www.alkhajahfactory.com

Innovative **Building Materials**
with Tomorrow's Technology

# AL KHAJAH FACTORIES WLL
# BUILDING SYSTEM CATALOGUE

energy saving

At the heart of our business lies a market-oriented, process-driven philosophy that is dedicated to the development and delivery of innovative building solutions. As a dynamic organization, our operational processes are anchored in the principles of sustainability, comprehensive application of the latest technology, and unrelenting focus on high-quality outputs. These principles guide every facet of our activities, and their continuous reinforcement ensures that our clients realize the optimal return on their investments.



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## ABOUT US

Drawing from our vast contracting, manufacturing, and trading experience spanning 50+ years, we've been able to identify strategic opportunities for promoting sustainability. Our approach includes the development of energy-efficient, technologically advanced lightweight building products. To this aim, we are actively working towards achieving technological and industrial self-sufficiency to continue to revolutionize our offerings. Leveraging the power of the latest comprehensive materials and applications, we endeavor to embed these technologies into every aspect of our operations. Our vision of the future is one where we are the pioneers in offering inventive, energy-efficient solutions to our clientele.



# COMPANY OVERVIEW

> Our operational distribution solutions offer a sustainable **Complete Lightweight Building System.**

Our innovative business strategy cleanly outlines our structured yet flexible approach to vertical integration. This principle enables us to offer a highly effective client-centered service whereby customers' objectives are met with superior efficiency. The successful integration of different stages in the project development process ensures the delivery of high-quality output, reduces overall project costs, and fast-tracks delivery timelines.

Our established approach to client service commences with a detailed assessment of clients' requirements. This is seamlessly followed by an exhaustive planning phase and coordinated execution of all aspects of the project, from design to manufacturing. This process guarantees efficient resource utilization and provides a conducive environment for harmonious communication among stakeholders.

The pursuit of excellence is deeply ingrained into our value system and is manifested in every product we manufacture and every service we extend. Our unwavering commitment to our esteemed customers, business partners, and investors is the bedrock that supports our pursuit of creating and providing top-tier products and services.

# TECHNICAL INFORMATION

# UNIQUE ADVANTAGES

- LIGHT WEIGHT
- HIGH THERMAL INSULATION
- FIRE RESISTANCE
- SOUND RESISTANCE
- SEISMIC RESISTANCE
- ENERGY EFFICIENT

- DURABLE/ STRONG
- 100+ YEARS LIFESPAN
- RAPID ASSEMBLY
- COST EFFECTIVE
- ECO FRIENDLY
- NON TOXIC

## CHARACTERISTICS

Our progressive lightweight building system comprises four critical parts, structured using an advanced material aggregate matrix. Our team of analysts undertook a thorough examination of every significant criterion, identifying and rectifying inefficiencies and limitations present in traditional lightweight concrete systems. This process encompasses everything from the choice of aggregates to the final conceptual realization, thereby assuring the utmost levels of diligence were maintained throughout and reflected in our final product lines. The outcome of this process is an innovative lightweight building system that outclasses existing alternatives on numerous fronts redefining the industry and establishing new global benchmarks for lightweight building systems globally.

## SPECIFICATIONS

### BUILDING LIFESPAN

**100+ YEARS**

Our proprietary building system sets the standard for excellence in today's dynamic construction industry. Utilizing highest-grade aggregates, we have crafted a system that ensures unparalleled durability through the integration of cutting-edge energy-saving technology, marking a significant stride towards sustainable construction practices. Our system dimensional stability, ensures a perfect fit and alignment for precise construction, reaffirming the value proposition of long-term cost efficiency, delivering a robust, environment-friendly solution dedicated to shaping the future of construction.

### TOTAL COST SAVINGS

**20% COST**

The four core components of our building system work synergistically to dramatically amplify overall cost-effectiveness. Each component has been designed to interact seamlessly with the others, resulting in an efficient, cohesive system that achieves more than the sum of its parts. This systematic and integrated approach, intricately adjusted to work in conjunction, not only bolsters the system's performance and durability but also introduces notable cost benefits. The holistic operational efficiency empowers the combined system to provide substantial cost savings.

### RAPID ASSEMBLY TECHNOLOGY

**50% SPEED**

Our innovative building system possesses the remarkable capability to efficiently erect an increased quantity of blocks/panels in both horizontal and vertical orientations, surpassing the limitations imposed by the time-consuming nature of conventional systems.

The peripheral design of each system has been thoughtfully and strategically crafted to incorporate advantageous elements when utilized in conjunction with the entire building systems integration and expediating the project completion.

### FIRE RESISTANCE

**A1 RATED**

Each product in our portfolio has been tested and certified as non-combustible, achieving the highest classification of A1 rating. This superior performance signifies that our products contribute zero spread of flame, effectively mitigating the risk of fire propagation between rooms and areas within a building. Maintaining a healthy and safe environment during fire incidents. When exposed to high temperatures and flames, our products neither release toxic gases nor emit harmful vapors, thereby preserving the air quality and ensuring the well-being of building occupants.

### SOUND RESISTANCE

**65 DECIBELS**

Our systems offers a highly effective solution for reducing the impact of noise pollution on building occupants addressing various types of noise, including airborne noise, impact noise, and structure-borne noise, by employing advanced materials and innovative design strategies that efficiently mitigate these undesirable effects.

This exceptional level of acoustic insulation not only surpasses industry requirements but also offers occupants an enhanced level of comfort and privacy, setting our system apart from any rival in the construction industry.

## LWC BLOCKS/PANELS

Unparalleled thermal characteristics amplifies energy efficiency facilitating an optimal equilibrium between environmental sustainability and construction efficacy.

## LWC SHUTTERING

Accelerated construction timelines, a reduction in overall material and labor costs, and significant thermal enhancements to the structural component's lifespan.

## LW READYMIX CONCRETE

Significantly lighter than conventional concrete, making it easier and more cost-effective to transport, handle and install, without sacrificing on strength.

## INSULATED PLASTERING

Our perlite-based plaster system helps maintain comfortable indoor temperatures while drastically reducing energy consumption and associated costs.

## AUTOMATION

Fully automated advanced technology equipment, which improves efficiency, speed, and precision in the production process.

