

SUSTAINABLE BUILDING MATERIALS

serving a **better world!**



ORTHOBLOCK®

**ORTHOBLOCK®
PLUS**



ECOLOGY & CLAY

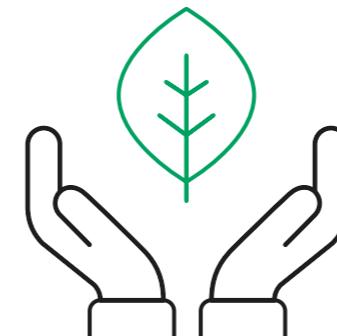


Growing awareness that it is no longer possible to waste resources recklessly in order to sustain a lifestyle that leads our planet and our civilization toward destruction has driven to a significant shift toward **Ecology and Sustainable (Green) Development**.

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 re-

sources 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.

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.



CERTIFICATIONS



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).

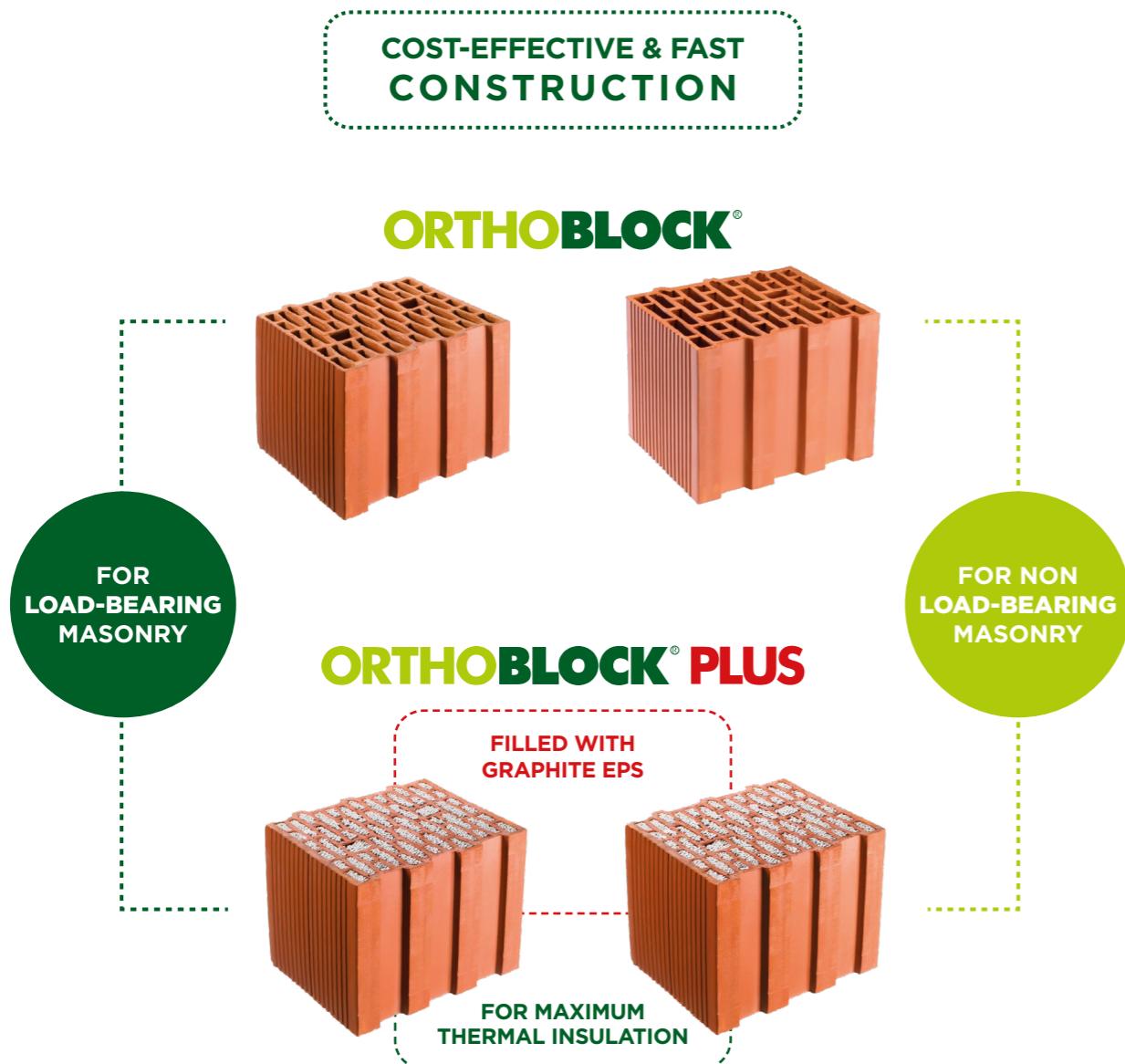
PARTNER ORGANIZATIONS



CERTIMAC | ENEA & CNR
Measurement & Determination
of Thermal Conductivity

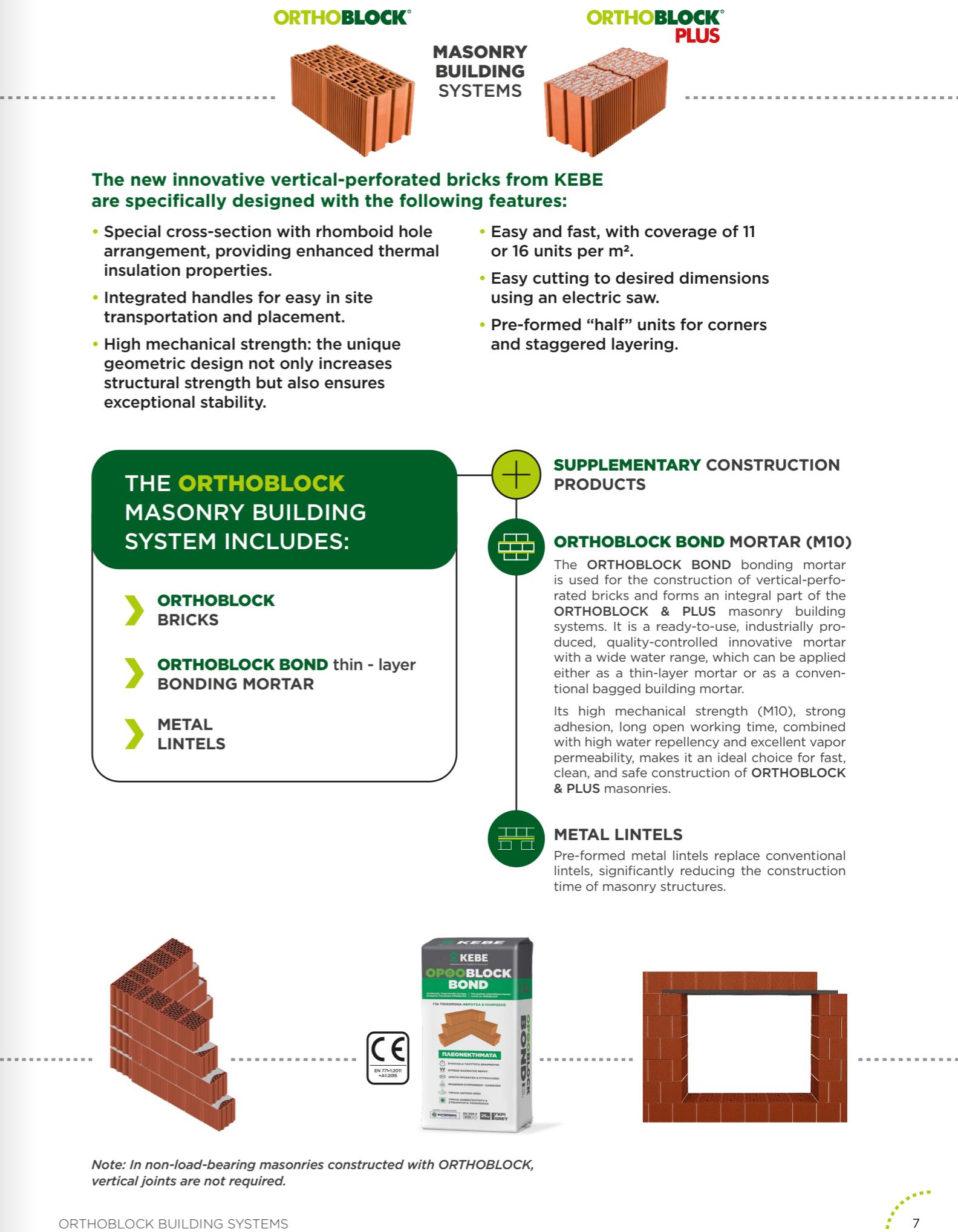


ADVANCED BUILDING SYSTEMS



- ✓ 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



› 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



