SUSTAINABLE BUILDING MATERIALS

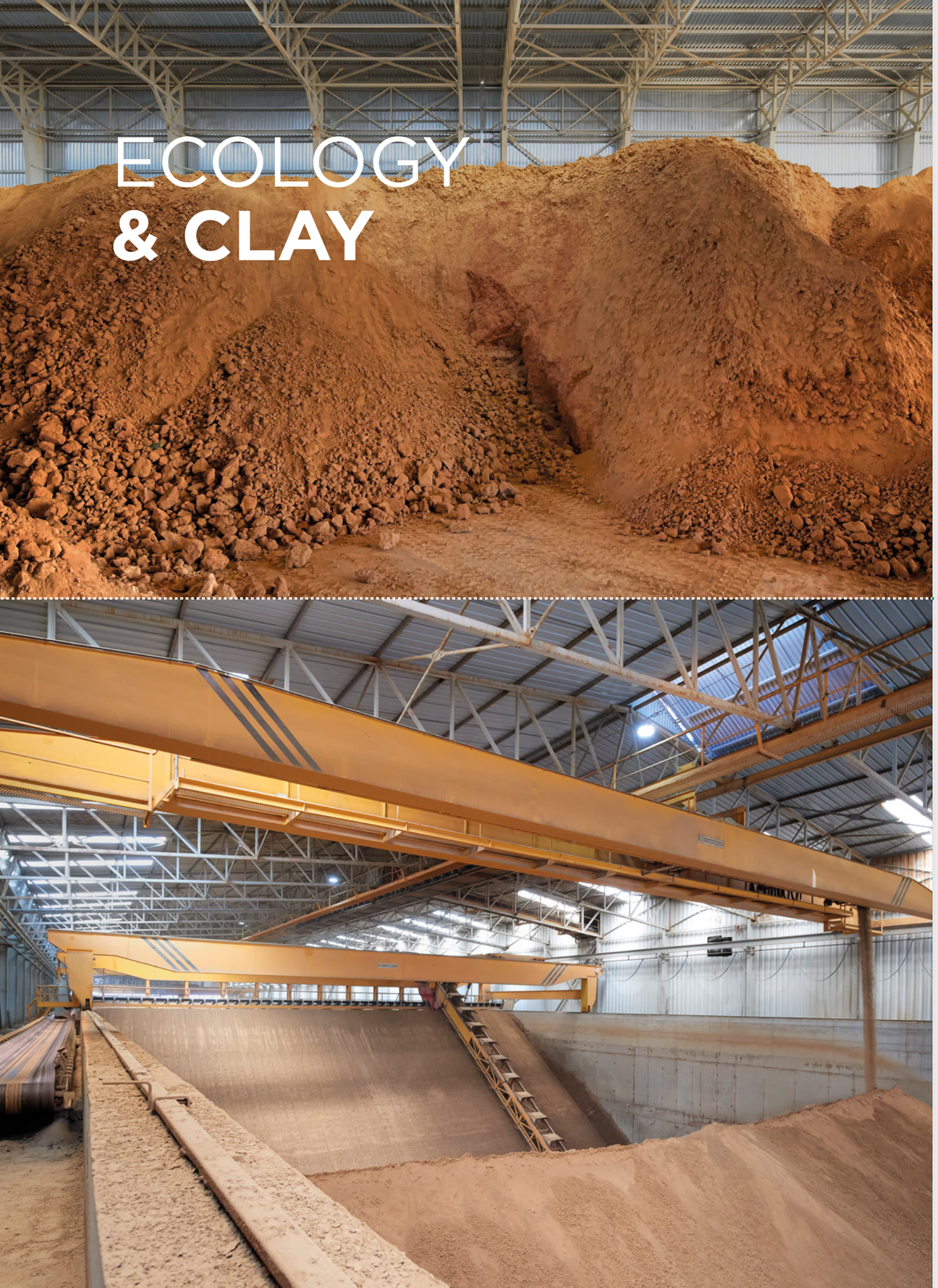
serving a **better world!**

ORTHOBLOCK®

ORTHOBLOCK® PLUS

90 YEARS
A STRUCTURALLY BETTER WORLD

EST. 1935
KOTHALI
KEBE
NORTHERN GREECE CERAMICS



ECOLOGY & CLAY

Growing awareness that it is no longer possible to waste resources recklessly in order to sustain a lifestyle that leads our planet and our civilization toward destruction has driven to a significant shift toward **Ecology and Sustainable (Green) Development.**

Ecological construction refers to the construction of buildings at low cost and with minimum energy consumption to achieve thermal comfort, using widely available natural materials that require minimum maintenance and offer virtually unlimited durability.