## SUSTAINABILITY

Developed concrete mixtures that incorporate recycled materials, reducing environmental impact. and implement energy-saving measures.

## CUSTOMIZATION

Our concrete mixes can be tailored to meet specific project requirements, enabling a wider range of applications and construction needs.

## DIGITALIZATION

Digital tools and software are employed including design, optimization, and quality control streamlining the manufacturing process.

# ANALYTICAL DATA

**AL KHAJAH FACTORIES** extensive review on comprehensive technical comparisons for insulated properties of aggregate, prioritize the enhanced effects of expanded perlite, which presents a natural and sustainable alternative to both organic and inorganic insulating materials. These materials included in the research were PUR-foam and EPS, which derive from non-replenishable sources and mineral wools.

Confirmed by extensive academic research from respected global institutions, as well as authoritative technical evaluations by certified national bodies, perlite emerges as an advantageous choice.

It exhibits minimal Global Warming Potential (GWP) by comparison, reinforcing the environmental preference for this material. Moreover, insulation systems that incorporate perlite showcase durable, consistent thermal performance throughout their operational lifetime.

The main insulating material used in our system is expanded perlite, which is durable, non-combustible (Class A1/DIN 4102), inorganic, and ultra-lightweight with a bulk density range of between 40 Kg/m³ and 140 Kg/m³ (2.5–9.0 lb./ft³). Expanded perlite has low thermal conductivity at 0.044 W/mK (0.023 BTU/hr·ft·°F) at ambient conditions, with an R-value of approximately 3.0–3.5 per inch at a mean temperature of 40 deg F (4 deg C) for product 4.1– 7.4 lb/ft³ (66 –118 kg/m³). It is resistant to chemical attack, odorless, pH neutral and can be produced to comply with ASTM C332i and ASTM C549.

Al Khajah Building Systems replaces inefficient chemical insulators/products such as expanded polystyrene (EPS), extruded polystyrene (XPS), and polyurethane foam. Such chemical products are highly combustible, contain Volatile Organic Compounds (VOCs), are organic and deteriorate with time. Our system is dimensional, stable and keeps its insulating performance 100%. It maintains its structural integrity and retains stable thermal conductivity for the entire lifetime of the building.

### AGING/DROP OF THERMAL INSULATION

**-43%**

Thermal resistance of expanded polystyrene decreases by up to 43% (from 2.485 m2·K·W-1 to 1.424 m2·K·W-1) after 5,000 days from production.

**-27.5%**

Thermal resistance of rigid polyurethane decreases by up to 27.5% (from 2.579 m2·K·W-1 to 1.897 m2·K·W-1) after 5,000 days. The same trend has been identified for polyurethane (PU) foam insulation in refrigerator panels.

# SANDLESS CONCRETE

Standard concrete mix designs primarily comprise fine aggregates such as sand, coarse aggregates, cement, and water. However, the practical utilization of sand within these blends imposes certain restrictions. This stems from the rough and angular physical properties of sand grains, leading to the formulation of void spaces within the concrete matrix. These void spaces can detrimentally undermine the overall structural solidity and impede the concrete's compressive strength attributes. Furthermore, an over-reliance on sand tends to escalate water demand, thereby adversely influencing the concrete's workability metrics, as well as undermining its performance characteristics.

In conventional concrete formulas, coarse aggregates are put through a mechanical crushing process to ensure compatibility with the overall mix. Regrettably, this trial exhibits an undesirable side effect of inducing micro cracks on the coarse aggregate particle surfaces, which, upon integration into the concrete matrix, act as prospective weak points within the structural construction. As time elapses, these microcracks tend to propagate, contributing significantly to the accelerated deterioration of the concrete. Such cascading effects negatively impact the structural lifespan and overall resilience of the edifice.

Our groundbreaking building system offers a sustainable solution to these delineated limitations in traditional concrete mix designs by eliminating the need for sand, steel and coarse aggregates. Leveraging alternative materials with the addition of utilizing GFRP fibres into the concrete mix design. Our innovative approach considerably mitigates the propensity of void and microcrack developments within the concrete matrix. The end product is a substantially homogeneous and structurally-robust edifice impacting overall potency and durability. This exhibits markedly reduced susceptibility to subsequent cracking and time-induced degradation . leading to a significant enhancement in the overall performance and longevity of the resulting structures.

By replacing these conventional components with alternative materials and employing customized technology, the likelihood of void and microcrack formations within the concrete matrix is drastically reduced. This outcome leads to a more homogeneous and structurally robust building system, which exhibits augmented resistance to cracking and time-related degradation.

The system's functionality results from the incorporation of superior compaction techniques and enhanced interfacial bonding between the cement matrix and other insulated component materials. This produces a construction material that demonstrates increased consistency and resilience, thereby reducing the need for maintenance and extending the functional lifespan of the built structures. The reduction of potential weak points, such as microcracks derived from crushed coarse aggregates, further contributes to the system's sustainability advantages, as it minimizes operational costs and bolsters environmental performance throughout the building's lifecycle.

# COMPONENTS

Our system is manufactured using distinctive blend of core aggregates, carefully selected to minimize the ecological footprint. These aggregates are derived from high-quality sources and have been expertly engineered to replace conventional heavyweight components, resulting in a more sophisticated and efficient concrete formulation.

This innovative approach to material production ensures that the overall environmental impact is minimal and contributes positively to the preservation of our planet's resources.

CORE AGGREGATES
SUPERPLASTICIZER
PORTLAND CEMENT
EXPANDED PERLITE
WATER

**Expanded Perlite**

Expanded Perlite is a fully natural, inorganic and chemically inert material. Naturally occurring volcanic rock offering superior thermal performance.


**Admixtures (Superplasticizer)**

Superplasticizers are high efficiency admixture for preparing high-strength, high-performance in our concrete mix, offering a variety of benefits.

**Portland Cement**

Portland Cement serves as the primary component in the production of concrete suitable for diverse construction applications.

**Water**

Avoid using saltwater, seawater, or other types of water that contain high levels of contaminants to allow the concrete to yield higher strength/durability.

**GFRP (optional)**

GFRP, the glass fibers provide additional strength and stiffness to the epoxy resin, making it a strong and efficient material for a variety of applications.

