

INTEGRATED BUILDING SYSTEMS ORTHOBLOCK®



3+1
BENEFITS



**THERMAL
INSULATION**



**SOUND
INSULATION**



**SEISMIC
RESISTANCE**



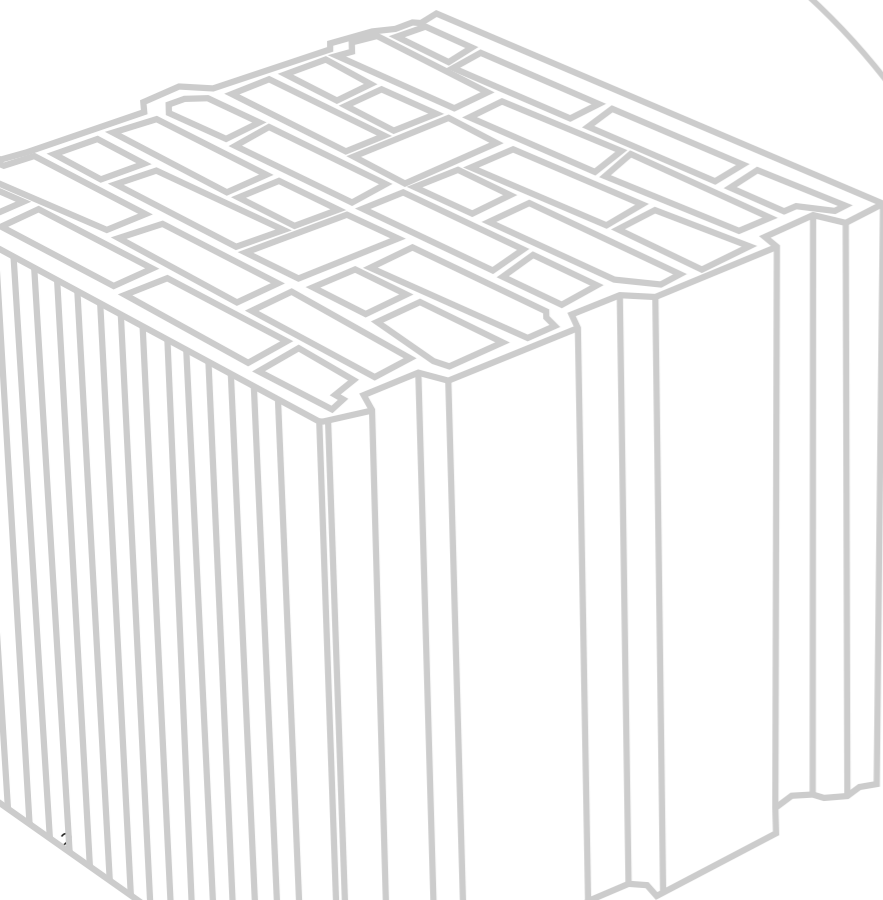
SUSTAINABILITY

KEBE reintroduces bioclimatic construction by presenting the vertically perforated clay bricks series **ORTHOBLOCK®** & **ORTHOBLOCK PLUS®** (the voids are filled with Graphite Expanded Polystyrene), which are designed to cover all the needs of modern construction.

