGY

We have suitable technology for mixing materials and for casting it into molds, manufacturing the pre-cast pieces. The step-by-step process is represented in the following diagram:



Our products can be delivered dried or fired. The dried ones are refractories which had had a thermal treatment that can warranty no free and chemical water into the microstructure. On the other hand, fired products had been fired at high temperatures, allowing the ceramic bond development which improves refractory properties. The selection between a dried and a fired product should be made taking into account process conditions and also, the properties of the materials.

Laboratories with state-of-art equipment are also available to carry out refractory characterizations of raw materials and finished products. Tests are supported by a qualified team with consolidated ceramic and refractory materials know-how for over 135 years and 65 years, respectively. This has allowed GAMMA|ERECOS® to always be in the Latin America market.

State-of-Art Equipment:



- ▶ Hot Modulus of Rupture (HMOR) measurements.
- ▶ Hot Compressive Creep (CREEP) behavior measurements.
- ▶ Hot Refractory Under Load (RUL) measurements.
- ▶ Materials' Physical Properties.
- ▶ Thermal Conductivity.
- ▶ Controlled heating using electric furnaces that reach up to 1700°C.

QUALITY ASSURANCE: ISO 9001 CERTIFICATION

Quality assurance is one of the fundamental pillars in our manufacturer process. For this reason we have ISO 9001 certification.

We have:

- Effective solutions with the participation of suppliers and/or clients.
- Specialized team in the refractory and facilities areas.
- Permanent training in refractories and facilities.
- State-of-art equipment that allows us to develop products with higher specifications and benefits for our clients.
- At R&D laboratories new developments are tested, verifying the quality of our raw materials and, the efficiency of our products.



GAMMA|ERECOS® is a leading Colombian company in the production of pre-cast refractory materials. Our products are offered dried (L) and fired (LQ). Some of them which have been manufactured by us are listed below. All of them are destined for different industrial applications, performing outstanding behavior.

KILN FURNITURE

Cordierite products can be used such as kiln furniture in continuous ceramic heat treatment processes. They are distinguished by their high mechanical and thermal shock resistance in comparison with other refractory types.

Their shapes can be made according to the client's requirements. Different sizes have been manufactured over the 20 years.

Some of the products that are included in our portfolio are: kiln props and spacers, prop extensions, perforated plates, protecting slabs, T-cranks, tile cranks, kiln shelves, parts for firing white ware, kiln car blocks (perimeter corner block and kiln seal blocks), among others.

Also, high-alumina and fireclay bricks are available for furnace walls and roofs.



TROUGH AND RUNNERS

Trough and runners are designed to carry on hot metal or slag. During their working condition, the refractory lining has reactions with hot metal, slag, and air.

Our trough and runners are made with a high-alumina castable specially developed for this application. This product has high chemical resistance, high refractoriness, and good mechanical properties at working conditions.

The final product is dried before delivery. This guarantees no free and chemical-water content into the pre-cast shape. The dried condition decreases downtime because of the installation and removal of the refractory lining is easily done without needing any additional in situ thermal treatment.

Different shapes can be made according to the client's requirements. The pictures showed two different trough and runners manufactured with high-quality standards