**ENERGY EFFICIENT**

# APPLICATION OPTIONS

## RESIDENTIAL 01

Our lightweight block system offers a range of applications in residential construction. The lightweight nature of the blocks makes them ideal for residential projects, providing cost savings excellent thermal insulation, improvED energy efficiency and reducing heating and cooling costs for homeowners.

## COMMERCIAL 02

Our lightweight block system offers a wide range of commercial applications, providing numerous benefits for various industries. With their lightweight nature, these blocks are ideal for multi-storey buildings, reducing the load on foundations and allowing for more design flexibility.

## INDUSTRIAL 03

The blocks also offer exceptional fire resistance, ensuring compliance with safety regulations and protecting valuable assets. The versatile nature allows for various industrial applications, including warehouses, factories, manufacturing plants, and industrial buildings.



# FULLY INTEGRATED BUILDING SYSTEM

## PARTITION WALLS 04

Our lightweight block system offers a versatile solution for partition walls are highly adaptable and can be easily customized to fit specific design requirements. Utilizing rapid installation and customization, these blocks provide cost-effective and flexible alternatives to traditional partitions.

## BOUNDARY WALLS 05

Our lightweight block system for boundary walls offers ease of installation, cost-effectiveness, and low maintenance, while simultaneously securing an assortment of facilities providing a robust barrier and help maintain a controlled environment while ensuring the safety and security.

## MULTI-STORY 06

Our lightweight block system caters to the specific needs of multi-story projects across these sectors by reducing the load , delivering cost-effective, energy-efficient, and safe solutions.


# SYSTEM USAGE

> Innovation plays a key role in moving manufacturing industries towards **sustainable production**.

**01 CONCRETE STAIRCASE**
Fast construction of concrete staircases offering a temporary/ permanent solution while construction is in process.

**02 CONCRETE ROOFING**
Customized roofing application, adapting our lightweight concrete solutions.

**03 CONCRETE FLOORING**
Lightweight concrete staircases offering a permanent solution while construction is in process.

**04 EXTERNAL WALL(S)**
Ideal for use in the external leaf of cavity walls as well as for solid wall construction.

**05 PARTITION WALL(S)**
Constructing internal partition walls, quickly, cost effectively, as well as reducing loading on flooring systems.

**06 CONCRETE COLUMNS**
Fast construction of insulated concrete shuttering for columns/ beams offering a multitude of advantages.

# LWC BLOCKS/PANELS

"The **design matrix is unique**, adapting never seen before statistical elements setting it apart from other systems that are readily available today."

The innovation of LWC Blocks/panels enables a unilateral cohesive approach to meet diverse requirements ensuring adaptability utilizing customization for a wide range of construction projects. The size selection ensures efficient integration into various architectural designs and structural configurations, enhancing the overall performance, speed of construction and aesthetics of the built environment.

Our system integrates the low thermal bridging concept allowing, ensuring the flow of heat must traverse a considerable distance before dissipating almost completely before reaching the opposing side. This feature significantly reduces the temperature difference between the interior and exterior surfaces. The superior performance is a direct result of our stringent design process that prioritizes energy efficiency and minimizes heat loss.

The reduction in low thermal bridging serves as a testament to our commitment to delivering environmentally friendly, energy saving-efficient solutions that cater to the needs of our clients and contribute to sustainable development surpassing increasingly stringent energy codes and regulations, such as those set by the International Energy Conservation Code (IECC) and the European Union Energy Performance of Buildings Directive (EPBD)-European Commission, 2020.

The design ensures that each section's width possesses equal dimensions, thereby facilitating a balanced and continuous flow of heat without interruption. Chamfered edges allow for the adaption of rapid build technology, fostering accelerated construction times and reducing labor intensive timelines. Strategically placed air gaps within the panel allows for the upward dissipation of heat as it travels through the blocks/panels. This innovative feature not only optimizes the panel's thermal performance but also mitigates the risk of condensation and potential moisture-related issues, ensuring a more durable and long-lasting building envelope solution for the building sector.



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Building Smarter, Building Greener: Innovation in Design and Thermal Efficiency for Sustainable Construction

"

The outer perimeter of the panel has been meticulously designed to feature chamfered edges with a depth of 15mm. This specific depth plays a crucial role when combined with our innovative insulated plaster, which is applied at a thickness of 12mm to coat the chamfered edges.

This design facilitates the integration of a novel bonding technique that has the ability to horizontally and vertically erect a greater number of panels without being constrained by the time it takes on traditional systems.

This advantage contributes to the rapid installation assembly, which has been thoughtfully integrated into the system's design. This aspect not only streamlines the construction process but also seamlessly joins the panels together reducing the thermal bridging to the bare minimum. This uniformity in dimensions not only enhances the panel's thermal performance but also contributes to its overall structural integrity and aesthetic appeal.

LWC 523-T

## TECHNICAL PROPERTIES

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Dry Density | $Kg/m^3$ | 500 |
| Compressive Strength | $N/mm^2$ | 7 |
| Thermal Conductivity | W/m-K | 0.08 |

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Block Weight | Kg | 7 |
| 'R' Value $m^2k/W$ | $m^2k/W$ | 6.19 |
| Sound Resistance | Rw, dB | 65 |
| Fire Resistance | Class Rated | A1 |

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Block Size | mm | 400x200x200 |
| Block Per Pack | # of Blocks | 100 |
| $m^2$ per pack | $m^2$ | 8 |
| Block Pallet Weight | Kg | 900 |



HOLLOW BLOCK SERIES

# LWC 523-T

## DESCRIPTION

New construction technological insulated block, unique design adapting low thermal bridging conception, offering absence of coarse aggregate(s) which are critical factors for thermal insulation. Versatile lightweight design matrix utilizing the highest quality components to achieve superior performance.

## APPLICATIONS

- Residential
- Internal/External Walls
- Commercial
- Boundary Walls
- Industrial
- Partition Walls

## THERMAL CONDUCTIVITY

Attained an unrivaled degree of thermal transmittance, estimated U-value of 0.08 to 0.12, surpassing all existing systems. Our achievement is in compliance with, and transcends, international codes and regulations for thermal conductivity; including ISO 10456, ASTM C518. and EN 12664 setting new benchmarks in thermal performance worldwide.