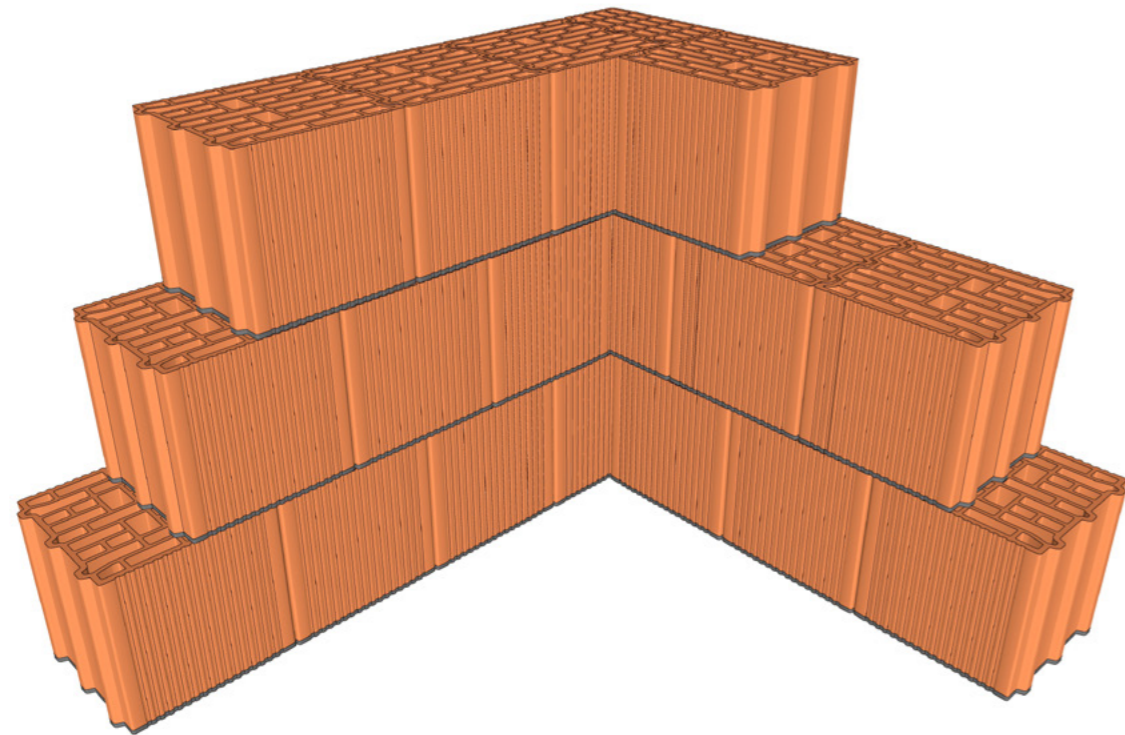


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➤ ADVANCED BUILDING SYSTEMS

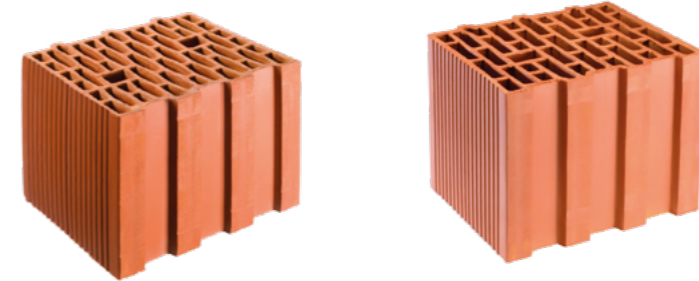


ORTHOBLOCK® & ORTHOBLOCK® PLUS



 **EPD**®
THE INTERNATIONAL EPD® SYSTEM
S-P-08942

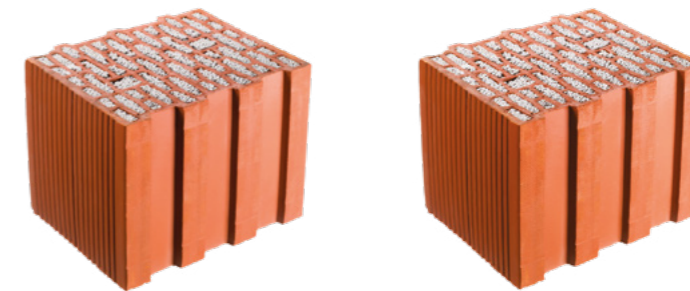
ORTHOBLOCK®



FOR
LOAD-
BEARING
MASONRY

COST-EFFICIENT & HIGH-SPEED
CONSTRUCTION

FOR
NON LOAD-
BEARING
MASONRY



ORTHOBLOCK® PLUS WITH GRAPHITE EXPANDED POLYSTYRENE

DISCOVER THE MULTIPLE BENEFITS OF ORTHOBLOCK BUILDING SYSTEMS

The integrated benefits of ORTHOBLOCK & ORTHOBLOCK PLUS Building Systems provide both the external masonry and the entire construction with superior performance characteristics, such as:

 <p>Excellent Thermal Insulation Energy savings in heating & cooling</p>	 <p>High Thermal Capacity High levels of Thermal Comfort</p>	 <p>Excellent Fire Resistance</p>
 <p>High Vapor Permeability</p>	 <p>High Moisture Resistance</p>	 <p>High Sound Insulation</p>
 <p>Seismic Resistant Properties The load bearing capacity of the infilled frame is up to 5,5 times higher than that of the equivalent bare frame</p>	 <p>High Mechanical Strength</p>	 <p>Environmental Product Declaration (EPD) for projects meeting LEED, BREEAM, WELL, etc requirements. Contribution to bioclimatic design and construction of passive buildings</p>
 <p>Natural, recyclable product clay based, free of chemical additives</p>	 <p>Suitable for Load-Bearing and Non Load-Bearing Masonries Compliance with the requirements of Eurocode 6 & 8</p>	 <p>Practically unlimited lifetime</p>

ORTHOBLOCK®



MASONRY BUILDING SYSTEMS

ORTHOBLOCK® PLUS



KEBE's new, innovative, vertically perforated clay bricks are specially designed with:

- Diamond perforated pattern for enhanced thermal insulation properties
- Special grips for easy handling and laying
- High mechanical strength: The special geometrical features, in addition to high mechanical strength, ensure exceptional stability.
- Easy and high-speed construction (8-16 units/m²)
- Easy cutting to desired dimensions using an electric saw
- Pre-formed "half" units for corners, junctions and alternating layers.