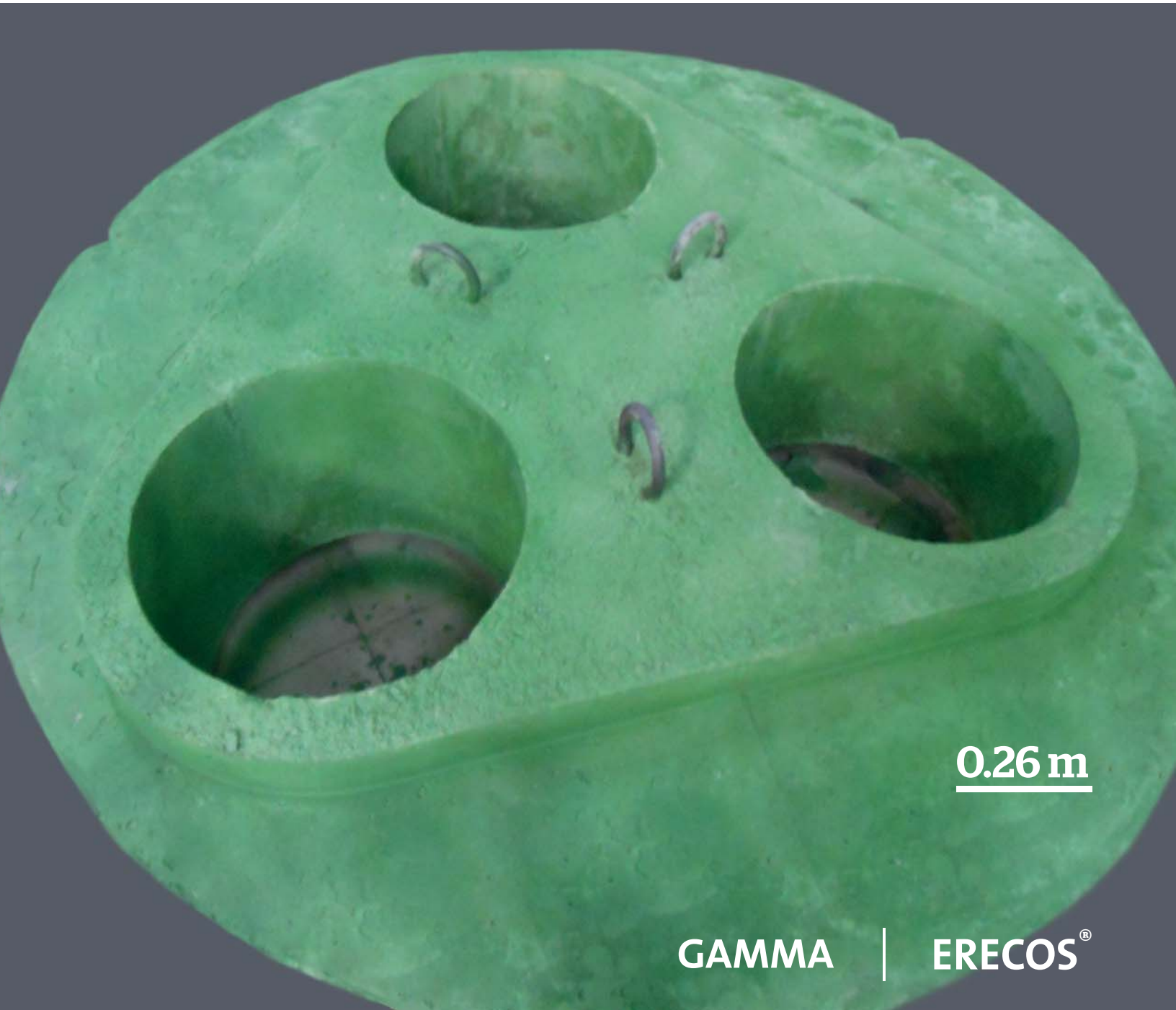


EAF DELTA ROOF

EAF Delta roof is a pre-cast brick that is inserted to fill the roof of electric arc furnaces (EAF). It has openings where electrodes are going to be inserted.

They are made under customer's specifications regarding their design because each furnace has its own dimensions. We have already manufacture EAF Delta roof for a large quantity of Latin-American industries, currently having some of them in working service.

Our EAF Delta roof sections are made by a high-alumina castable which allows obtaining good resistance to erosion, thermal shock, and spalling. Stainless steel metal fiber reinforcement and chrome oxide additions are offered.



0.26 m

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PSA – TUNDISH BOARD

Our tundish boards are special pieces known as “dry tundish lining”. This product has high porosity, good thermal insulation, and, also, a low cost in contrast with bricks and conventional gunning that are consumed in the same application.

They are used for mild steel and non-ferrous industries being installed into the tundish box without having direct adhesion to the permanent tundish lining.



Our products are made of good quality raw materials, and consequently, they have excellent performance. During their working life, good deskulling is achieved without failure.

BURNER BLOCKS

Pre-cast burner blocks are an important part of industrial processes. They are custom-made refractories per each shape design that could be manufactured with and without metal anchors and/or, dried or fired before delivered.

We assure the material selection performance will comply with the necessary refractoriness for the application and, also, its characteristic wear mechanisms under service condition are going to be supported.



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OTHER PRE-CAST SHAPES

Other pre-cast shapes can be created from the ground up. GAMMA|ERECOS®'s engineers can create a drawing of any shape that is required, subsequently followed by the casting and, drying or firing process. Some of them are shown below: refractory air ducts, nozzles, electric resistance refractories.



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