- ISO 10456 – Thermal values for thermally homogeneous building materials and products
- ASTM C518 – Measurement of steady state thermal transmission using a heat flow meter apparatus

## FIRE RESISTANCE

Tested and certified as non-combustible, achieving the highest classification of A1 rating. This superior performance signifies that our products contribute zero spread of flame, effectively mitigating the risk of fire propagation between rooms and areas within a building.

## ACCOUSTIC RESISTANCE

LWC 523-T outperforms competing solutions in terms of acoustic performance, achieved sound reduction exceeding 65 decibels, certified through key regulations and standards pertaining to acoustic ratings;

- ASTM E90 – Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
- ASTM E413 – Classification for Rating Sound Insulation

## QUICK INSTALLATION

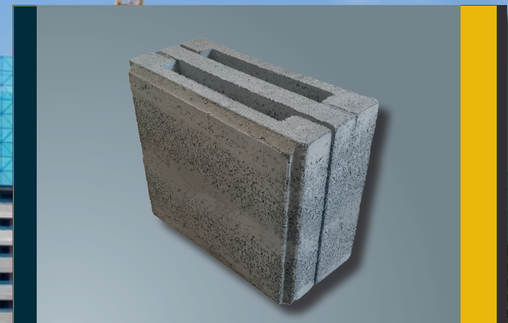
LWC 523-T peripheral design incorporates chamfered edge technology, allowing seamless integration and adaptability for rapid modular installation. This vital aspect not only streamlines the overall assembly procedure upto 10 times that of conventional systems, with the addition of enhancing the structural integrity and resilience of the building envelope.

## ENERGY SAVINGS

LWC 523-T energy savings achieved contribute to the reduction of carbon emissions during both the production process and the building's lifecycle. This reduction in carbon emissions position an environmentally friendly and sustainable choice through the adaptation of the core aggregate mix in our blocks for construction projects. Adhering to energy-efficient codes and regulations and opting for architects, builders, and developers that can significantly contribute to the global effort in promoting sustainable construction practices and reducing the environmental impact in the industry.

## ADVANTAGES

Light Weight | High Thermal Insulation | Fire Resist | Sound Resist | Seismic Resist | Energy Savings | Cost Savings | Rapid Build | Durable/Strong | ECO System | Long Life | Non Toxic



LWC 524-T

## TECHNICAL PROPERTIES

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Dry Density | $Kg/m^3$ | 500 |
| Compressive Strength | $N/mm^2$ | 7 |
| Thermal Conductivity | W/m-K | 0.08 |

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Block Weight | Kg | 16 |
| 'R' Value $m^2k/W$ | $m^2k/W$ | 5.18 |
| Sound Resistance | Rw, dB | 65 |
| Fire Resistance | Class Rated | A1 |

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Block Size | mm | 400x400x200 |
| Block Per Pack | # of Blocks | 60 |
| $m^2$ per pack | $m^2$ | 9.6 |
| Block Pallet Weight | Kg | 1000 |



HOLLOW BLOCK SERIES

# LWC 524-T

## DESCRIPTION

New construction technological insulated block, unique design adapting low thermal bridging conception, offering absence of coarse aggregate(s) which are critical factors for thermal insulation. Versatile lightweight design matrix utilizing the highest quality components to achieve superior performance.

## APPLICATIONS

- Residential
- Internal/External Walls
- Commercial
- Boundary Walls
- Industrial Partition Walls

## THERMAL CONDUCTIVITY

Attained an unrivaled degree of thermal transmittance, estimated U-value of 0.08 to 0.12, surpassing all existing systems. Our achievement is in compliance with, and transcends, international codes and regulations for thermal conductivity; including ISO 10456, ASTM C518. and EN 12664 setting new benchmarks in thermal performance worldwide.

- ISO 10456 – Thermal values for thermally homogeneous building materials and products
- ASTM C518 – Measurement of steady state thermal transmission using a heat flow meter apparatus

## FIRE RESISTANCE

Tested and certified as non-combustible, achieving the highest classification of A1 rating. This superior performance signifies that our products contribute zero spread of flame, effectively mitigating the risk of fire propagation between rooms and areas within a building.

## ACCOUSTIC RESISTANCE

LWC 524-T outperforms competing solutions in terms of acoustic performance, achieved sound reduction exceeding 65 decibels, certified through key regulations and standards pertaining to acoustic ratings;

- ASTM E90 – Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
- ASTM E413 – Classification for Rating Sound Insulation

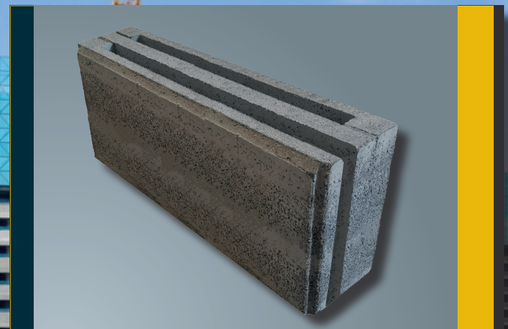
## QUICK INSTALLATION

LWC 524-T peripheral design incorporates chamfered edge technology, allowing seamless integration and adaptability for rapid modular installation. This vital aspect not only streamlines the overall assembly procedure upto 10 times that of conventional systems, with the addition of enhancing the structural integrity and resilience of the building envelope.

## ENERGY SAVINGS

LWC 524-T energy savings achieved contribute to the reduction of carbon emissions during both the production process and the building's lifecycle. This reduction in carbon emissions position an environmentally friendly and sustainable choice through the adaptation of the core aggregate mix in our blocks for construction projects. Adhering to energy-efficient codes and regulations and opting for architects, builders, and developers that can significantly contribute to the global effort in promoting sustainable construction practices and reducing the environmental impact in the industry.