Clay has been used for more than **4,000** years in the production of bricks and roof tiles, due to its excellent resistance to fire, temperature fluctuations, and sound, its high durability over time, and its aesthetic qualities.

For the production of clay bricks, only mixtures of **clay and water are used.**

Taking into account the availability of raw material, the potential for reuse and restoration of clay excavation sites, the carbon footprint (energy consumption) related to production, transportation, and construction, as well as the building's lifetime energy savings resulting from clay's thermal mass properties, **clay stands out as a unique ecological material.**

ABOUT US

With over 90 years of experience and expertise in the field of ceramics manufacturing, **KEBE (Northern Greece Ceramics)** produces and supplies — to both domestic and international markets — a wide range of traditional and modern structural ceramic products of high energy performance value. **KEBE's facilities** maintain the highest production capacity in Europe and one of the highest worldwide. Specifically, the company operates on privately **owned premises of 235,000 m²,** including 44,000 m² of industrial buildings and 12,000 m² of covered raw material storage space, located in Nea Santa, Kilkis (Northern Greece). Its annual production capacity reaches **700,000 tons of clay bricks and 75,000,000 roof tiles and accessories.**

These state-of-the-art production units utilize modern mechanical equipment and robotic technologies, which contribute to a low environmental footprint during the manufacturing process. Moreover, **Renewable Energy Sources (RES)** have been used in production processes for many years, further enhancing environmental efficiency. Such investments have led to the optimal use of natural resources and the creation of high added-value products with a long life cycle, characterized by the minimization of environmental impact throughout all stages of production.

Focusing on **Research and Development (R&D),** the company's primary objective is to actively contribute to the sustainable development of the broader construction sector by supplying the market with high-quality, aesthetically refined, and bioclimatically designed products. With a steadfast commitment to the triad of Quality – Innovation – Sustainability, **KEBE** continues to play a leading role in the construction materials market, both in Greece and abroad, maintaining a presence in over 40 countries worldwide.

Establishing the foundations of responsible entrepreneurship, **KEBE became the first company in the Greek ceramics industry to publish a Sustainability Report (KEBE ESG Report),** strengthening the basis for a future where construction harmoniously coexists with care for people, nature, and corporate governance — remaining faithful to its vision of building a structurally better world.

CERTIFICATIONS

EPD® THE INTERNATIONAL EPD® SYSTEM

EPD® CLIMATE DECLARATION

CE

ENVIRONMENTAL PRODUCT DECLARATION (EPD & EPD CLIMATE)

The first Greek ceramics manufacturer — and among the first in Europe — to obtain Environmental Product Declaration (EPD & EPD Climate) certification, meeting the requirements of LEED, BREEAM, WELL, and other internationally recognized sustainability assessment systems

CE CONFORMITY CERTIFICATION

Compliance with the applicable requirements of European legislation and verification that the company's construction products conform to their Declared Performance (DoP).

PARTNER ORGANIZATIONS

certimac | ENEA CNR

CERTIMAC| ENEA & CNR

Measurement & Determination of Thermal Conductivity

A "green" investment

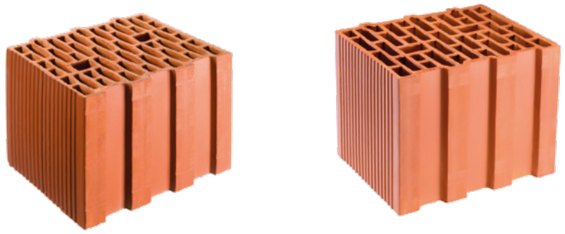
leveraging the experience of three generations of the largest ceramics group in Greek history, dedicated to the production of structural clay products,

a purely ecological material.

ADVANCED BUILDING SYSTEMS

COST-EFFECTIVE & FAST CONSTRUCTION

ORTHOBLOCK®

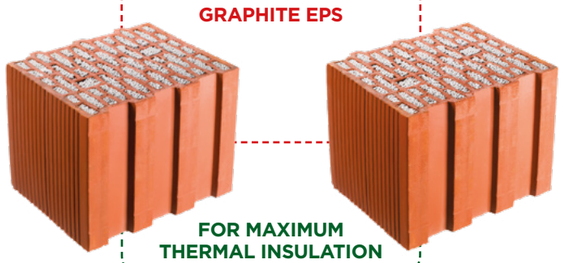


FOR LOAD-BEARING MASONRY

FOR NON LOAD-BEARING MASONRY

ORTHOBLOCK® PLUS

FILLED WITH GRAPHITE EPS



FOR MAXIMUM THERMAL INSULATION

- Excellent Thermal Insulation
- High Thermal Mass
- Superior Fire Resistance
- High Vapor Permeability
- High Sound Insulation
- Seismic-Resistant Properties
- High Mechanical Strength
- High Moisture Resistance
- Environmental Product Declaration (EPD)
- Natural, Recyclable Material Based on Clay
- Suitable for Both Infill and Load-Bearing Masonry
- Practically Unlimited Service Life

