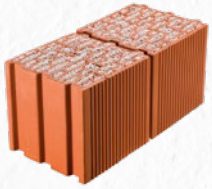
SUSTAINABLE
BUILDING MATERIALS

Serving a better
WORLD!

ORTHOBLOCK®

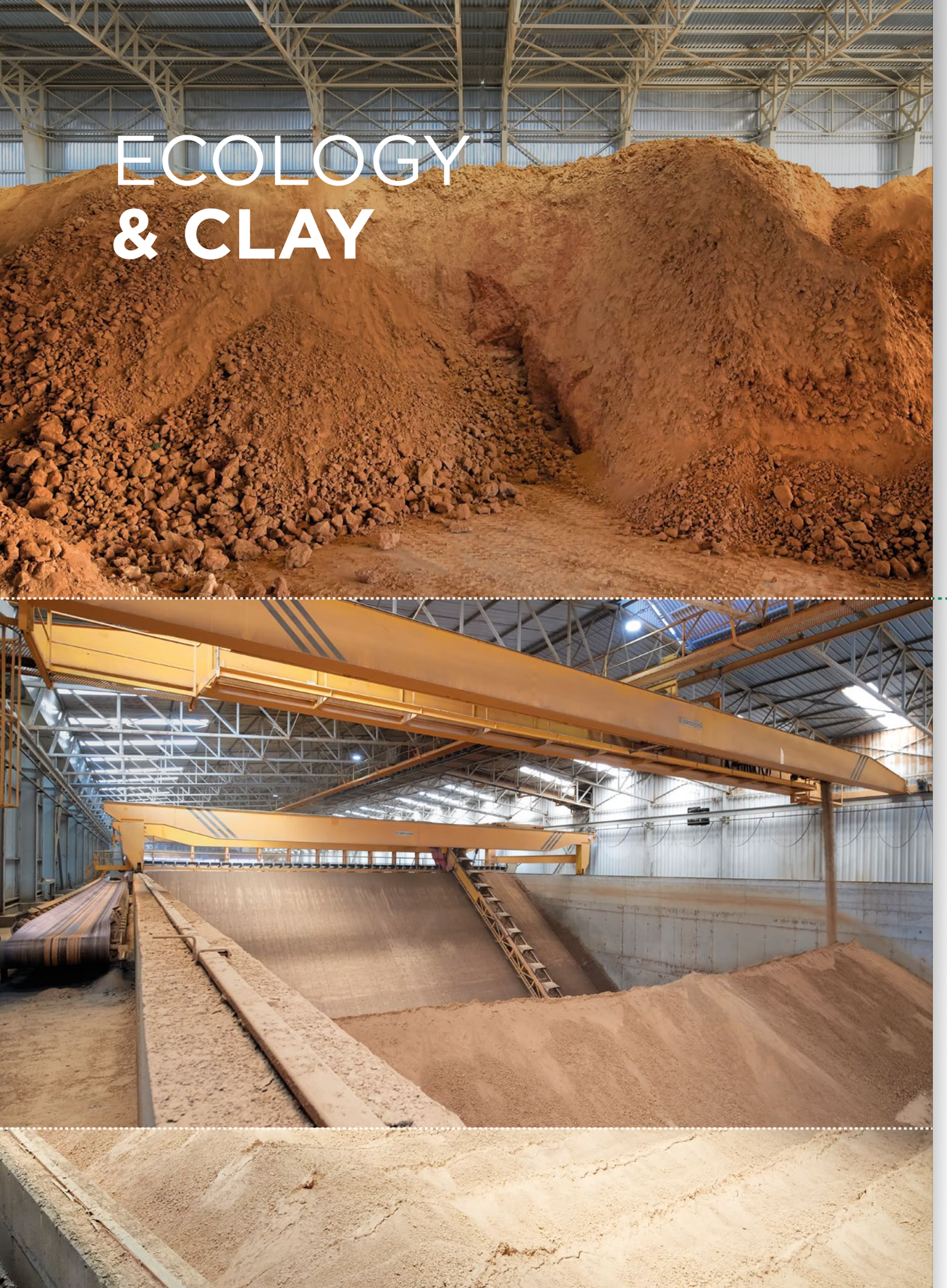
CONSTRUCTION
SYSTEMS

ORTHOBLOCK® PLUS



EST. 1935
KOTHALI
KEBE
NORTHERN GREECE CERAMICS

A STRUCTURALLY
BETTER WORLD



ECOLOGY & CLAY

The realization that we can no longer recklessly waste resources to cater to a lifestyle that is quickly leading our planet and our civilization to destruction has led to a major shift towards **Ecology and Green Development.**

Environmentally friendly construction

is the construction of low-cost buildings that consume little energy to create thermal comfort, are made of readily available natural materials, demand minimum maintenance and have a practically unlimited lifetime.