Light Weight | High Thermal Insulation | Fire Resist | Sound Resist | Seismic Resist | Energy Savings | Cost Savings | Rapid Build | Durable/Strong | ECO System | Long Life | Non Toxic



LWC 525-P

## TECHNICAL PROPERTIES

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Dry Density | $Kg/m^3$ | 500 |
| Compressive Strength | $N/mm^2$ | 7 |
| Thermal Conductivity | W/m-K | 0.08 |

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Block Weight | Kg | 32 |
| 'R' Value $m^2k/W$ | $m^2k/W$ | 10.18 |
| Sound Resistance | Rw, dB | 65 |
| Fire Resistance | Class Rated | A1 |

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Block Size | mm | 800x400x200 |
| Block Per Pack | # of Blocks | 36 |
| $m^2$ per pack | $m^2$ | 15.36 |
| Block Pallet Weight | Kg | 1600 |



HOLLOW BLOCK SERIES

# LWC 525-P

## DESCRIPTION

New construction technological insulated panel, unique design adapting low thermal bridging conception, offering absence of coarse aggregate(s) which are critical factors for thermal insulation. Versatile lightweight design matrix utilizing the highest quality components to achieve superior performance.

## APPLICATIONS

- Residential
- Internal/External Walls
- Commercial
- Boundary Walls
- Industrial
- Partition Walls

## THERMAL CONDUCTIVITY

Attained an unrivaled degree of thermal transmittance, estimated U-value of 0.08 to 0.12, surpassing all existing systems. Our achievement is in compliance with, and transcends, international codes and regulations for thermal conductivity; including ISO 10456, ASTM C518. and EN 12664 setting new benchmarks in thermal performance worldwide.

- ISO 10456 – Thermal values for thermally homogeneous building materials and products
- ASTM C518 – Measurement of steady state thermal transmission using a heat flow meter apparatus

## FIRE RESISTANCE

Tested and certified as non-combustible, achieving the highest classification of A1 rating. This superior performance signifies that our products contribute zero spread of flame, effectively mitigating the risk of fire propagation between rooms and areas within a building.

## ACCOUSTIC RESISTANCE

LWC 525-P outperforms competing solutions in terms of acoustic performance, achieved sound reduction exceeding 65 decibels, certified through key regulations and standards pertaining to acoustic ratings;

- ASTM E90 – Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
- ASTM E413 – Classification for Rating Sound Insulation

## QUICK INSTALLATION

LWC 525-P peripheral design incorporates chamfered edge technology, allowing seamless integration and adaptability for rapid modular installation. This vital aspect not only streamlines the overall assembly procedure upto 10 times that of conventional systems, with the addition of enhancing the structural integrity and resilience of the building envelope.

## ENERGY SAVINGS

LWC 525-P energy savings achieved contribute to the reduction of carbon emissions during both the production process and the building's lifecycle. This reduction in carbon emissions position an environmentally friendly and sustainable choice through the adaptation of the core aggregate mix in our panels for construction projects. Adhering to energy-efficient codes and regulations and opting for architects, builders, and developers that can significantly contribute to the global effort in promoting sustainable construction practices and reducing the environmental impact in the industry.

Light Weight | High Thermal Insulation | Fire Resist | Sound Resist | Seismic Resist | Energy Savings | Cost Savings | Rapid Build | Durable/Strong | ECO System | Long Life | Non Toxic

LWC 623-U

## TECHNICAL PROPERTIES

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Dry Density | $Kg/m^3$ | 500 |
| Compressive Strength | $N/mm^2$ | 7 |
| Thermal Conductivity | W/m-K | 0.08 |

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Block Weight | Kg | 7 |
| 'R' Value $m^2k/W$ | $m^2k/W$ | 2.68 |
| Sound Resistance | Rw, dB | 60 |
| Fire Resistance | Class Rated | A1 |

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Block Size | mm | 400x200x200 |
| Block Per Pack | # of Blocks | 100 |
| $m^2$ per pack | $m^2$ | 8 |
| Block Pallet Weight | Kg | 800 |



HOLLOW BLOCK SERIES

# LWC 623-U

## DESCRIPTION

New construction technological insulated block, unique design adapting low thermal bridging conception, offering absence of coarse aggregate(s) which are critical factors for thermal insulation. Versatile lightweight design matrix utilizing the highest quality components to achieve superior performance.

## APPLICATIONS

- Residential
- Internal/External Walls
- Commercial
- Boundary Walls
- Industrial
- Partition Walls

## THERMAL CONDUCTIVITY

Attained an unrivaled degree of thermal transmittance, estimated U-value of 0.08 to 0.12, surpassing all existing systems. Our achievement is in compliance with, and transcends, international codes and regulations for thermal conductivity; including ISO 10456, ASTM C518. and EN 12664 setting new benchmarks in thermal performance worldwide.

- ISO 10456 – Thermal values for thermally homogeneous building materials and products
- ASTM C518 – Measurement of steady state thermal transmission using a heat flow meter apparatus

## FIRE RESISTANCE

Tested and certified as non-combustible, achieving the highest classification of A1 rating. This superior performance signifies that our products contribute zero spread of flame, effectively mitigating the risk of fire propagation between rooms and areas within a building.

## ACCOUSTIC RESISTANCE

LWC 623-U outperforms competing solutions in terms of acoustic performance, achieved sound reduction exceeding 65 decibels, certified through key regulations and standards pertaining to acoustic ratings;

- ASTM E90 – Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
- ASTM E413 – Classification for Rating Sound Insulation

## QUICK INSTALLATION

LWC 623-U peripheral design incorporates chamfered edge technology, allowing seamless integration and adaptability for rapid modular installation. This vital aspect not only streamlines the overall assembly procedure upto 10 times that of conventional systems, with the addition of enhancing the structural integrity and resilience of the building envelope.

## ENERGY SAVINGS

LWC 623-U energy savings achieved contribute to the reduction of carbon emissions during both the production process and the building's lifecycle. This reduction in carbon emissions position an environmentally friendly and sustainable choice through the adaptation of the core aggregate mix in our blocks for construction projects. Adhering to energy-efficient codes and regulations and opting for architects, builders, and developers that can significantly contribute to the global effort in promoting sustainable construction practices and reducing the environmental impact in the industry.