THE ORTHOBLOCK BUILDING SYSTEM INCLUDES:

- ORTHOBLOCK CLAY BRICKS
- METAL LINTELS
- Thin-Layer Bonding Mortar ORTHOBLOCK BOND



SUPPLEMENTARY BUILDING PRODUCTS



ORTHOBLOCK BOND BONDING MORTAR

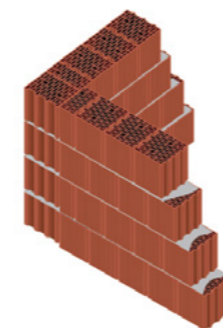
ORTHOBLOCK BOND bonding mortar is used for the construction of walls made of vertically perforated bricks and forms an integral part of ORTHOBLOCK & ORTHOBLOCK PLUS masonry Building Systems. It is a ready-to-use, wide water range, industrially produced and quality controlled innovative mortar, which 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.




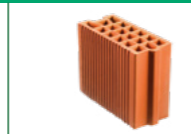
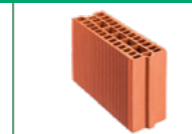

METAL LINTELS

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 optional.

TABLE 1: TECHNICAL SPECIFICATIONS OF ORTHOBLOCK® & ORTHOBLOCK PLUS®

	 MK 80	 K 100	 K 120	 MK 150
FEATURES				
Type of Masonry	Non Load-Bearing	Non Load-Bearing	Non Load-Bearing	Non Load-Bearing
Dimensions(LxWxH) (mm)	500x80x240	250x100x240	380x120x240	380x150x240
Weight (kg/unit)	8,20	5,35	8,85	10,50
Masonry Thickness (mm)	80	100	120	150
Units/m ²	8	16	11	11
Estimated Masonry Weight (kg/m ²) without mortar	65,60	85,60	97,35	115,50
Gross Dry Density (kg/m ³)	855	895	870	710
Net Dry Density (kg/m ³)	1.900	1.900	1.900	1.900
Mean Compressive Strength (perpendicular to bed face) (N/mm ²)	9	10,5	12	9
Thermal Conductivity Coefficient λ _{10,dry,unit} (W/mK)	0,1739	-	0,2172	0,1815
Thermal Design Conductivity Coefficient λ _{eq,u,design,masonry} (with 3mm ORTHOBLOCK BOND) (W/mK)	-	-	-	0,1990
Thermal Transmittance U _{w,design} without any plaster (with 3mm ORTHOBLOCK BOND) (W/m ² K)	-	-	-	1,0857
Sound Reduction Index R _w (dB)	40**	42*	43*	43**
Water Vapor Permeability μ	5/10	5/10	5/10	5/10
Durability against freeze/thaw	F0	F0	F0	F0
Reaction to Fire	A1	A1	A1	A1
Fire Resistance Classification (Criteria EI) without finishing plaster	30	90	120	120
Fire Resistance Classification (Criteria EI) with 10mm finishing plaster on both sides of the wall	90	120	120	180
INFORMATIONS				
Units / Pallet	96	160	96	84

* Laboratory Measurement
** Calculated Measurement



	 MK 180	 MK 200	 MK 250	 K 250	 K 250 HALF	 K 250 PLUS
FEATURES						
Type of Masonry	Non Load-Bearing	Non Load-Bearing	Non Load-Bearing	Load-Bearing & Non Load-Bearing	Non Load-Bearing	Load-Bearing & Non Load-Bearing
Dimensions(LxWxH) (mm)	380x180x240	380x200x240	380x250x240	250x250x240	125x250x240	250x250x240
Weight (kg/unit)	10,80	12,50	14,90	11,90	6,00	11,90
Masonry Thickness (mm)	180	200	250	250	250	250
Units/m ²	11	11	11	16	32	16
Estimated Masonry Weight (kg/m ²) without mortar	118,80	137,50	163,90	190,40	192,00	190,40
Gross Dry Density (kg/m ³)	650	680	700	800	840	800
Net Dry Density (kg/m ³)	1.900	1.900	1.900	1.900	1.900	1.900
Mean Compressive Strength (perpendicular to bed face) (N/mm ²)	8,5	7	8,5	12	14	12
Thermal Conductivity Coefficient λ _{10,dry,unit} (W/mK)	0,1964	0,1971	0,2061	0,1585	-	0,0901
Thermal Design Conductivity Coefficient λ _{eq,u,design,masonry} (with 3mm ORTHOBLOCK BOND) (W/mK)	0,2138	0,2193	0,2284	0,1743	-	0,1053
Thermal Transmittance U _{w,design} without any plaster (with 3mm ORTHOBLOCK BOND) (W/m ² K)	0,9906	0,9339	0,7965	0,6234	-	0,3930
Sound Reduction Index R _w (dB)	45**	46*	48*	51**	-	51**
Water Vapor Permeability μ	5/10	5/10	5/10	5/10	5/10	5/10
Durability against freeze/thaw	F0	F0	F0	F0	F0	F0
Reaction to Fire	A1	A1	A1	A1	A1	B-S1, d0
Fire Resistance Classification (Criteria EI) without finishing plaster	180	240	240	240	-	240
Fire Resistance Classification (Criteria EI) with 10mm finishing plaster on both sides of the wall	240	240	240	240	-	240
INFORMATIONS						
Units / Pallet	72	60	48	64	128	64