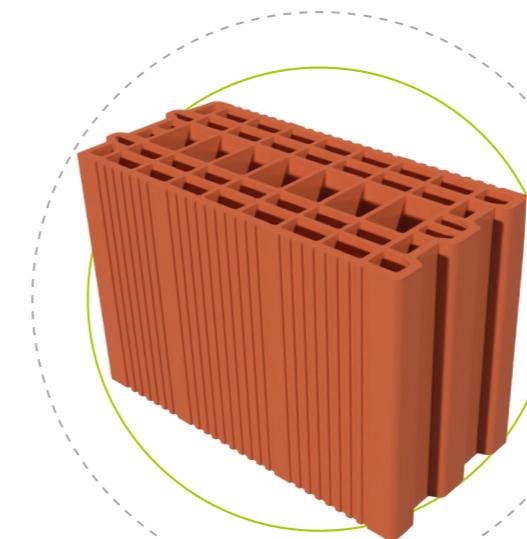
RESISTANCE
TO MOISTURE



HIGH SOUND
INSULATION



› NEW EXTERNAL MASONRY SOLUTIONS BY KEBE

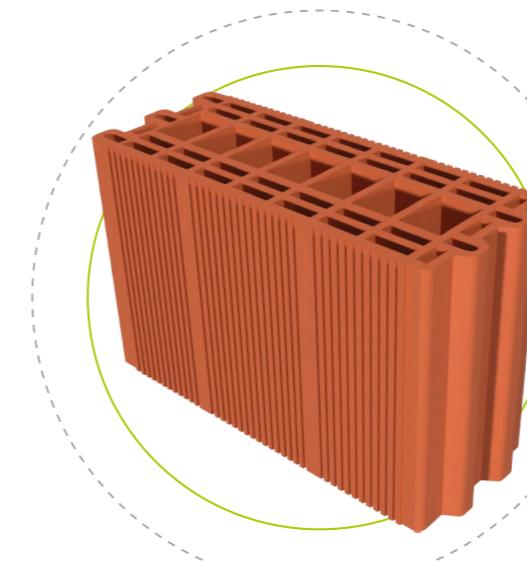


ORTHOBLOCK® MK180

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.

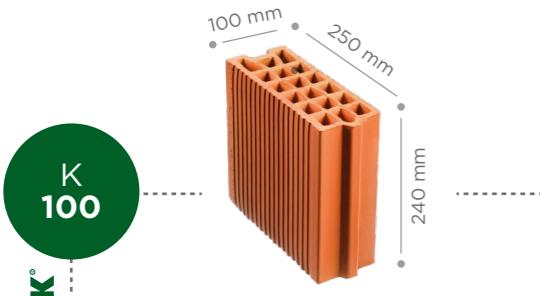
With a steady commitment to innovation, the ORTHOBLOCK series of vertically perforated clay blocks is expanding dynamically.



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.