## ADVANTAGES

Light Weight | High Thermal Insulation | Fire Resist | Sound Resist | Seismic Resist | Energy Savings | Cost Savings | Rapid Build | Durable/Strong | ECO System | Long Life | Non Toxic

LWC 624-U

## TECHNICAL PROPERTIES

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Dry Density | $Kg/m^3$ | 500 |
| Compressive Strength | $N/mm^2$ | 7 |
| Thermal Conductivity | W/m-K | 0.08 |

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Block Weight | Kg | 15 |
| 'R' Value $m^2k/W$ | $m^2k/W$ | 2.68 |
| Sound Resistance | Rw, dB | 60 |
| Fire Resistance | Class Rated | A1 |

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Block Size | mm | 400x400x200 |
| Block Per Pack | # of Blocks | 60 |
| $m^2$ per pack | $m^2$ | 9.6 |
| Block Pallet Weight | Kg | 1000 |



HOLLOW BLOCK SERIES

# LWC 624-U

## DESCRIPTION

New construction technological insulated block, unique design adapting low thermal bridging conception, offering absence of coarse aggregate(s) which are critical factors for thermal insulation. Versatile lightweight design matrix utilizing the highest quality components to achieve superior performance.

## APPLICATIONS

- Residential
- Internal/External Walls
- Commercial
- Boundary Walls
- Industrial
- Partition Walls

## THERMAL CONDUCTIVITY

Attained an unrivaled degree of thermal transmittance, estimated U-value of 0.08 to 0.12, surpassing all existing systems. Our achievement is in compliance with, and transcends, international codes and regulations for thermal conductivity; including ISO 10456, ASTM C518. and EN 12664 setting new benchmarks in thermal performance worldwide.

- ISO 10456 – Thermal values for thermally homogeneous building materials and products
- ASTM C518 – Measurement of steady state thermal transmission using a heat flow meter apparatus

## FIRE RESISTANCE

Tested and certified as non-combustible, achieving the highest classification of A1 rating. This superior performance signifies that our products contribute zero spread of flame, effectively mitigating the risk of fire propagation between rooms and areas within a building.

## ACCOUSTIC RESISTANCE

LWC 624-U outperforms competing solutions in terms of acoustic performance, achieved sound reduction exceeding 65 decibels, certified through key regulations and standards pertaining to acoustic ratings;

- ASTM E90 – Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
- ASTM E413 – Classification for Rating Sound Insulation

## QUICK INSTALLATION

LWC 624-U peripheral design incorporates chamfered edge technology, allowing seamless integration and adaptability for rapid modular installation. This vital aspect not only streamlines the overall assembly procedure upto 10 times that of conventional systems, with the addition of enhancing the structural integrity and resilience of the building envelope.

## ENERGY SAVINGS

LWC 624-U energy savings achieved contribute to the reduction of carbon emissions during both the production process and the building's lifecycle. This reduction in carbon emissions position an environmentally friendly and sustainable choice through the adaptation of the core aggregate mix in our blocks for construction projects. Adhering to energy-efficient codes and regulations and opting for architects, builders, and developers that can significantly contribute to the global effort in promoting sustainable construction practices and reducing the environmental impact in the industry.

## ADVANTAGES

Light Weight | High Thermal Insulation | Fire Resist | Sound Resist | Seismic Resist | Energy Savings | Cost Savings | Rapid Build | Durable/Strong | ECO System | Long Life | Non Toxic

LWC 625-P

## TECHNICAL PROPERTIES

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Dry Density | $Kg/m^3$ | 500 |
| Compressive Strength | $N/mm^2$ | 7 |
| Thermal Conductivity | W/m-K | 0.08 |

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Block Weight | Kg | 32 |
| 'R' Value $m^2k/W$ | $m^2k/W$ | 2.68 |
| Sound Resistance | Rw, dB | 65 |
| Fire Resistance | Class Rated | A1 |

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Block Size | mm | 800x400x200 |
| Block Per Pack | # of Blocks | 36 |
| $m^2$ per pack | $m^2$ | 11.52 |
| Block Pallet Weight | Kg | 1200 |



HOLLOW BLOCK SERIES

# LWC 625-P

## DESCRIPTION

New construction technological insulated block, unique design adapting low thermal bridging conception, offering absence of coarse aggregate(s) which are critical factors for thermal insulation. Versatile lightweight design matrix utilizing the highest quality components to achieve superior performance.

## APPLICATIONS

- Residential
- Internal/External Walls
- Commercial
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- Industrial
- Partition Walls

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## FIRE RESISTANCE

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## ACCOUSTIC RESISTANCE

LWC 625-P outperforms competing solutions in terms of acoustic performance, achieved sound reduction exceeding 65 decibels, certified through key regulations and standards pertaining to acoustic ratings;

- ASTM E90 – Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
- ASTM E413 – Classification for Rating Sound Insulation

## QUICK INSTALLATION

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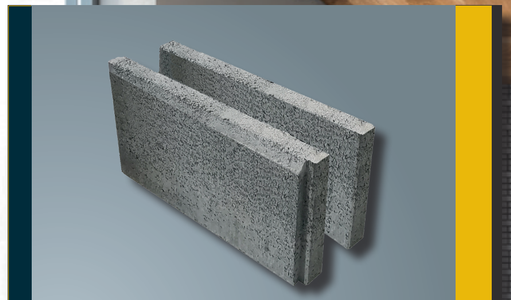
## ENERGY SAVINGS

LWC 625-P energy savings achieved contribute to the reduction of carbon emissions during both the production process and the building's lifecycle. This reduction in carbon emissions position an environmentally friendly and sustainable choice through the adaptation of the core aggregate mix in our panels for construction projects. Adhering to energy-efficient codes and regulations and opting for architects, builders, and developers that can significantly contribute to the global effort in promoting sustainable construction practices and reducing the environmental impact in the industry.

Light Weight | High Thermal Insulation | Fire Resist | Sound Resist | Seismic Resist | Energy Savings | Cost Savings | Rapid Build | Durable/Strong | ECO System | Long Life | Non Toxic



LWC 723-Q

## TECHNICAL PROPERTIES

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Dry Density | $Kg/m^3$ | 500 |
| Compressive Strength | $N/mm^2$ | 3.5 |
| Thermal Conductivity | W/m-K | 0.08 |

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Block Weight | Kg | 5.5 |
| 'R' Value $m^2k/W$ | $m^2k/W$ | 2.5 |
| Sound Resistance | Rw, dB | 65 |
| Fire Resistance | Class Rated | A1 |

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Block Size | mm | 400x200x200 |
| Block Per Pack | # of Blocks | 100 |
| $m^2$ per pack | $m^2$ | 8 |
| Block Pallet Weight | Kg | 650 |



HOLLOW BLOCK SERIES

# LWC 723-Q

## DESCRIPTION

New construction technological insulated block, unique design adapting low thermal bridging conception, offering absence of coarse aggregate(s) which are critical factors for thermal insulation. Versatile lightweight design matrix utilizing the highest quality components to achieve superior performance.