ORTHOBLOCK® MASONRY BUILDING SYSTEMS ORTHOBLOCK® PLUS

The new innovative vertical-perforated bricks from KEBE are specifically designed with the following features:

- Special cross-section with rhomboid hole arrangement, providing enhanced thermal insulation properties.
- Integrated handles for easy in site transportation and placement.
- High mechanical strength: the unique geometric design not only increases structural strength but also ensures exceptional stability.
- Easy and fast, with coverage of 11 or 16 units per m².
- Easy cutting to desired dimensions using an electric saw.
- Pre-formed “half” units for corners and staggered layering.

THE ORTHOBLOCK MASONRY BUILDING SYSTEM INCLUDES:

- **ORTHOBLOCK** BRICKS
- **ORTHOBLOCK BOND** thin - layer BONDING MORTAR
- METAL LINTELS

SUPPLEMENTARY CONSTRUCTION PRODUCTS

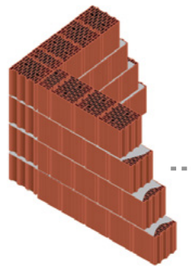
ORTHOBLOCK BOND MORTAR (M10)

The **ORTHOBLOCK BOND** bonding mortar is used for the construction of vertical-perforated bricks and forms an integral part of the **ORTHOBLOCK & PLUS** masonry building systems. It is a ready-to-use, industrially produced, quality-controlled innovative mortar with a wide water range, which can be applied either as a thin-layer mortar or as a conventional bagged building mortar.

Its high mechanical strength (M10), strong adhesion, long open working time, combined with high water repellency and excellent vapor permeability, makes it an ideal choice for fast, clean, and safe construction of **ORTHOBLOCK & PLUS** masonries.

METAL LINTELS

Pre-formed metal lintels replace conventional lintels, significantly reducing the construction time of masonry structures.



Note: In non-load-bearing masonries constructed with ORTHOBLOCK, vertical joints are not required.

INNOVATION IN RENOVATION!!
FOR INTERIOR PARTITIONS

ORTHOBLOCK®
MK80

An **ideal choice** for renovations and new constructions, **maximizing usable space area** without any compromise in **performance or quality!**

Dimensions (WxHxL):
80 x 240 x 500 mm

- **SPACE SAVING**
- **QUICK & CLEAN INSTALLATION**

STRUCTURAL STRENGTH

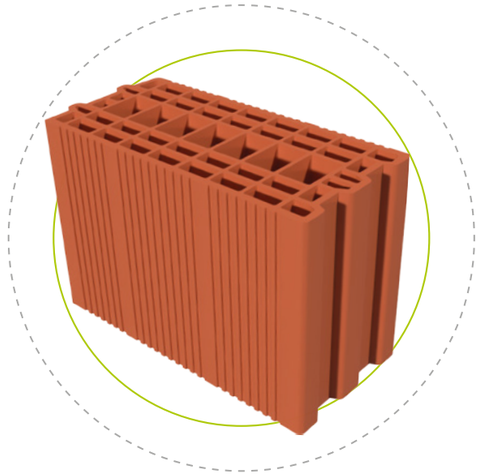
HIGH THERMAL CAPACITY

RESISTANCE TO MOISTURE

HIGH SOUND INSULATION

NEW

NEW EXTERNAL MASONRY SOLUTIONS
BY KEBE

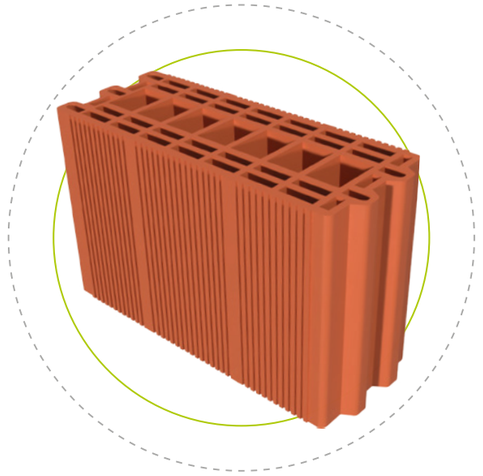


ORTHOBLOCK®
MK180

The **ORTHOBLOCK MK180** represents a strategic enhancement of the vertically perforated brick range, offering technologically advanced solutions that replace traditional building methods with superior performance.