THERMAL INSULATION



SEISMIC RESISTANCE






SOUND INSULATION



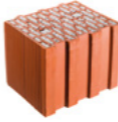



SUSTAINABILITY

TABLE 1: TECHNICAL SPECIFICATIONS OF ORTHOBLOCK® & ORTHOBLOCK PLUS®

				
	K 250 PLUS HALF	NK 250	NK 250 PLUS	K 300
FEATURES				
Type of Masonry	Load-Bearing & Non Load-Bearing	Non Load-Bearing	Non Load-Bearing	Load-Bearing & Non Load-Bearing
Dimensions(LxWxH) (mm)	125x 250 x240	250x 250 x240	250x 250 x240	250x 300 x240
Weight (kg/unit)	6,00	10,65	10,65	14,20
Masonry Thickness (mm)	250	250	250	300
Units/m ²	32	16	16	16
Estimated Masonry Weight (kg/m ²) without mortar	192,00	170,40	170,40	227,20
Gross Dry Density (kg/m ³)	840	760	760	790
Net Dry Density (kg/m ³)	1.900	1.900	1.900	1.900
Mean Compressive Strength (perpendicular to bed face) (N/mm ²)	14	9	9	10,5
Thermal Conductivity Coefficient λ _{10,dry,unit} (W/mK)	-	0,1664	0,0856	0,1570
Thermal Design Conductivity Coefficient λ _{eq,u,design,masonry} (with 3mm ORTHOBLOCK BOND) (W/mK)	-	0,1818	0,1004	0,1727
Thermal Transmittance U _{w,design} without any plaster (with 3mm ORTHOBLOCK BOND) (W/m ² K)	-	0,6471	0,3758	0,5245
Sound Reduction Index R _w (dB)	-	48*	50**	53**
Water Vapor Permeability μ	5/10	5/10	5/10	5/10
Durability against freeze/thaw	FO	FO	FO	FO
Reaction to Fire	B-S1, d0	A1	B-S1, d0	A1
Fire Resistance Classification (Criteria EI) without finishing plaster		240	240	240
Fire Resistance Classification (Criteria EI) with 10mm finishing plaster on both sides of the wall		240	240	240
INFORMATIONS				
Units / Pallet	128	64	64	48

* Laboratory Measurement
** Calculated Measurement



				
	K 300 PLUS	NK 300	NK 300 PLUS	NK 380
FEATURES				
Type of Masonry	Load-Bearing & Non Load-Bearing	Non Load-Bearing	Non Load-Bearing	Non Load-Bearing
Dimensions(LxWxH) (mm)	250x 300 x240	250x 300 x240	250x 300 x240	250x 380 x240
Weight (kg/unit)	14,20	13,15	13,15	15,65
Masonry Thickness (mm)	300	300	300	380
Units/m ²	16	16	16	16
Estimated Masonry Weight (kg/m ²) without mortar	227,20	210,40	210,40	250,40
Gross Dry Density (kg/m ³)	790	720	720	685
Net Dry Density (kg/m ³)	1.900	1.900	1.900	1.900
Mean Compressive Strength (perpendicular to bed face) (N/mm ²)	10,5	9	9	9,5
Thermal Conductivity Coefficient λ _{10,dry,unit} (W/mK)	0,0893	0,1605	0,0839	0,1726
Thermal Design Conductivity Coefficient λ _{eq,u,design,masonry} (with 3mm ORTHOBLOCK BOND) (W/mK)	0,1045	0,1756	0,0985	0,1878
Thermal Transmittance U _{w,design} without any plaster (with 3mm ORTHOBLOCK BOND) (W/m ² K)	0,3290	0,5324	0,3110	0,4605
Sound Reduction Index R _w (dB)	53**	51*	52**	52**
Water Vapor Permeability μ	5/10	5/10	5/10	5/10
Durability against freeze/thaw	FO	FO	FO	FO
Reaction to Fire	B-S1, d0	A1	B-S1, d0	A1
Fire Resistance Classification (Criteria EI) without finishing plaster	240	240	240	240
Fire Resistance Classification (Criteria EI) with 10mm finishing plaster on both sides of the wall	240	240	240	240
INFORMATIONS				
Units / Pallet	48	48	48	48

 **3+1 Benefits**

THERMAL INSULATION & THERMAL CAPACITY



THERMAL INSULATION IS THE METHOD, THE PROCEDURES AND THE USE OF THE APPROPRIATE MATERIALS AIMING THE MINIMUM HEAT TRANSFER TO AND FROM THE INTERIOR OF A BUILDING.

The higher the thermal insulation provided by a structural material, the more thermal losses are restricted in the building's interior, consequently decreasing the **demand for heating or cooling**.