## APPLICATIONS

- Residential
- Internal/External Walls
- Commercial
- Boundary Walls
- Industrial Partition Walls

## THERMAL CONDUCTIVITY

Attained an unrivaled degree of thermal transmittance, estimated U-value of 0.08 to 0.12, surpassing all existing systems. Our achievement is in compliance with, and transcends, international codes and regulations for thermal conductivity; including ISO 10456, ASTM C518. and EN 12664 setting new benchmarks in thermal performance worldwide.

- ISO 10456 – Thermal values for thermally homogeneous building materials and products
- ASTM C518 – Measurement of steady state thermal transmission using a heat flow meter apparatus

## FIRE RESISTANCE

Tested and certified as non-combustible, achieving the highest classification of A1 rating. This superior performance signifies that our products contribute zero spread of flame, effectively mitigating the risk of fire propagation between rooms and areas within a building.

## ACCOUSTIC RESISTANCE

LWC 723-Q outperforms competing solutions in terms of acoustic performance, achieved sound reduction exceeding 65 decibels, certified through key regulations and standards pertaining to acoustic ratings;

- ASTM E90 – Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
- ASTM E413 – Classification for Rating Sound Insulation

## QUICK INSTALLATION

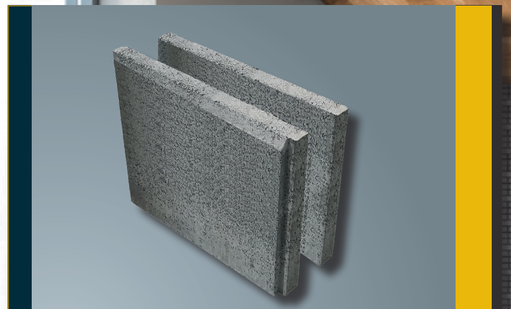
LWC 723-Q peripheral design incorporates chamfered edge technology, allowing seamless integration and adaptability for rapid modular installation. This vital aspect not only streamlines the overall assembly procedure upto 10 times that of conventional systems, with the addition of enhancing the structural integrity and resilience of the building envelope.

## ENERGY SAVINGS

LWC 723-Q energy savings achieved contribute to the reduction of carbon emissions during both the production process and the building's lifecycle. This reduction in carbon emissions position an environmentally friendly and sustainable choice through the adaptation of the core aggregate mix in our blocks for construction projects. Adhering to energy-efficient codes and regulations and opting for architects, builders, and developers that can significantly contribute to the global effort in promoting sustainable construction practices and reducing the environmental impact in the industry.

## ADVANTAGES

Light Weight · High Thermal Insulation · Fire Resist · Sound Resist · Seismic Resist · Energy Savings · Cost Savings · Rapid Build · Durable/Strong · ECO System · Long Life · Non Toxic



LWC 724-Q

## TECHNICAL PROPERTIES

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Dry Density | $Kg/m^3$ | 500 |
| Compressive Strength | $N/mm^2$ | 7 |
| Thermal Conductivity | W/m-K | 0.08 |

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Block Weight | Kg | 11 |
| 'R' Value $m^2k/W$ | $m^2k/W$ | 2.5 |
| Sound Resistance | Rw, dB | 65 |
| Fire Resistance | Class Rated | A1 |

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Block Size | mm | 400x400x200 |
| Block Per Pack | # of Blocks | 60 |
| $m^2$ per pack | $m^2$ | 9.6 |
| Block Pallet Weight | Kg | 770 |



HOLLOW BLOCK SERIES

# LWC 724-Q

## DESCRIPTION

New construction technological insulated block, unique design adapting low thermal bridging conception, offering absence of coarse aggregate(s) which are critical factors for thermal insulation. Versatile lightweight design matrix utilizing the highest quality components to achieve superior performance.

## APPLICATIONS

- Residential
- Internal/External Walls
- Commercial
- Boundary Walls
- Industrial Partition Walls

## THERMAL CONDUCTIVITY

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- ISO 10456 – Thermal values for thermally homogeneous building materials and products
- ASTM C518 – Measurement of steady state thermal transmission using a heat flow meter apparatus

## FIRE RESISTANCE

Tested and certified as non-combustible, achieving the highest classification of A1 rating. This superior performance signifies that our products contribute zero spread of flame, effectively mitigating the risk of fire propagation between rooms and areas within a building.

## ACCOUSTIC RESISTANCE

LWC 724-Q outperforms competing solutions in terms of acoustic performance, achieved sound reduction exceeding 65 decibels, certified through key regulations and standards pertaining to acoustic ratings;

- ASTM E90 – Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
- ASTM E413 – Classification for Rating Sound Insulation

## QUICK INSTALLATION

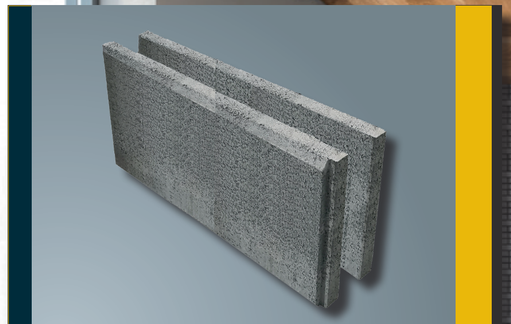
LWC 724-Q peripheral design incorporateS chamfered edge technology, allowing seamless integration and adaptability for rapid modular installation. This vital aspect not only streamlines the overall assembly procedure upto 10 times that of conventional systems, with the addition of enhancing the structural integrity and resilience of the building envelope.

## ENERGY SAVINGS

LWC 724-Q energy savings achieved contribute to the reduction of carbon emissions during both the production process and the building's lifecycle. This reduction in carbon emissions position an environmentally friendly and sustainable choice through the adaptation of the core aggregate mix in our blocks for construction projects. Adhering to energy-efficient codes and regulations and opting for architects, builders, and developers that can significantly contribute to the global effort in promoting sustainable construction practices and reducing the environmental impact in the industry.