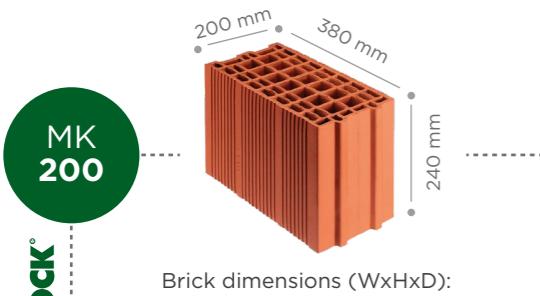
› ORTHOBLOCK® & ORTHOBLOCK® PLUS BUILDING SYSTEMS



Sound Reduction Index Rw: **42***

λ , 10, dry, unit: **0,1971 W/mK**

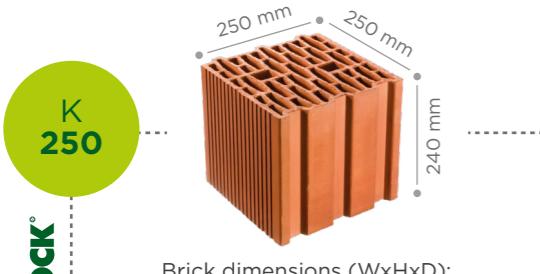
λ , equ, design, masonry (with 3mm bonding mortar): **0,2193 W/mK**



Sound Reduction Index Rw: **46***

λ , 10, dry, unit: **0,1971 W/mK**

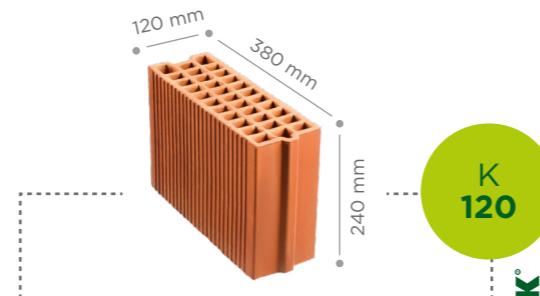
λ , equ, design, masonry (with 3mm bonding mortar): **0,2193 W/mK**



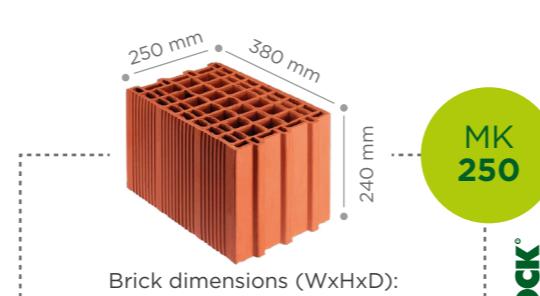
Sound Reduction Index Rw: **51****

λ , 10, dry, unit: **0,1585 W/mK**

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



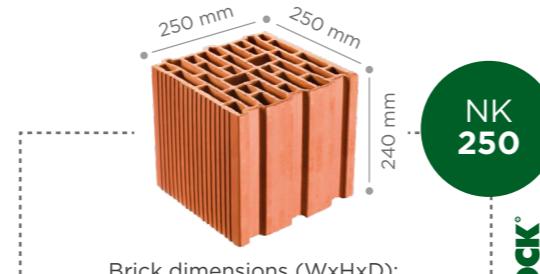
Sound Reduction Index Rw: **43***



Sound Reduction Index Rw: **48***

λ , 10, dry, unit: **0,2061 W/mK**

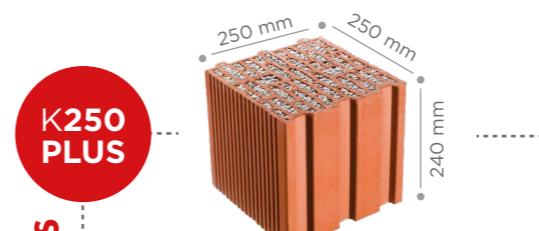
λ , equ, design, masonry (with 3mm bonding mortar): **0,2284 W/mK**



Sound Reduction Index Rw: **48***

λ , 10, dry, unit: **0,1664 W/mK**

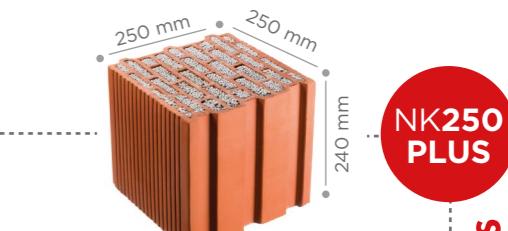
λ , equ, design, masonry (with 3mm bonding mortar): **0,1818 W/mK**