With a thickness of **18 cm,** it is specifically designed for infill wall applications, providing improved thermal insulation, increased sound insulation, and even greater structural sturdiness compared to horizontally perforated bricks of similar thickness. The **MK180** addresses the need for efficient single-wall solutions, delivering a modern and more effective approach to construction.

*With a steady commitment to innovation, the **ORTHOBLOCK** series of vertically perforated clay blocks is expanding dynamically.*

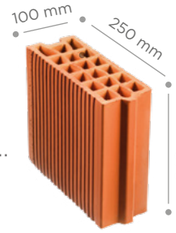


ORTHOBLOCK®
MK150

At the same time, the **ORTHOBLOCK MK150,** with a thickness of **15 cm,** offers smart and versatile solutions, as it can serve as an ideal choice for various architectural and structural details where large wall thicknesses are not required — such as bay windows, staircase walls, internal common-area partitions, interconnecting walls, and parapet walls.

ORTHOBLOCK® & ORTHOBLOCK® PLUS BUILDING SYSTEMS

K 100



ORTHOBLOCK®

Brick dimensions (WxHxD):
100 x 240 x 250 mm

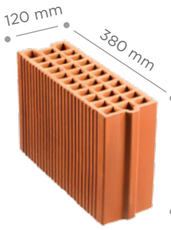
Brick weight: **5,35 kg**

Masonry width: **100 mm**

Number of bricks: **16/m²**

Sound Reduction Index Rw: **42***

K 120



ORTHOBLOCK®

Brick dimensions (WxHxD):
120 x 240 x 380 mm

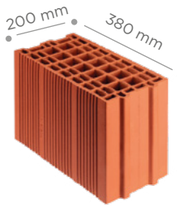
Brick weight: **8,85 kg**

Masonry width: **120 mm**

Number of bricks: **11/m²**

Sound Reduction Index Rw: **43***

MK 200



ORTHOBLOCK®

Brick dimensions (WxHxD):
200 x 240 x 380 mm

Brick weight: **12,50 kg**

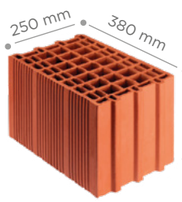
Masonry width: **200 mm**

Number of bricks: **11/m²**

Sound Reduction Index Rw: **46***

λ, 10, dry, unit:	λ, equ, design, masonry (with 3mm bonding mortar):
0,1971 W/mK	**0,2193 W/mK**

MK 250



ORTHOBLOCK®

Brick dimensions (WxHxD):
250 x 240 x 380 mm

Brick weight: **14,90 kg**

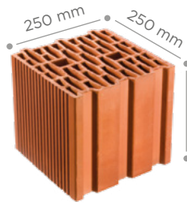
Masonry width: **250 mm**

Number of bricks: **11/m²**

Sound Reduction Index Rw: **48***

λ, 10, dry, unit:	λ, equ, design, masonry (with 3mm bonding mortar):
0,2061 W/mK	**0,2284 W/mK**

K 250



ORTHOBLOCK®

Brick dimensions (WxHxD):
250 x 240 x 250 mm

Brick weight: **11,90 kg**

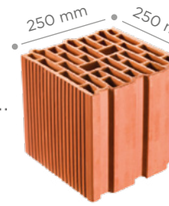
Masonry width: **250 mm**

Number of bricks: **16/m²**

Sound Reduction Index Rw: **51****

λ, 10, dry, unit:	λ, equ, design, masonry (with 3mm bonding mortar):
0,1585 W/mK	**0,1743 W/mK**

NK 250



ORTHOBLOCK®

Brick dimensions (WxHxD):
250 x 240 x 250 mm

Brick weight: **10,65 kg**

Masonry width: **250 mm**

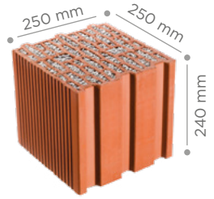
Number of bricks: **16/m²**

Sound Reduction Index Rw: **48***

λ, 10, dry, unit:	λ, equ, design, masonry (with 3mm bonding mortar):
0,1664 W/mK	**0,1818 W/mK**

** Laboratory Measurement ** Measurement Using a Computational Method*

K250 PLUS



ORTHOBLOCK® PLUS

Brick dimensions (WxHxD):
250 x 240 x 250 mm

Brick weight: **11,90 kg**

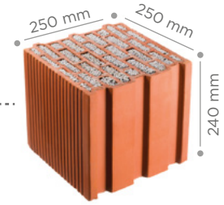
Masonry width: **250 mm**

Number of bricks: **16/m²**

Sound Reduction Index Rw: **51****

λ, 10, dry, unit:	λ, equ, design, masonry (with 3mm bonding mortar):
0,0901 W/mK	**0,1053 W/mK**