Clay has been used for more than **4,000** years to make bricks and roof tiles, due to its excellent properties against fire, temperature and sound, its remarkable endurance over time and its aesthetics.

Only mixtures of **clay and water** are used in brick production.

Taking into consideration its availability, the potential for the rehabilitation of clay pits, the carbon footprint (energy consumption) for production, transport and building, its life expectancy and the building's energy savings from its thermal mass, clay is a **uniquely ecological building material.**

ECOLOGICAL **PRODUCTION** WITH CERTIFICATIONS

Green Development means using innovative technologies to produce necessary goods and materials with minimal energy consumption and zero environmental pollution.

With the use of robotic technology and the most sophisticated production-process control systems in **KEBE's** state-of-the-art factory in Nea Santa, Kilkis, energy consumption and greenhouse gas emissions are kept to a minimum.

Besides the well-known range of bricks on the market, the new plant has the capacity to produce vertically perforated bricks for both load-bearing and non-load-bearing masonry, the **ORTHOBLOCK** bricks, which offer cost and energy savings in buildings.

DESIGN-
PRODUCTION-
TRADE

HEALTH
& SAFETY
AT WORK

ENVIRONMENTAL
MANAGEMENT

CORPORATE SOCIAL
RESPONSIBILITY

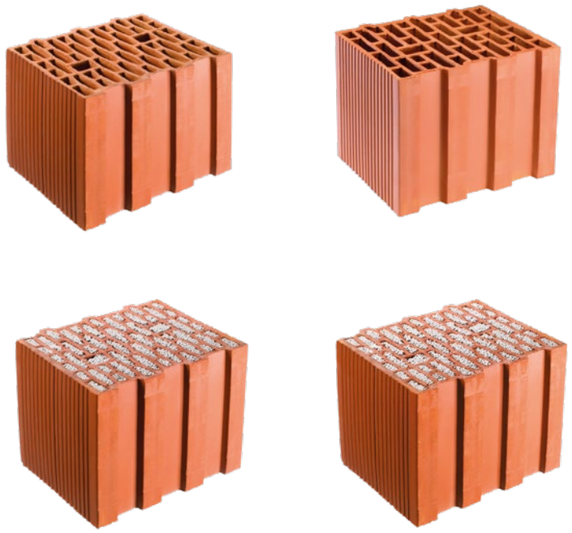
TÜV HELLAS
Member of TÜV NORD Group

ADVANCED
CONSTRUCTION SYSTEMS

AFFORDABLE & FAST
CONSTRUCTION

ORTHOBLOCK

FOR LOAD-BEARING MASONRY



FOR NON LOAD-BEARING MASONRY

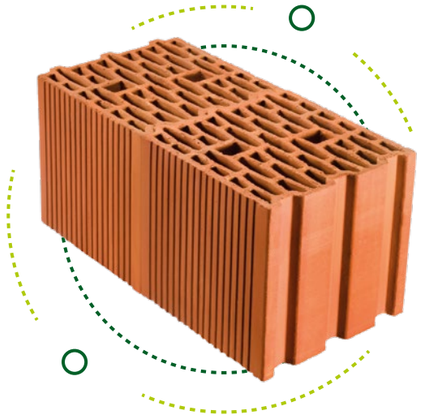
ORTHOBLOCK® PLUS
FILLED WITH GRAPHITE EPS

- **Meets structural and antiseismic requirements under the Eurocodes**
- **Increased thermal insulation advantages**
- **Great thermal mass capacity**
- **Savings in heating and air conditioning**
- **Ideal healthy living conditions**
- **Practically unlimited life expectancy**

BUILDING SYSTEM ORTHOBLOCK®

The effective management of energy during the use of buildings, which aims to protect the environment, save energy resources and reduce cost for users and the world in general, is achieved by saving energy both during production and during use.

ORTHOBLOCK bricks were designed to meet the needs of modern construction and offer thermal insulation advantages.



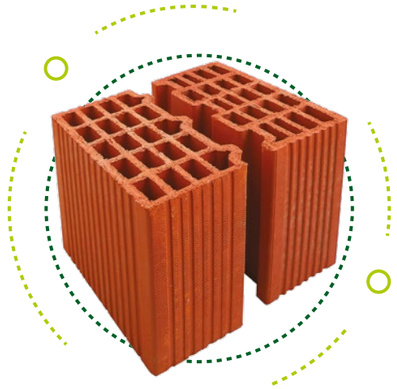
THE ORTHOBLOCK BUILDING SYSTEM INCLUDES:

- **ORTHOBLOCK BRICKS**
  K 100, K 120, K 200, K 250 and K 300
- **METAL LINTELS**
- **ORTHOBLOCK MOUNTING MORTAR BRICKS**
  thin layer
- **NEW RANGE** with square hole pattern and less weight!