The property of a material that determines the ease or difficulty of heat transmission through its interior is called **thermal conductivity**. It is measured by the **thermal conductivity coefficient λ (W/mK)**, which varies from material to material. The lower the thermal conductivity coefficient λ of a material, the better thermal insulation it provides

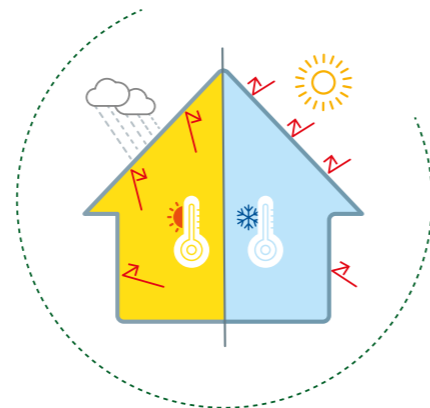
In all thermal insulation materials, to a greater or lesser extent, air is trapped within their structure. Air has a low thermal conductivity coefficient λ ; therefore, it is considered as a poor conductor of heat. Conversely, water has a **thermal conductivity coefficient λ** approximately **24 times** higher than that of air, while ice is about **92 times** higher.

It is, therefore, easily understood that moisture has a significant impact on thermal insulation materials. Even a slight increase of moisture within an insulating material leads to the trapped water replacing the air; thereby causing a proportional increase in its thermal conductivity coefficient.

Another crucial factor for the long-term performance stability of an insulating material is its **water vapor permeability**.

The property that indicates a material's breathability is the **Water Vapor Diffusion Resistance Factor (μ)**. The lower the μ -value, the more easily water vapor can pass through the mass of the material, and vice versa. **The μ -value of air equals 1** (the optimal value). The further a material deviates from this value, the more difficult it becomes for water vapor to escape through it. This increases the risk of vapor accumulation within the material leading to a reduction in its declared thermal insulation performance.

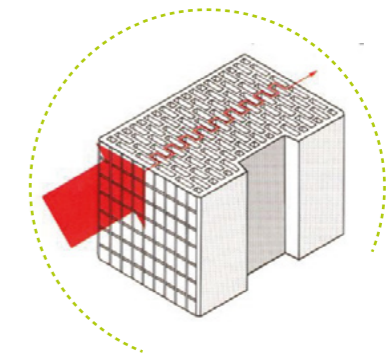
At the same time, **thermal capacity is a key property of a thermal insulation material**. High thermal capacity means the material has the ability to store heat while the heating or cooling system is in operation and release it back into the space once the system stops, ensuring high levels of thermal comfort within the building interior.



Therefore, by using building materials with a **low thermal conductivity coefficient λ , high heat capacity, and high water repellency, while simultaneously maintaining high water vapor permeability, high energy savings and superior thermal comfort levels are achieved within the building.**

Vertically perforated clay bricks **ORTHOBLOCK & ORTHOBLOCK PLUS**, due to their specialized cross-sectional design with a diamond and rectangular arrangement, offer excellent thermal insulation with low equivalent thermal conductivity coefficients $\lambda_{10,dry,unit}$ as low as 0.0839 W/mK.

The combination of high resistance to heat transfer and significant thermal storage capacity—due to the mass and heat capacity of the clay—leads to high levels of thermal insulation and substantial energy savings. Furthermore, it ensures superior thermal comfort, as **ORTHOBLOCK & ORTHOBLOCK PLUS** contribute to maintaining the desired temperature and humidity levels within the building, even after the heating or cooling systems have been turned off.



SOUND INSULATION

When a surface receives a **sound wave**, part of its energy is reflected, part is absorbed, and part is **transmitted through the material**.

Certain **construction materials** are designed to **absorb** reverberation within a room, while others are used to **restrict or block sound transmission** to and from the space.

Materials that absorb sound reflections without simultaneously stopping its transmission are called **sound-absorbing materials**; they are used to improve room acoustics (e.g., in a music studio) and the most of the times are porous and low in density.

In contrast, heavy and high density materials that block or impede the transmission of sound waves are called **sound-insulating materials**.



NOWDAYS, ENVIRONMENTAL NOISE CONSTITUTES ONE OF THE MOST SIGNIFICANT FACTORS DEGRADING THE QUALITY OF LIFE, BOTH IN GREECE AND THROUGHOUT EUROPE.