NK250 PLUS



ORTHOBLOCK® PLUS

Brick dimensions (WxHxD):
250 x 240 x 250 mm

Brick weight: **10,65 kg**

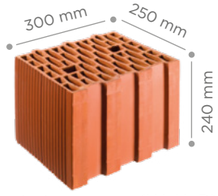
Masonry width: **250 mm**

Number of bricks: **16/m²**

Sound Reduction Index Rw: **50****

λ, 10, dry, unit:	λ, equ, design, masonry (with 3mm bonding mortar):
0,0856 W/mK	**0,1004 W/mK**

K 300



ORTHOBLOCK®

Brick dimensions (WxHxD):
300 x 240 x 250 mm

Brick weight: **14,20 kg**

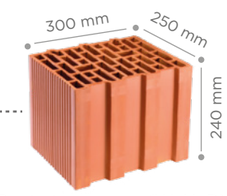
Masonry width: **300 mm**

Number of bricks: **16/m²**

Sound Reduction Index Rw: **53****

λ, 10, dry, unit:	λ, equ, design, masonry (with 3mm bonding mortar):
0,1570 W/mK	**0,1727 W/mK**

NK 300



ORTHOBLOCK®

Brick dimensions (WxHxD):
300 x 240 x 250 mm

Brick weight: **13,15 kg**

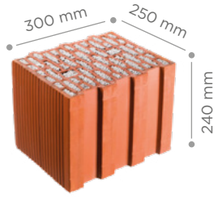
Masonry width: **300 mm**

Number of bricks: **16/m²**

Sound Reduction Index Rw: **51***

λ, 10, dry, unit:	λ, equ, design, masonry (with 3mm bonding mortar):
0,1605 W/mK	**0,1756 W/mK**

K300 PLUS



ORTHOBLOCK® PLUS

Brick dimensions (WxHxD):
300 x 240 x 250 mm

Brick weight: **14,20 kg**

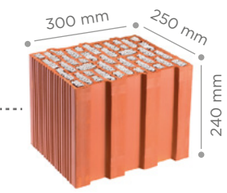
Masonry width: **300 mm**

Number of bricks: **16/m²**

Sound Reduction Index Rw: **53***

λ, 10, dry, unit:	λ, equ, design, masonry (with 3mm bonding mortar):
0,0893 W/mK	**0,1045 W/mK**

NK300 PLUS



ORTHOBLOCK® PLUS

Brick dimensions (WxHxD):
300 x 240 x 250 mm

Brick weight: **13,15 kg**

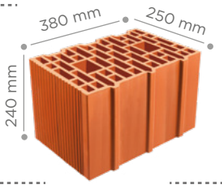
Masonry width: **300 mm**

Number of bricks: **16/m²**

Sound Reduction Index Rw: **52****

λ, 10, dry, unit:	λ, equ, design, masonry (with 3mm bonding mortar):
0,0839 W/mK	**0,0985 W/mK**

NK 380



ORTHOBLOCK®

Brick dimensions (WxHxD):
380 x 240 x 250 mm

Brick weight: **15,65 kg**

Masonry width: **380 mm**

Number of bricks: **16/m²**

Sound Reduction Index Rw: **52**

NEW

λ, 10, dry, unit:	λ, equ, design, masonry (with 3mm bonding mortar):
0,1726 W/mK	**0,1878 W/mK**

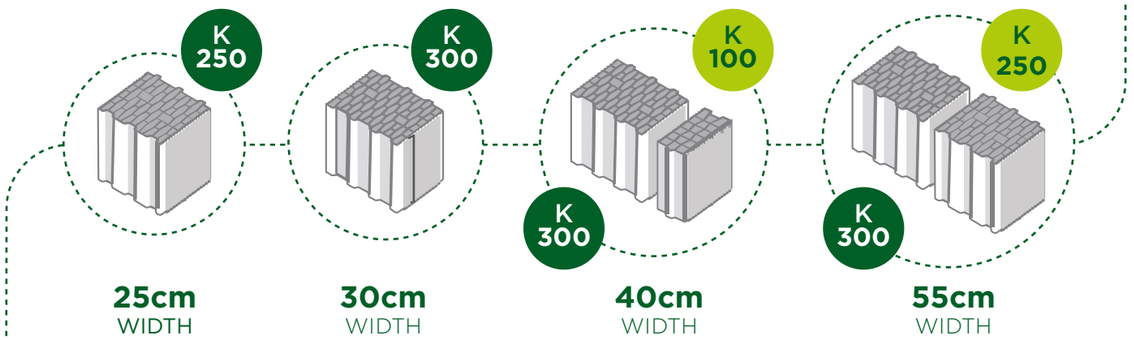
** Laboratory Measurement ** Measurement Using a Computational Method*

LOAD BEARING MASONRY

Masonry is defined as load-bearing when it carries all the structural loads of a building, as well as all external dynamic forces it may be subjected to. Load-bearing masonry has been used worldwide in building construction from antiquity to the present, as evidenced by numerous monuments of both global and Greek architectural heritage.