CONSTRUCTION SYSTEMS

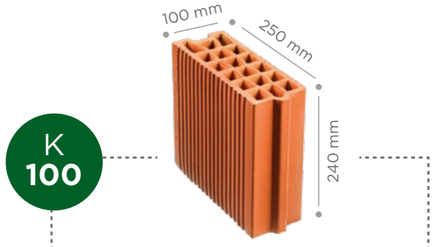
AFFORDABLE & FAST CONSTRUCTION

KEBE reintroduces the traditional bioclimatic architecture, using the **most advanced clay construction materials.**



The new innovative vertically perforated bricks by KEBE are specially designed with:

- **Diamond perforation pattern, for thermal insulation advantages.**
- **Special grips for easy handling and laying.**
- **Laying without vertical mortar joining in non-load bearing masonry.**
- **Great strength.** The special geometrical features, in addition to high mechanical strength, also give increased stability.
- **Easy and fast construction** (11, 12 or 16 pcs/m²).
- **Easy cutting at the desired dimensions.** The company also provides **ORTHOBLOCK** already cut in half, for corners and alternating layers.
- **The overlapping of bricks in corners, junctions and alternating layers, is 125 mm or 190 mm, i.e. at the half of their length.**



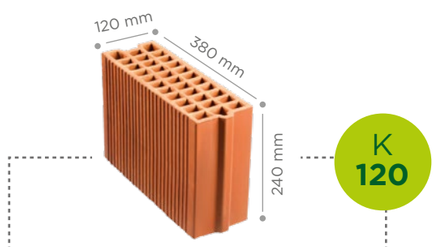
ORTHOBLOCK

Brick dimensions (WxHxL)
100 x 240 x 250 mm

Brick weight: **5.25 kg**

Masonry width: **100 mm**

Number of bricks: **16/m²**



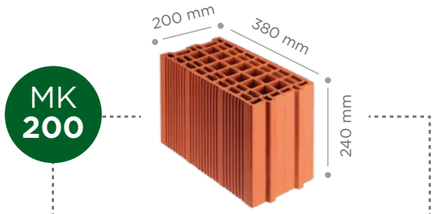
ORTHOBLOCK

Brick dimensions (WxHxL)
120 x 240 x 380 mm

Brick weight: **8.9 kg**

Masonry width: **120 mm**

Number of bricks: **11/m²**



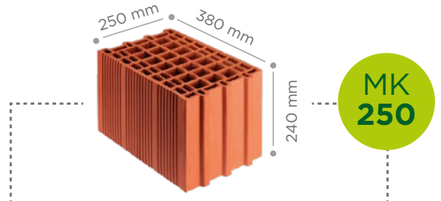
ORTHOBLOCK

Brick dimensions (WxHxL)
200 x 240 x 380 mm

Brick weight: **12.3 kg**

Masonry width: **200 mm**

Number of bricks: **11/m²**



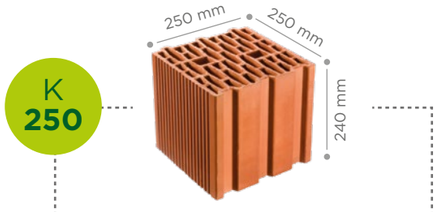
ORTHOBLOCK

Brick dimensions (WxHxL)
250 x 240 x 380 mm

Brick weight: **14.5 kg**

Masonry width: **250 mm**

Number of bricks: **11/m²**



ORTHOBLOCK

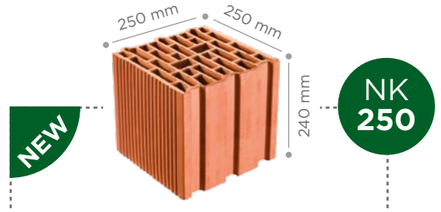
Brick dimensions (WxHxL)
250 x 240 x 250 mm