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

λ , 10, dry, unit: **0,0901 W/mK**

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



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

λ , 10, dry, unit: **0,0856 W/mK**

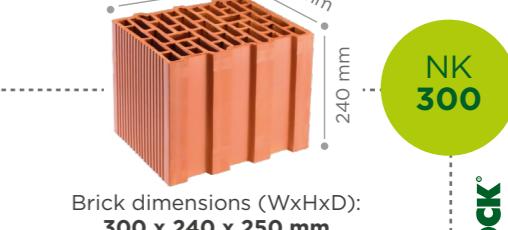
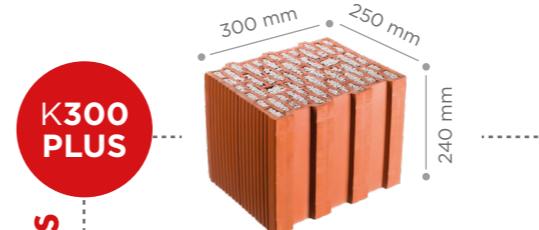
λ , equ, design, masonry (with 3mm bonding mortar): **0,1004 W/mK**



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

λ , 10, dry, unit: **0,1570 W/mK**

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



Sound Reduction Index Rw: **51***

λ , 10, dry, unit: **0,1605 W/mK**

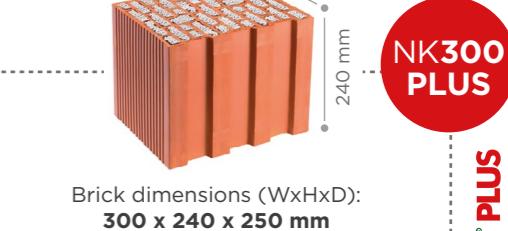
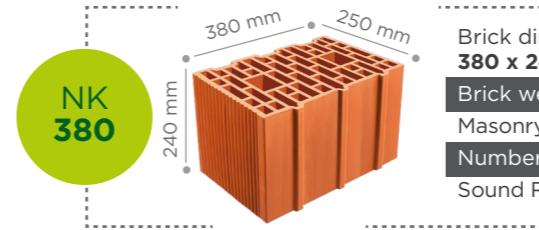
λ , equ, design, masonry (with 3mm bonding mortar): **0,1756 W/mK**



Sound Reduction Index Rw: **53***

λ , 10, dry, unit: **0,0893 W/mK**

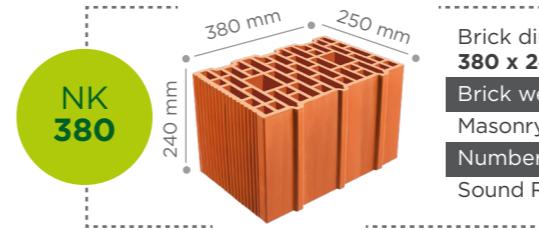
λ , equ, design, masonry (with 3mm bonding mortar): **0,1045 W/mK**