The **ORTHOBLOCK K250 / K250 PLUS and ORTHOBLOCK K300 / K300 PLUS** vertical perforated bricks from KEBE meet all the necessary criteria for the construction of load-bearing masonry.

ORTHOBLOCK COMBINATIONS FOR LOAD-BEARING MASONRY:



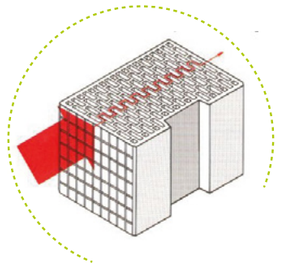
BUILDINGS WITH **ORTHOBLOCK LOAD-BEARING MASONRY** OFFERS:

- **Cost-effective and fast construction with high value and long lifetime**
- **Excellent structural stability and strength**
- **Outstanding seismic performance due to their technical characteristics**
- **Very high fire resistance**
- **Enhanced thermal insulation properties**
- **Great heat storage capacity, due to high heat capacity**
- **Energy savings in heating and cooling**
- **High moisture resistance**

NON-LOAD BEARING MASONRY

Masonry is defined as non-load bearing when it fills the gaps of a load-bearing framework. Although it does not carry structural loads, it serves as the first line of defense against dynamic forces. Non-load bearing masonry constructed with **ORTHOBLOCK** enhances the strength of the structural frame against seismic actions.

ORTHOBLOCK as non-load bearing masonry is recommended for structures with a reinforced concrete frame, with no requirement for vertical joints



- High thermal insulation properties
- Great heat storage capacity, due to high heat capacity
- High levels of indoor thermal comfort, making it an ideal choice for bioclimatic building constructions
- Excellent sound insulation properties
- Fast construction when combined with ORTHOBLOCK thin-layer bonding mortar
- Contribution to the building's seismic performance
- Very high fire resistance
- High moisture resistance

ORTHOBLOCK® & ORTHOBLOCK® PLUS BUILDING SYSTEMS

BONDING MORTAR

ORTHOBLOCK BOND is a fine-grained, cement-based masonry mortar designed for use with **ORTHOBLOCK & PLUS.**

MIXING INSTRUCTIONS:

Mixing one 25 kg bag with 5.7–6.0 liters of water: Produces a fluid mixture suitable for masonry construction with thin joints (2–5 mm) using the dipping method.

Mixing one 25 kg bag with 5.2–5.5 liters of water: Produces a stiffer mixture for masonry construction with joint thickness up to 10 mm, applied with a trowel.

For optimal results, it is recommended to use a mechanical mixer at low speed when preparing the final mix.

Application temperature: **5°C to 35°C.**

ORTHOBLOCK BOND Consumption: **1.4–1.5 kg/m²/mm**

CERTIFIED WITH CE MARKING

ITS CHARACTERISTICS COMPLY WITH STANDARD EN 998-2:

Compressive Strength: **>10N/mm²**

Reaction to Fire: **A1**

Water Absorption: **<0,5kg/m².min^0,5**

Thermal Conductivity Coefficient λ10,dry,unit: **0,61 W/mK**

Water Vapour Permeability μ: **<15**

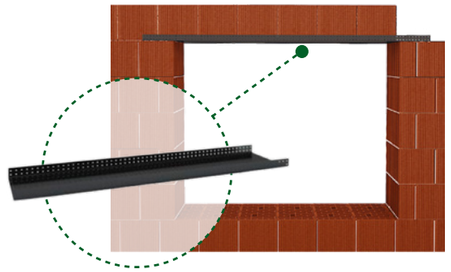
THE FOLLOWING TABLE PRESENTS THE INDICATIVE PERFORMANCE OF EACH ORTHOBLOCK CODE:

THIN-LAYER BONDING MORTAR													
ORTHOBLOCK	K 100	K 120	MK 200	MK 250	K 250	K250 PLUS	NK 250	NK250 PLUS	K 300	K300 PLUS	NK 300	NK300 PLUS	NK 380
PERFORMANCE: m2 OF MASONRY WALL / BAG OF 25KG	6,5 up to 9,5	6,0 up to 9,0	3,5 up to 6,0	3,0 up to 4,5	2,5 up to 4,5	2,5 up to 4,0	3,0 up to 5,0	2,5 up to 4,5	2,0 up to 3,5	2,0 up to 3,0	2,0 up to 4,0	2,0 up to 3,5	1,5 up to 3,0

NOTES:
The above performance values are indicative, derived from a combination of laboratory and empirical measurements. These indicative values apply only to horizontal joints with a thickness of **3 mm** (in case of non-load bearing masonry constructed with **ORTHOBLOCK,** vertical jointing is not required).