Brick weight: **12.2 kg**

Masonry width: **250 mm**

Number of bricks: **16/m²**

Sound insulation (dB) - Certified value: **43**



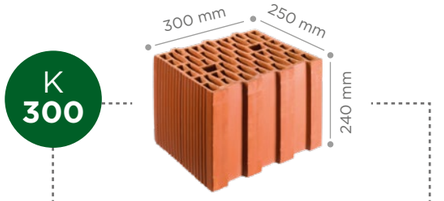
ORTHOBLOCK

Brick dimensions (WxHxL)
250 x 240 x 250 mm

Brick weight: **10.8 kg**

Masonry width: **250 mm**

Number of bricks: **16/m²**



ORTHOBLOCK

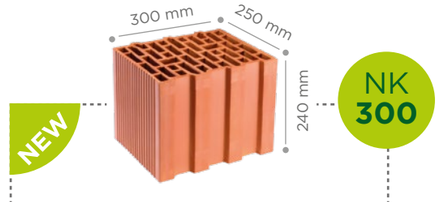
Brick dimensions (WxHxL)
300 x 240 x 250 mm

Brick weight: **14.4 kg**

Masonry width: **300 mm**

Number of bricks: **16/m²**

Sound insulation (dB) - Certified value: **46**



ORTHOBLOCK

Brick dimensions (WxHxL)
300 x 240 x 250 mm

Brick weight: **12.9 kg**

Masonry width: **300 mm**

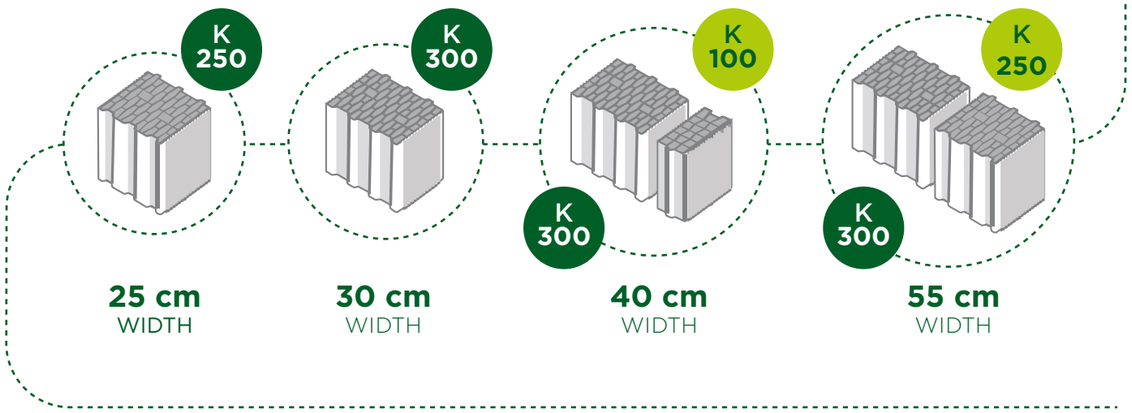
Number of bricks: **16/m²**

LOAD-BEARING MASONRY

Load-bearing masonry is used in the construction of buildings across the world, from ancient times to this day, as we see in monuments of global and Greek architectural heritage.

These monuments, and the traditional houses in the Greek countryside, are proof of the **endurance of clay-brick load-bearing masonry**, having withstood **time** and **earthquakes**, and of their minimal maintenance and low energy requirements.

ORTHOBLOCK COMBINATIONS
FOR LOAD-BEARING MASONRY:



BUILDING WITH **ORTHOBLOCK LOAD-BEARING MASONRY** OFFERS:

- **Affordable, fast, high value and long-lasting traditional construction**
- **High structural stability and strength**
- **Exceptional antiseismic characteristics** (absorption of seismic energy without damage)
- **High fire resistance** (fire-proof)
- **Ideal living conditions** (excellent interior microclimate)
- **Increased thermal properties that do not change over time**
- **High thermal mass capacity** (thermal lag)
- **Savings in heating and air conditioning**

NON-LOAD BEARING MASONRY

ORTHOBLOCK clay bricks have great mechanical strength. When used in non-load bearing masonry, they greatly strengthen the reinforced concrete or metal frame against earthquakes.

ORTHOBLOCK is recommended for construction with a reinforced concrete frame, without requiring vertical assembly with mortar.

- Reinforces the building's anti-seismic behaviour
- Offers savings in heating & air conditioning
- Improves fire resistance
- Reduces external noise and radiation
- Improves interior microclimate
- Increases the life expectancy of reinforced concrete

ORTHOBLOCK MOUNTING MORTAR

An adhesive cement-based material in powder form.

Mix with 20% pure water per powder weight (25 kg of material with 5.0 - 5.3 lt of water). A machine mixer is recommended.

It can be worked with up to 2-3 hours after mixing.

Immersion of the **ORTHOBLOCK** is recommended for application.