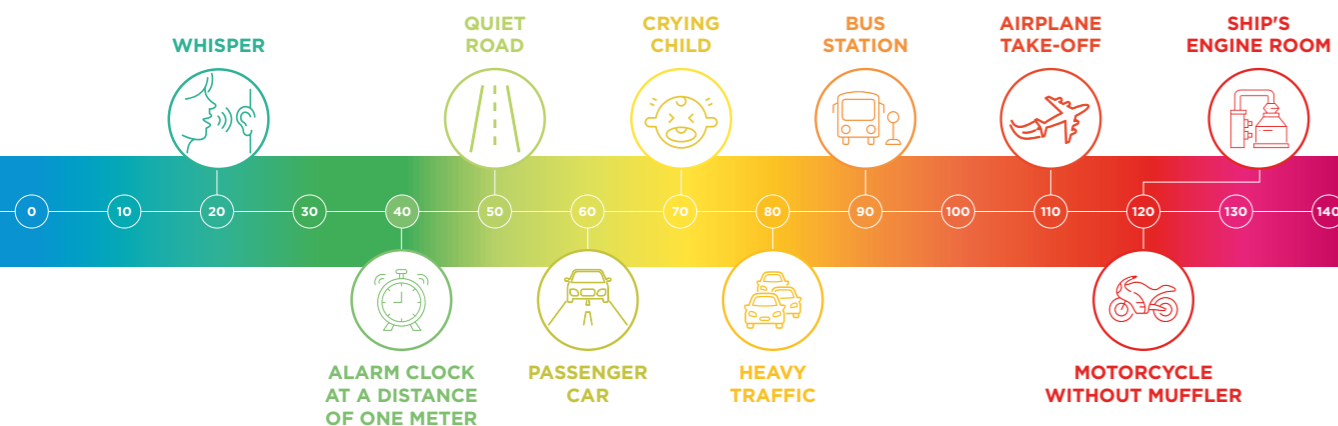


The effects of environmental noise on human health are significant. They depend on both the **intensity** and the **duration of human exposure to noise**. Therefore, addressing environmental noise must be one of the primary goals of every modern state that respects its citizens.

TABLE 4: INDICATIVE INTENSITY VALUES OF SEVERAL SOUNDS

SOUNDS' INTENSITIES WE FREQUENTLY HEAR

Unit of measurement: Decibel



The most significant part of environmental noise is **traffic noise**, which must be addressed effectively both at its source and along its transmission path.

When it is not possible to apply noise control measures at the source or along the path of traffic noise (known as active sound insulation), intervention must be made at the receiver, meaning the building itself, and specifically at its external structural elements (known as passive sound insulation). A key part of these external elements is the **external masonry**.

The purpose of **sound insulation** is the effective protection of a building envelope from external noise (environmental noise) as well as internal noise, ensuring acceptable acoustic comfort for the building's occupants.

Acoustic comfort refers to a building's ability to shield its occupants from external noise and to provide an acoustic environment suitable for living or performing various activities.

The sound insulation rating index is the **Weighted Sound Reduction Index (R_w)**, which is measured in dB and represents the acoustic insulation performance of a structural element against airborne noise in the frequency range from 100 Hz to 3150 Hz.



Sound insulation materials are designed to acoustically isolate a space from sounds originating in the external environment and vice versa.

Thermal insulation materials, on the other hand, are designed to interrupt heat transfer, aiming to reduce energy losses and maintain the temperature within a space.

TABLE 2: RELATIONSHIP BETWEEN R_w & $R'w$

$R'w$ (dB)	R_w (dB)
...up to 42	$R' + 0$
from 43 to 48	$R' + 2$
from 48 to 52	$R' + 3$
from 53 to 55	$R' + 4$
from 56 to 60	$R' + 6$



TABLE 3: WEIGHTED SOUND REDUCTION INDEX R_w

ORTHOBLOCK	R_w (dB)
MK80	40**
K 100	42*
K 120	43*
MK 150	43**
MK 180	45**
MK 200	46*
MK 250	48*
K 250	51**
K 250 PLUS	51**
NK 250	48*
NK 250 PLUS	50**
K 300	53**
K 300 PLUS	53**
NK 300	51*
NK 300 PLUS	52**
NK 380	52**

Note: The above measurement results include a 20mm thick plaster layer on each side

* Laboratory Measurement
** Calculated Measurement

ORTHOBLOCK® & ORTHOBLOCK PLUS® clay blocks combine both properties offering both sound insulation and thermal insulation

KEBE carries out a series of actions to ensure that its products are manufactured with a focus on optimum performance regarding building physics parameters. In collaboration with the Laboratory of Architectural Technology of the Faculty of Engineering of AUTH, a series of acoustic parameter measurements are conducted to provide a complete picture of material performance and to enable the optimization of the manufactured products.



SEISMIC RESISTANCE



CONTRIBUTION OF INFILL WALLS TO THE LOAD-BEARING CAPACITY OF REINFORCED CONCRETE FRAMES UNDER SEISMIC ACTIONS

Infill masonry walls are important components of building structures, as they constitute the first line of defense against seismic actions; therefore, it is crucial to pay particular attention to the selection of materials and their construction process.

KEBE, in collaboration with the Aristotle University of Thessaloniki (AUTH), conducted a special study to evaluate the contribution of infill walls to the load-bearing capacity of reinforced concrete frames under seismic actions. More specifically, the study investigates the contribution of five infill wall cases to the strength of three types of reinforced concrete frame systems against horizontal loads.

A single-story, two-column reinforced concrete frame of category C25/30 was selected as a representative system, with column cross-sections of 30/30, 50/50 & 80/80cm, representing low, medium & high scale structures.