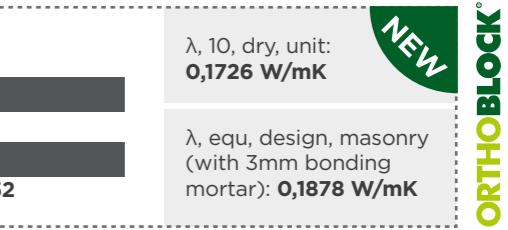
Sound Reduction Index Rw: **52****

λ , 10, dry, unit: **0,0839 W/mK**

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



Sound Reduction Index Rw: **52**



λ , 10, dry, unit: **0,1726 W/mK**

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



NEW

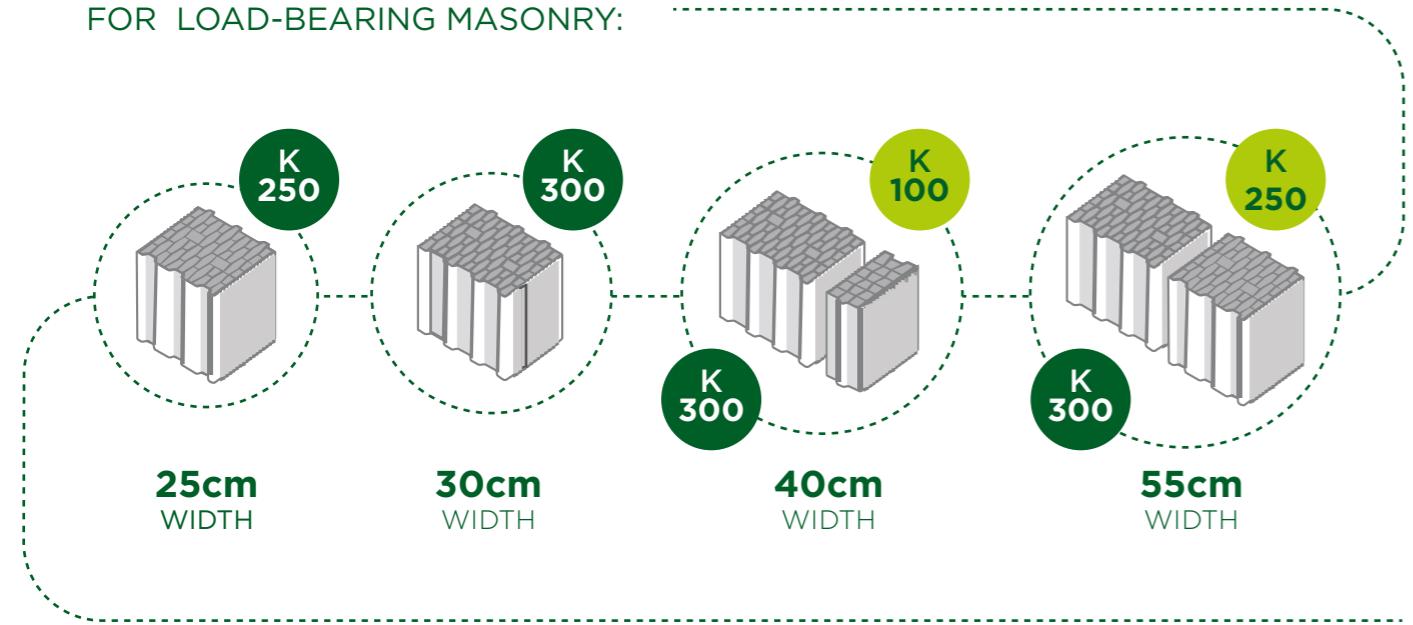
› LOAD BEARING MASONRY

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

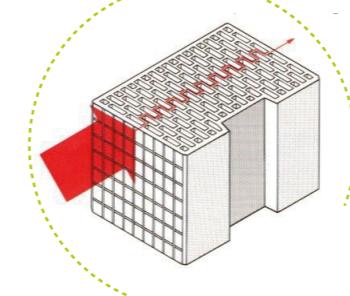
Masonry is defined as non-load bearing when it fills the gaps of a load-bearing framework. Although it does not carry structural loads, it serves as the first line of defense against dy-

namic 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**



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 λ 10,dry,unit: **0,61 W/mK**

Water Vapour Permeability μ : **<15**

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

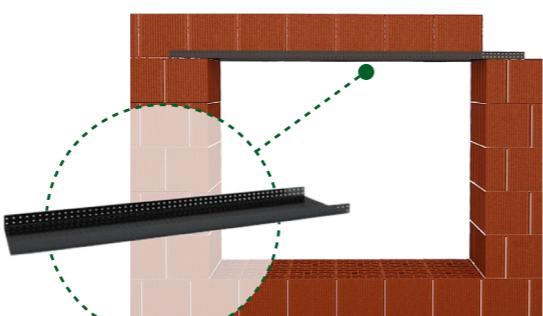
| ORTHOBLOCK | K 100 | K 120 | MK 200 | MK 250 | K 250 | K250 PLUS | NK 250 | NK250 PLUS | K 300 | K300 PLUS | NK 300 | NK300 PLUS | NK 380 |
|---|---------------|---------------|---------------|---------------|---------------|---------------|-----------|------------|---------------|---------------|---------------|---------------|---------------|
| | up to 9,5 | up to 9,0 | up to 6,0 | up to 4,5 | up to 4,5 | 2,5 up to 4,0 | up to 5,0 | up to 4,5 | up to 3,5 | up to 3,0 | up to 4,0 | up to 3,5 | up to 3,0 |
| 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 | up to 5,0 | 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:

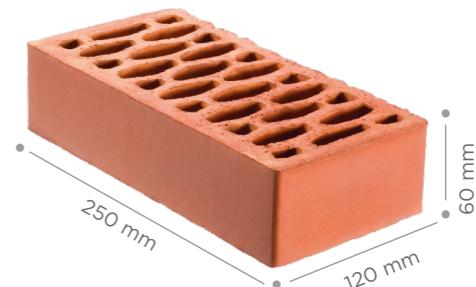
- › Enable faster construction and time savings
- › Create a strong bond between **ORTHOBLOCK & ORTHOBLOCK PLUS** bricks and plasters
- › Provide a simple, easy, and cost-effective solution

› 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: **1.7 kg**

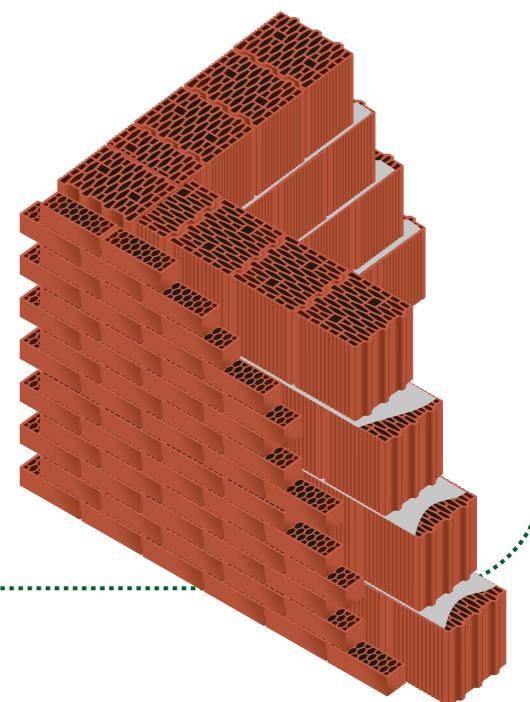
Masonry Thickness: **120 mm**

Number of bricks: **55/m²**

› FACING MASONRY

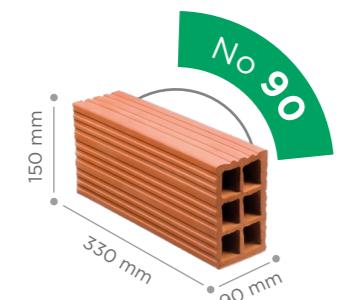
Facing bricks can be used to clad both load bearing masonry and non-load bearing masonry constructed with the **ORTHOBLOCK** building systems. Installing facing masonry on the exterior reduces maintenance costs by eliminating the need for painting and increases:

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



› HORIZONTAL PERFORATED BRICKS

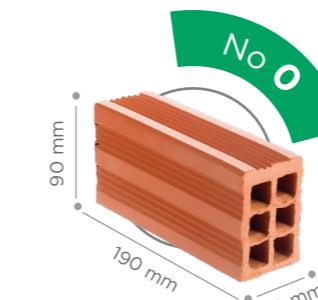
PRODUCTION
NEA
SANTA



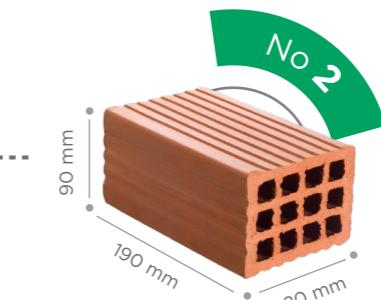
Brick dimensions (WxHxL):
90 x 150 x 330 mm
Brick weight: **3,85 kg**
Wall width: **90 mm**
Number of bricks: **18/m²**