The joint must have a maximum 3 mm width. Consumption is 6 - 7.5 kg per m^2 of surface for joining.

ORTHOBLOCK mortar is available in 25 kg bags and covers a masonry surface of 3.0 - 4.5 m^2 **K 250** or 2.5 - 3.5 m^2 **K 300.**

CERTIFIED WITH CE MARKING

ITS CHARACTERISTICS COMPLY WITH STANDARD EN 998-2:

Group based on crushing strength: **M10**

Content in chlorides: **<0.01%**

Resistance to fire: **A1**

Water absorption: **<0.58kg/($m^2 min^{0,5}$)**

Water vapour permeability: **M 15/35 (tabulated value)**

METAL LINTELS

Metal lintels are a horizontal metal element designed to bear the masonry above interior and exterior openings. They are available in sizes that correspond to the **ORTHOBLOCK** widths. Their length will cover any opening dimensions.

THEIR TECHNICAL FEATURES INCLUDE:

- certified with CE marking.
- compliance with standard EN 845-2.
- painted with electrostatic sand texture powder paint, for good grip of the coating.
- Rust protection, polymerization at 200°C.

PRACTICAL CHARACTERISTICS AT APPLICATION:

- fast construction for saving time.
- strong bond between **ORTHOBLOCK** and coating.
- offer a simple, easy and cost-efficient solution.

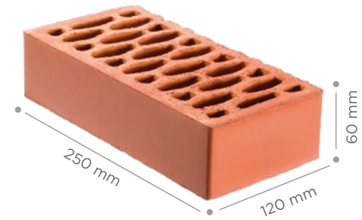
FACING BRICKS

Facing bricks complete the full range of clay structural materials offered by **KEBE**. Thanks to their extraordinary resistance to all weather conditions (sun, rain, frost and wind) and their low cost, **facing clay bricks** are a top architectural choice.

The different hues created by the firing of the clay, give off a sense of luxurious warmth and a unique aesthetic simplicity.

In addition to the external masonry of buildings, facing bricks are used in:

- columns
- fences
- chimneys
- barbecues
- garden decorations
- floorings



Brick dimensions (WxHxL)
120 x 60 x 250 mm

Brick weight: **1.7 kg**

Masonry width: **120 mm**

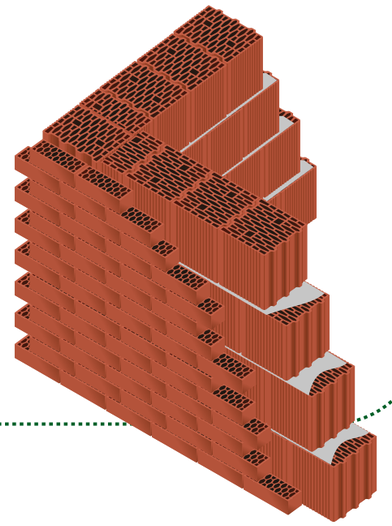
Number of bricks: **55/m^2**

FACING BRICK MASONRY

Facing bricks can be used together with load-bearing **ORTHOBLOCK** masonry.

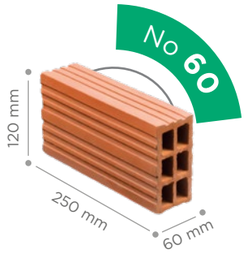
The installation of facing brick masonry on the exterior reduces the masonry maintenance cost, eliminating the need for painting, and increases:

- MECHANICAL STRENGTH
- THERMAL CAPACITY
- SOUND INSULATION
- INSULATION



HORIZONTALLY PERFORATED BRICKS

NEW SANTA PLANT

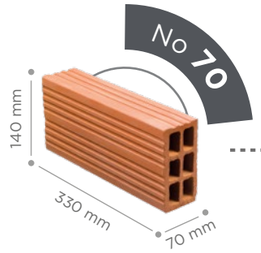


Brick dimensions (WxHxL)
60 x 120 x 250 mm

Brick weight: **1.5 kg**

Wall width: **60 mm**

Number of bricks: **29.5/m²**

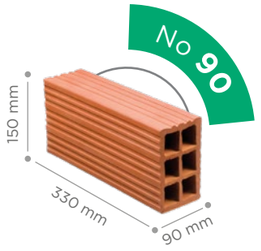


Brick dimensions (WxHxL)
70 x 140 x 330 mm

Brick weight: **3 kg**

Wall width: **70 mm**

Number of bricks: **20/m²**



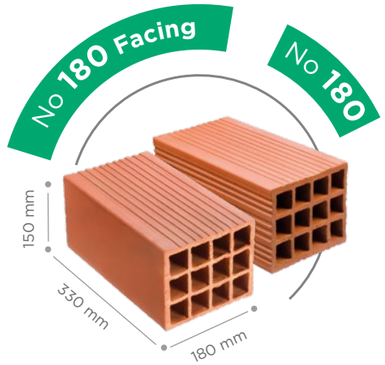
Brick dimensions (WxHxL)
90 x 150 x 330 mm