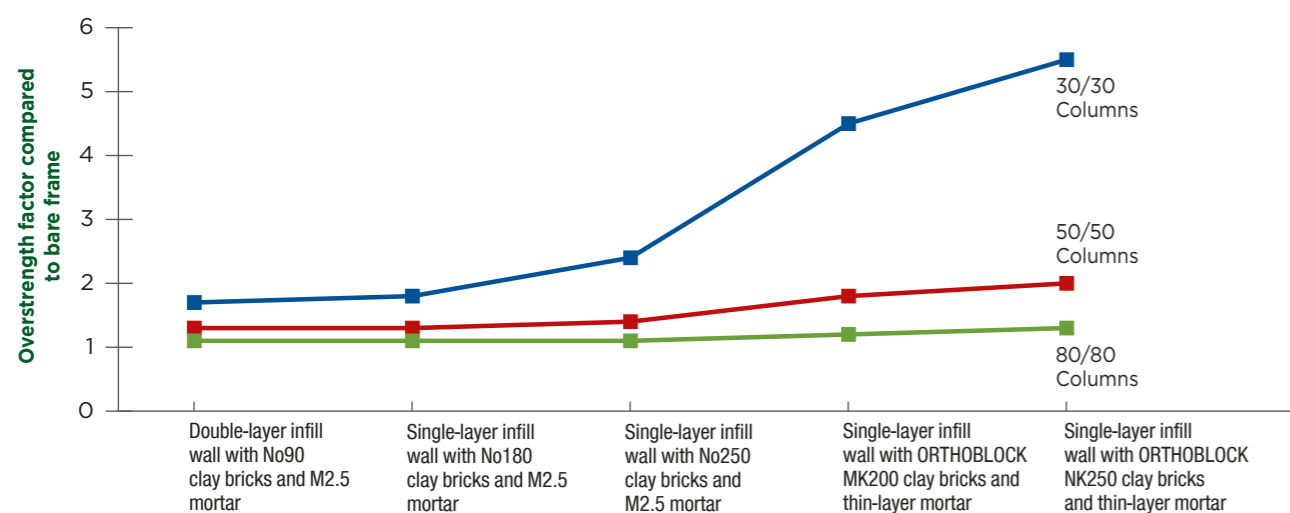
Three masonry systems from horizontally perforated clay bricks No. 90, No. 180 & No. 250 built with a conventional general-purpose mortar, category M2.5, and two masonry systems of ORTHOBLOCK® MK200

& ORTHOBLOCK® NK250 clay bricks built with a thin-layer mortar, category M10, were selected as representative infill walls.

Diagram 1 presents the most significant indicator of the infill walls' contribution to the system's load-bearing capacity. This indicator, named Overstrength Factor, illustrates the incremental multiplier of the external load required so that the shear force of each column equals the shear force of the bare frame.



DIAGRAM 1: OVERSTRENGTH OF INFILL MASONRY SYSTEMS



For relatively weak bare frames with 30/30 columns, the contribution of the infill walls is significant and increases as the infill becomes stronger. In low-rise buildings, even weak walls offer overstrength in the range of 1.8 to 2.5; however, the overstrength provided by strong walls made of high-strength vertically perforated clay bricks, such as ORTHOBLOCK® MK200 and ORTHOBLOCK® NK250, is manifold, in the range of 4.5 to 5.5.

For the second group of frames with a column cross-section of 50/50, the contribution of infill walls with conventional horizontally perforated clay bricks has decreased significantly and is not noteworthy. In contrast, frames with vertically perforated clay bricks ORTHOBLOCK® MK200 and ORTHOBLOCK® NK250 continue to possess substantial overstrength, in the range of 2.0.

For the third group of frames with a column cross-section of 80/80, the contribution of infill walls with conventional horizontally perforated clay bricks has been practically reduced to zero, whereas frames built with vertically perforated bricks ORTHOBLOCK® MK200 and ORTHOBLOCK® NK250 continue to maintain a considerable overstrength, in the range of 1.1 to 1.3.

Following the above, it is therefore obvious that strong walls should be preferred; these are constructed using high-strength bricks, such as the ORTHOBLOCK® MK200 and, even better, the ORTHOBLOCK® NK250, in combination with ORTHOBLOCK® thin-layer mortar, which completes the ORTHOBLOCK® building system.

SUSTAINABILITY



PRODUCTION OF HIGH-QUALITY, AESTHETIC CERAMIC BUILDING PRODUCTS FOR SUSTAINABLE CONSTRUCTION

Aiming for a new era of advanced and sustainable construction, **KEBE** ensures the implementation of sustainable practices from the first to the very last stage of the production process, so that the final product truly contributes to green building.

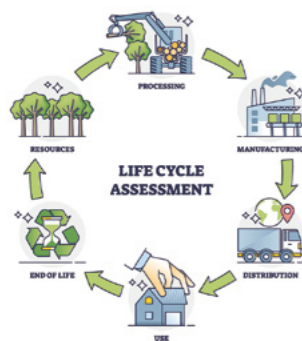
Holding quality and green certifications, **KEBE's ceramic building products** are fully compliant with both national and international legislation, while also contributing to improved energy and thermal performance and the reduction of buildings' environmental footprint. These products are characterized by **increased lifespan, high aesthetic value**, and the ability to be recycled or reused, therefore actively promoting the **circular economy and sustainable construction**.