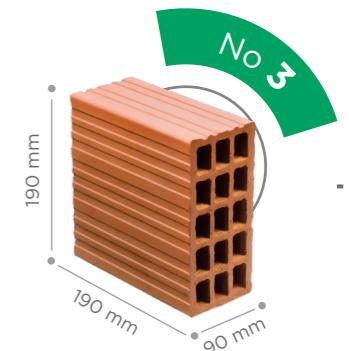
Brick dimensions (WxHxL):
180 x 150 x 330 mm
Brick weight: **7,20 kg**
Wall width: **150 ñ 180 mm**
Number of bricks: **15 ñ 18/m²**



Brick dimensions (WxHxL):
60 x 90 x 190 mm
Brick weight: **0,90 kg**
Wall width: **60 ñ 90 mm**
Number of bricks: **50 ñ 70/m²**

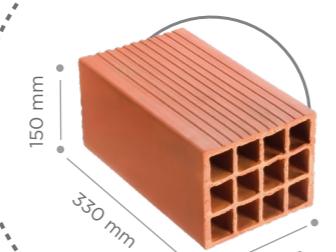


Brick dimensions (WxHxL):
90 x 120 x 190 mm
Brick weight: **1,85 kg**
Wall width: **90 ñ 120 mm**
Number of bricks: **38 ñ 50/m²**



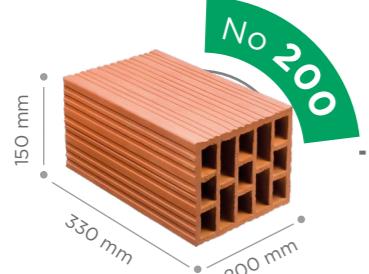
Brick dimensions (WxHxL):
90 x 190 x 190 mm
Brick weight: **2,75 kg**
Wall width: **90 mm**
Number of bricks: **25/m²**

No 180 Facing



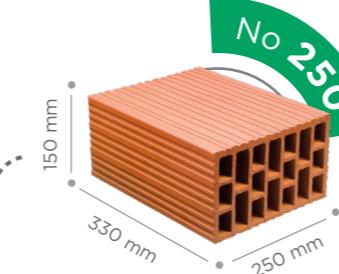
Brick dimensions (WxHxL):
180 x 150 x 330 mm
Brick weight: **7,35 kg**
Wall width: **180 mm**
Number of bricks: **18/m²**

No 200



Brick dimensions (WxHxL):
200 x 150 x 330 mm
Brick weight: **7,15 kg**
Wall width: **200 mm**
Number of bricks: **18/m²**

No 250

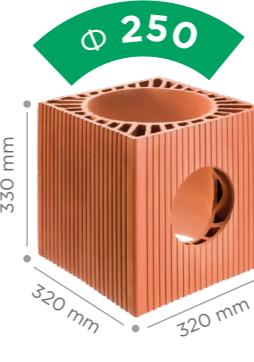


Brick dimensions (WxHxL):
250 x 150 x 330 mm
Brick weight: **9,20 kg**
Wall width: **250 mm**
Number of bricks: **18/m²**

› CHIMNEYS



Dimensions (WxHxL):
250 x 330 x 250 mm
Weight: **13,55 kg**
Diameter: **180 mm**
Side hole diameter:
130 ñ 150 mm



Dimensions (WxHxL):
320 x 330 x 320 mm
Weight: **19,05 kg**
Diameter: **250 mm**
Side hole diameter:
150 ñ 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



NATURAL, RECYCLABLE PRODUCT

clay-based, free of chemical additives



ENVIRONMENTAL PRODUCT DECLARATION

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

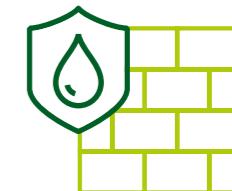


SUITABLE FOR CONSTRUCTION OF BOTH LOAD BEARING & NON-LOAD BEARING MASONRY

Compliance with the requirements of Eurocode 6 & 8



PRACTICALLY UNLIMITED LIFETIME



HIGH MOISTURE RESISTANCE

**HEAD OFFICES / FACTORY:**

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CERTIFIED COMPANY

 KEBE S.A.

 KEBE S.A. - Heavy Clay Building Materials

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