Brick weight: **3.7 kg**

Wall width: **90 mm**

Number of bricks: **18/m²**

IDEAL CHOICE FOR FENCES

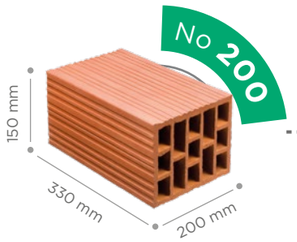


Brick dimensions (WxHxL)
180 x 150 x 330 mm

Brick weight: **6,8 kg**

Wall width: **150 or 180 mm**

Number of bricks: **15 or 18/m²**

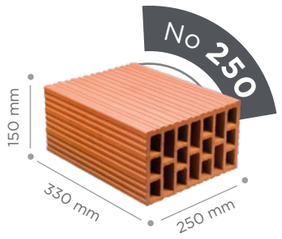


Brick dimensions (WxHxL)
200 x 150 x 330 mm

Brick weight: **7 kg**

Wall width: **200 mm**

Number of bricks: **18/m²**

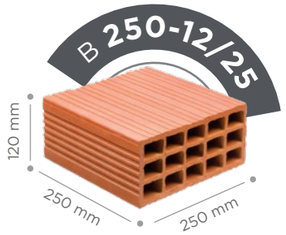


Brick dimensions (WxHxL)
250 x 150 x 330 mm

Brick weight: **9 kg**

Wall width: **250 mm**

Number of bricks: **18/m²**

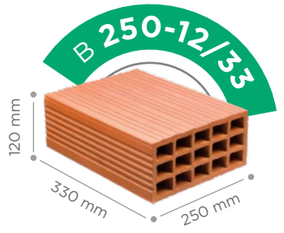


Brick dimensions (WxHxL)
250 x 120 x 250 mm

Brick weight: **5.5 kg**

Wall width: **250 mm**

Number of bricks: **29/m²**

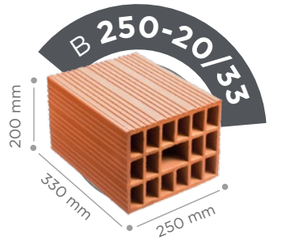


Brick dimensions (WxHxL)
250 x 120 x 330 mm

Brick weight: **7.2 kg**

Wall width: **250 mm**

Number of bricks: **22/m²**



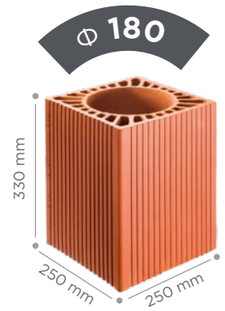
Brick dimensions (WxHxL)
250 x 200 x 330 mm

Brick weight: **10.6 kg**

Wall width: **250 mm**

Number of bricks: **14/m²**

CHIMNEYS & CHIMNEY HATS

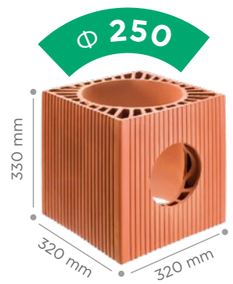


Dimensions (WxHxL)
250 x 330 x 250 mm

Weight: **13 kg**

Diameter: **180 mm**

Side hole diameter:
130 or 150 mm



Dimensions (WxHxL)
320 x 330 x 320 mm

Weight: **18 kg**

Diameter: **250 mm**

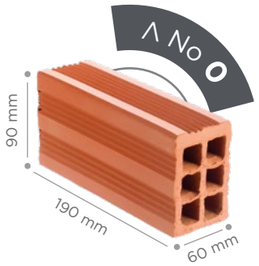
Side hole diameter:
150 or 180 mm

KEBE has the Certificate of Conformity for inspection of the production at the plant **ELOT EN 1806:2006**