Environmental Product Declaration



As part of its commitment to continuously reducing its environmental impact, **KEBE** has issued EPDs for all its products

KEBE is the first Greek ceramic manufacturer and one of the first in Europe to have certified its entire product range with EPDs



EPD (Environmental Product Declaration) is an Ecolabeling System that presents a product's environmental data, following international standards, aiming to provide reliable & verified information regarding its environmental performance.



The tool used is the **Life Cycle Assessment (LCA)**, which identifies all environmental impacts arising from one or more phases of the product's life cycle. **KEBE** holds **Environmental Product Declarations (EPDs) for Clay Bricks and Roof Tiles**, compliant with **ISO 14025:2006** and **EN 15804:2012+A2:2019**, verified by the independent accredited body **EUROCERT** and published in the **International EPD® System**, so that its domestic and international clients can access information regarding the high environmental performance of its products.

KEBE, in alignment with international architectural design trends and building assessment standards, provides **environmental advantages** to projects using its building ceramic products, such as additional rating points, thus encouraging Green Building and Sustainable Development. **Green Building** refers to the construction of buildings with the lowest possible cost & low energy consumption to create indoor thermal comfort, using widely available natural materials that require minimal maintenance & have practically unlimited lifespan.

The existence of **EPDs** further strengthens and substantiates the data that contribute to improved rating of entire building projects (e.g., LEED, BREEAM, WELL Programs, etc.). It also enhances documentation for **Green Building** certifications, adding value to construction projects.



How does LEED work?



LEED certification (Leadership in Energy and Environmental Design) provides a framework for healthy, highly efficient, and energy & cost-saving green buildings.

LEED-certified buildings offer significant energy savings, reduced carbon emissions, and create a healthier living environment. They are a vital component in addressing climate change and achieving broader environmental, social, and governance (ESG) goals.

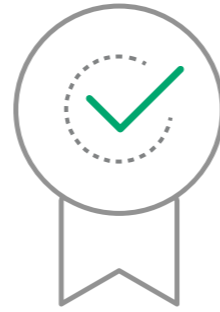
LEED is a holistic certification system, as it examines and evaluates the sustainability and environmental performance of buildings throughout their design, construction, and operational phases.

The primary goal of **LEED** is to create buildings that are both energy-efficient and environmentally friendly. **LEED**-certified buildings offer a range of benefits, including

- High energy savings
- Low operating costs
- Reduced impact on global climate change through lower CO₂ emissions
- Improved indoor living conditions and enhanced quality of life for the occupants and the broader community
- Reduced water consumption through efficient technologies and sustainable water management
- Increased property value

It is important to note that **LEED** certification applies to buildings, not products. Nevertheless, the selection of appropriate products secures points that contribute to achieving higher certification levels in building rating systems.

CERTIFICATIONS



ENVIRONMENTAL PRODUCT DECLARATION (EPD & EPD CLIMATE)

The 1st Greek ceramic factory - and one of the first in Europe - with certification Environmental Product Declaration (EPD) for LEED, BREEAM, WELL, etc Projects.



CERTIMAC | ENEC & CNR
Thermal Conductivity Determination

ABOUT US

Keramourgia Voreiou Ellados (KEBE), with 90 years of experience and expertise in the ceramics industry, manufactures and supplies both in the domestic and international markets a wide range of traditional and modern ceramic building products of high energy value.

KEBE operates one of the largest production facilities in Europe, and among the highest globally. Its facilities cover a **privately owned area of 235,000m²**, with 44,000m² of industrial buildings and 12,000m² of raw material storage shelters, located in Nea Santa, Kilkis. The annual production capacity reaches **700,000 tons of clay blocks and 75,000,000 pieces of roof tiles and accessories**.

These state-of-the-art facilities feature advanced mechanical equipment and robotic technology applications, which help reduce the environmental footprint during production. For many years, **Renewable Energy Sources (RES)** have been systematically integrated into the production processes.

These investments have enabled the use of minimal resources to create high-value, long-life products, characterized by the

minimization of environmental impact across all stages of the production cycle.

With a strong focus on **Research & Development (R&D)**, the company's primary goal is to actively contribute to the sustainable development of the wider construction industry. This is achieved by supplying the market with high-quality, aesthetically refined products, designed for bioclimatic architecture and based on clean building technologies, supporting the green transition in construction.

Firmly committed to the principles of Quality, Innovation, Sustainability, **KEBE** continues to play a leading role in the building materials sector, both in Greece and abroad, with a **presence in over 40 countries worldwide**.

Laying the foundations of responsible entrepreneurship, **KEBE proceeded—being the first in the ceramics industry—to publish its Sustainability Report (KEBE ESG Report)**, strengthening the groundwork for a world where construction goes hand in hand with care for people, nature, and corporate governance, thus remaining true to its vision of a structurally better world.





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