METAL LINTELS

Metal lintels are horizontal metal structures designed to support masonry over interior and exterior openings. They are available in sizes that correspond directly to the widths of **ORTHOBLOCK and ORTHOBLOCK PLUS** bricks. Their length accommodates openings of up to 2.5 meters long.



THEIR TECHNICAL CHARACTERISTICS ARE:

- Certified with CE Declaration of Conformity
- Compliant with EN 845-2 standard
- Coated with electrostatic powder paint of a special sandy texture for optimal plaster adhesion
- Corrosion-resistant
- Polymerized at 200°C

PRACTICAL CHARACTERISTICS IN APPLICATION:

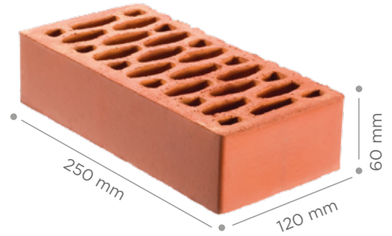
- Enable faster construction and time savings
- Create a strong bond between **ORTHOBLOCK & ORTHOBLOCK PLUS** bricks and plasters
- Provide a simple, easy, and cost-effective solution

FACING BRICK

Facing bricks represent an excellent architectural solution for decorating the facades of a building. They can be constructed as running masonry parallel to the **ORTHOBLOCK** construction system, either on the interior or exterior surfaces of the building. Their high-quality visible surface provides an aesthetically appealing architectural finish, highlighting the ceramic and earthy character of the construction, without the need for additional plastering.

In addition to exterior walls, facing bricks can also be used as decorative elements in:

- **Columns**
- **Fences**
- **Chimneys**
- **Barbecue Grills**
- **Garden Decoration**
- **Floor Paving**



Brick dimensions (WxHxD):
120 x 60 x 250 mm

Brick weight: **1,75 kg**

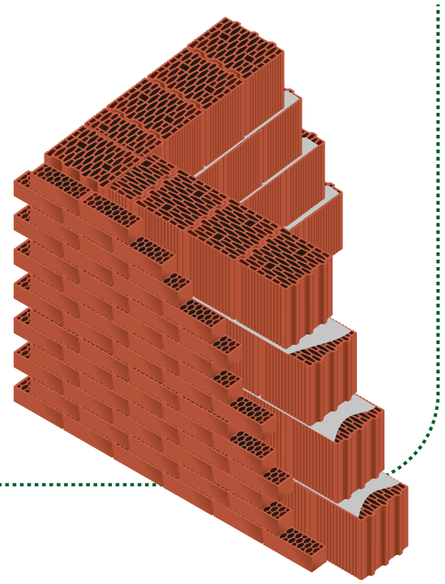
Masonry Thickness: **120 mm**

Number of bricks: **55/m²**

FACING MASONRY

Facing bricks can be used to clad both load bearing masonry and non-load bearing masonry constructed with the **ORTHOBLOCK** building systems. Installing facing masonry on the exterior reduces maintenance costs by eliminating the need for painting and increases:

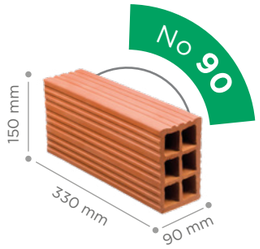
- THERMAL INSULATION
- THERMAL MASS
- SOUND INSULATION
- MECHANICAL STRENGTH



HORIZONTAL PERFORATED BRICKS

PRODUCTION
NEA SANTA

No 90



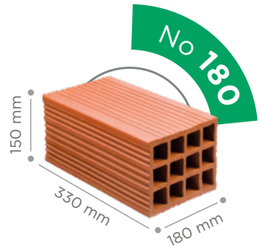
Brick dimensions (WxHxL):
90 x 150 x 330 mm

Brick weight: **3,80 kg**

Wall width: **90 mm**

Number of bricks: **18/m²**

No 180



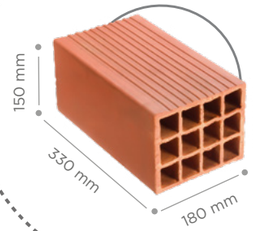
Brick dimensions (WxHxL):
180 x 150 x 330 mm