Chimney hat
indicative sample, range of options

HORIZONTALLY PERFORATED BRICKS

NEA SANTA & LARISSA BRANCH PRODUCTION



Brick dimensions (WxHxL)
60 x 90 x 190 mm

Brick weight: **1 kg**

Wall width: **60 or 90 mm**

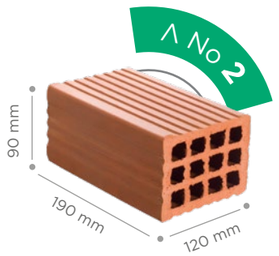
Number of bricks: **50 or 70/m²**

Brick dimensions (WxHxL)
90 x 90 x 190 mm

Brick weight: **1.3 kg**

Wall width: **90 mm**

Number of bricks: **50/m²**

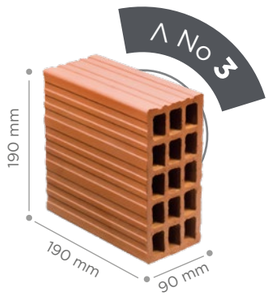


Brick dimensions (WxHxL)
90 x 120 x 190 mm

Brick weight: **1.6 kg**

Wall width: **90 or 120 mm**

Number of bricks: **38 or 50/m²**



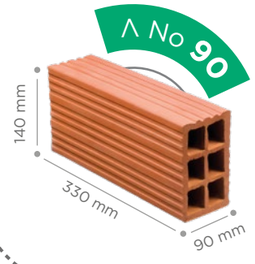
Brick dimensions (WxHxL)
90 x 190 x 190 mm

Brick weight: **2.7 kg**

Wall width: **90 mm**

Number of bricks: **25/m²**

LARISSA BRANCH PRODUCTION

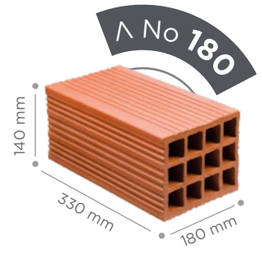


Brick dimensions (WxHxL)
90 x 140 x 330 mm

Brick weight: **3 kg**

Wall width: **90 mm**

Number of bricks: **20/m²**

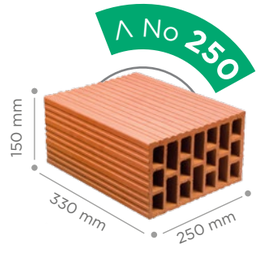


Brick dimensions (WxHxL)
180 x 140 x 330 mm

Brick weight: **5.5 kg**

Wall width: **140 or 180 mm**

Number of bricks: **15 or 20/m²**



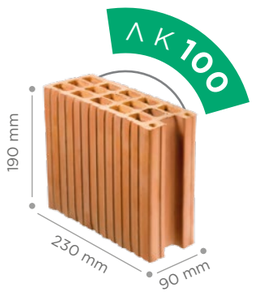
Brick dimensions (WxHxL)
250 x 150 x 330 mm

Brick weight: **7.6 kg**

Wall width: **250 mm**

Number of bricks: **18/m²**

VERTICALLY PERFORATED BRICKS



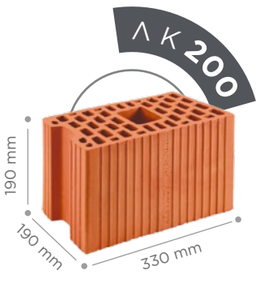
Brick dimensions (WxHxL)
90 x 190 x 230 mm

Brick weight: **3 kg**

Wall width: **90 mm**

Number of bricks: **20/m²**

LARISSA BRANCH PRODUCTION



Brick dimensions (WxHxL)
190 x 190 x 330 mm

Brick weight: **9 kg**

Wall width: **190 mm**

Number of bricks: **15/m²**

MECHANICAL RESISTANCE & STABILITY

The interlocking offered by the **ORTHOBLOCK** design, combined with the greater mechanical strength of vertically perforated bricks, gives your construction much greater stability and endurance over time. In load bearing masonry, the greater the thickness of the wall, the higher the mechanical strength and stability, and **ORTHOBLOCK** bricks multiply this effect compared to any other building method, at a cost that is significantly lower than conventional construction.

FIRE SAFETY

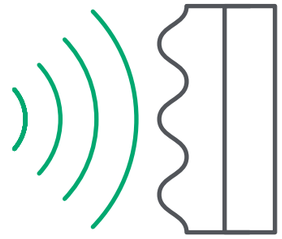
Clay is a naturally fireproof material that offers the best fire resistance of any building material. In addition to maintaining its cohesion and mechanical strength at temperatures exceeding **1000° C** for more than **300 minutes**, it stands out among other building materials, as it does not emit any toxic gases.

HYGIENE, HEALTH & ENVIRONMENT

Perhaps the greatest advantage of using clay as a building material is the creation of an excellent interior microclimate. Clay bricks, by constantly storing and exchanging heat and moisture, have a balancing effect and offer the greatest sense of comfort indoors when compared to other building materials. Moreover, they do not decay, do not emit odours and do not reflect any kind of radiation.

ENERGY SAVING & HEAT RETENTION

The heat-accumulating clay shell created with **ORTHOBLOCK** is an excellent passive system for heat and moisture exchange. It enables the most efficient use of energy, natural ventilation, and the alternation of day and nighttime temperatures to create maximum thermal comfort inside the building, with little or no energy consumption.

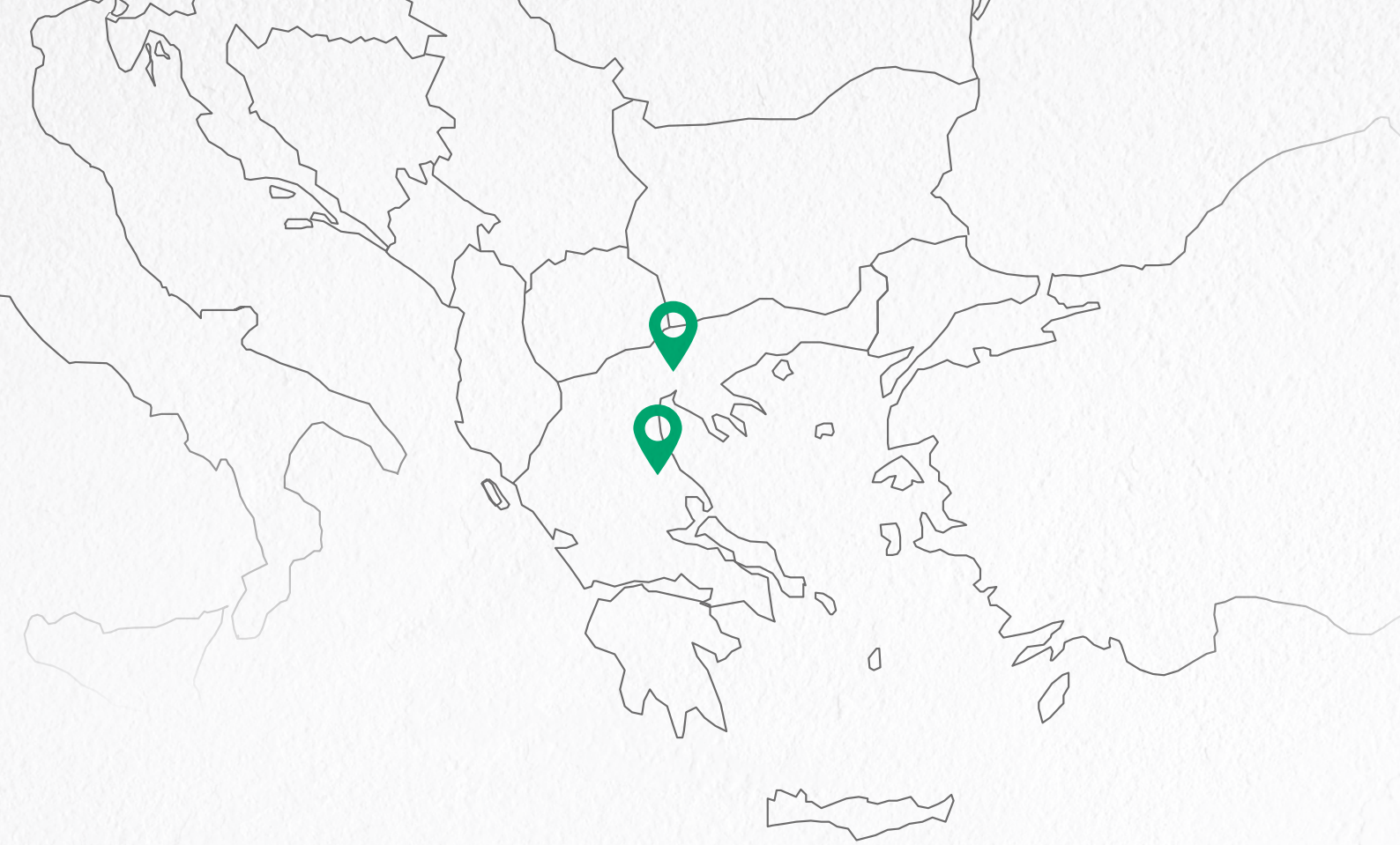


PROTECTION AGAINST NOISE

Clay has the ability to partially absorb noises, decreasing their intensity, depending on its mass. The more clay there is on the building's exterior shell, the less the noise in its interior.

SAFE USE

Clay tiles are 100% natural materials, odourless, radiation-free, and in general their use poses no immediate or long-term risk.



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