Brick weight: **7,15 kg**

Wall width: **150 ή 180 mm**

Number of bricks: **15 ή 18/m²**

No 180 Facing



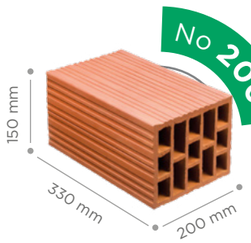
Brick dimensions (WxHxL):
180 x 150 x 330 mm

Brick weight: **7,35 kg**

Wall width: **180 mm**

Number of bricks: **18/m²**

No 200



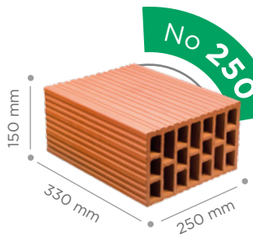
Brick dimensions (WxHxL):
200 x 150 x 330 mm

Brick weight: **7,10 kg**

Wall width: **200 mm**

Number of bricks: **18/m²**

No 250



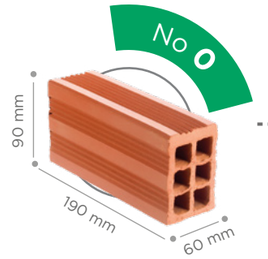
Brick dimensions (WxHxL):
250 x 150 x 330 mm

Brick weight: **9,20 kg**

Wall width: **250 mm**

Number of bricks: **18/m²**

No 0



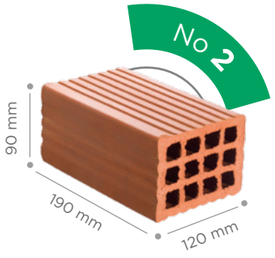
Brick dimensions (WxHxL):
60 x 90 x 190 mm

Brick weight: **0,90 kg**

Wall width: **60 ή 90 mm**

Number of bricks: **50 ή 70/m²**

No 2



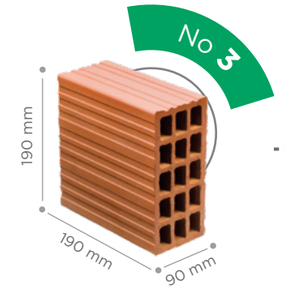
Brick dimensions (WxHxL):
90 x 120 x 190 mm

Brick weight: **1,85 kg**

Wall width: **90 ή 120 mm**

Number of bricks: **38 ή 50/m²**

No 3



Brick dimensions (WxHxL):
90 x 190 x 190 mm

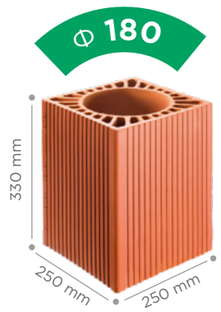
Brick weight: **2,75 kg**

Wall width: **90 mm**

Number of bricks: **25/m²**

CHIMNEYS

Φ 180



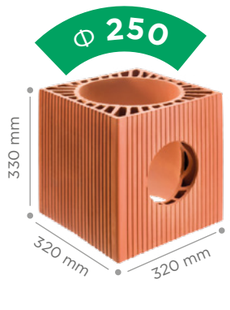
Dimensions (WxHxL):
250 x 330 x 250 mm

Weight: **13,55 kg**

Diameter: **180 mm**

Side hole diameter:
130 ή 150 mm

Φ 250



Dimensions (WxHxL):
320 x 330 x 320 mm

Weight: **19,05 kg**

Diameter: **250 mm**

Side hole diameter:
150 ή 180 mm

BENEFITS OF KEBE CERAMIC BRICKS

EXCELLENT
THERMAL INSULATION

Energy savings in heating
& cooling

HIGH
THERMAL COMFORT

EXCELLENT
FIRE RESISTANCE

HIGH
VAPOR PERMEABILITY

HIGH
SOUND INSULATION

SEISMIC-RESISTANT
PROPERTIES

Increases the strength of infilled
walls up to 5.5 times compared
to the corresponding bare frame

HIGH
MECHANICAL
STRENGTH

ENVIRONMENTAL
PRODUCT DECLARATION

(EPD) for projects meeting LEED,
BREEAM, WELL, and other requirements.
Contribution to bioclimatic design and
the construction of passive buildings

NATURAL,
RECYCLABLE PRODUCT

clay-based, free of chemical additives

SUITABLE FOR CONSTRUCTION
OF BOTH LOAD BEARING & NON-
LOAD BEARING MASONRY

Compliance with the requirements
of Eurocode 6 & 8

PRACTICALLY
UNLIMITED
LIFETIME

HIGH
MOISTURE
RESISTANCE

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T +30 23410 75570 | **E** exports@kebe-sa.gr

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