## ADVANTAGES

Light Weight · High Thermal Insulation · Fire Resist · Sound Resist · Seismic Resist · Energy Savings · Cost Savings · Rapid Build · Durable/Strong · ECO System · Long Life · Non Toxic



LWC 725-P

## TECHNICAL PROPERTIES

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Dry Density | $Kg/m^3$ | 500 |
| Compressive Strength | $N/mm^2$ | 7 |
| Thermal Conductivity | W/m-K | 0.08 |

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Block Weight | Kg | 22 |
| 'R' Value $m^2k/W$ | $m^2k/W$ | 2.5 |
| Sound Resistance | Rw, dB | 65 |
| Fire Resistance | Class Rated | A1 |

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Block Size | mm | 800x400x200 |
| Block Per Pack | # of Blocks | 36 |
| $m^2$ per pack | $m^2$ | 11.52 |
| Block Pallet Weight | Kg | 900 |



HOLLOW BLOCK SERIES

# LWC 725-P

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## APPLICATIONS

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## ACCOUSTIC RESISTANCE

LWC 725-P outperforms competing solutions in terms of acoustic performance, achieved sound reduction exceeding 65 decibels, certified through key regulations and standards pertaining to acoustic ratings;

- ASTM E90 – Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
- ASTM E413 – Classification for Rating Sound Insulation

## QUICK INSTALLATION

LWC 725-P peripheral design incorporates chamfered edge technology, allowing seamless integration and adaptability for rapid modular installation. This vital aspect not only streamlines the overall assembly procedure upto 10 times that of conventional systems, with the addition of enhancing the structural integrity and resilience of the building envelope.

## ENERGY SAVINGS

LWC 725-P energy savings achieved contribute to the reduction of carbon emissions during both the production process and the building's lifecycle. This reduction in carbon emissions position an environmentally friendly and sustainable choice through the adaptation of the core aggregate mix in our panels for construction projects. Adhering to energy-efficient codes and regulations and opting for architects, builders, and developers that can significantly contribute to the global effort in promoting sustainable construction practices and reducing the environmental impact in the industry.

## ADVANTAGES

Light Weight | High Thermal Insulation | Fire Resist | Sound Resist | Seismic Resist | Energy Savings | Cost Savings | Rapid Build | Durable/Strong | ECO System | Long Life | Non Toxic

LWC 823-U

## TECHNICAL PROPERTIES

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Dry Density | $Kg/m^3$ | 500 |
| Compressive Strength | $N/mm^2$ | 7 |
| Thermal Conductivity | W/m-K | 0.08 |

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Block Weight | Kg | 5 |
| 'R' Value $m^2k/W$ | $m^2k/W$ | 1.43 |
| Sound Resistance | Rw, dB | 35 |
| Fire Resistance | Class Rated | A1 |

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Block Size | mm | 400x200x100 |
| Block Per Pack | # of Blocks | 200 |
| $m^2$ per pack | $m^2$ | 16 |
| Block Pallet Weight | Kg | 1200 |



HOLLOW BLOCK SERIES

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LWC 824-U

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| Compressive Strength | $N/mm^2$ | 7 |
| Thermal Conductivity | W/m-K | 0.08 |

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Block Weight | Kg | 10 |
| 'R' Value $m^2k/W$ | $m^2k/W$ | 1.43 |
| Sound Resistance | Rw, dB | 35 |
| Fire Resistance | Class Rated | A1 |

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Block Size | mm | 400x400x100 |
| Block Per Pack | # of Blocks | 120 |
| $m^2$ per pack | $m^2$ | 19.2 |
| Block Pallet Weight | Kg | 1300 |



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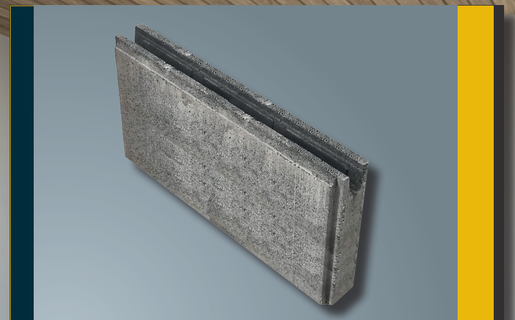

LWC 825-P

## TECHNICAL PROPERTIES

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Dry Density | $Kg/m^3$ | 500 |
| Compressive Strength | $N/mm^2$ | 7 |
| Thermal Conductivity | W/m-K | 0.08 |

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Block Weight | Kg | 22 |
| 'R' Value $m^2k/W$ | $m^2k/W$ | 1.43 |
| Sound Resistance | Rw, dB | 35 |
| Fire Resistance | Class Rated | A1 |

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Block Size | mm | 800x400x100 |
| Block Per Pack | # of Blocks | 80 |
| $m^2$ per pack | $m^2$ | 25.6 |
| Block Pallet Weight | Kg | 1800 |



HOLLOW BLOCK SERIES

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## ADVANTAGES

Light Weight | High Thermal Insulation | Fire Resist | Sound Resist | Seismic Resist | Energy Savings | Cost Savings | Rapid Build | Durable/Strong | ECO System | Long Life | Non Toxic

# LWC INSULATED SHUTTERING

"**Delivering stability and integrity**, our insulating materials and shuttering assembly method pave the way for vertical columns/ beams with the flexibility of exceeding international energy standards."

Our LWC Insulated Shuttering is a highly innovative and modern construction method that combines the superior strength of concrete with the exceptional thermal insulation properties of expanded perlite. This unique combination results in the production of cost-effective and durable structures that are highly efficient.

Our proprietary systems offer a wide variety of configurations, serving as permanent shuttering for concrete. These systems not only provide excellent sound insulation, fire resistance, and high thermal capacity but also showcase a remarkable level of simplicity and elegance that appeals to designers for a multitude of applications.

By employing environmentally friendly permanent insulating systems we have introduced a newly established method of construction. Our system remains in place after the concrete has cured, becoming an integral part of the building's internal structure. This method has been developed to ensure that the insulation materials and the assembly are capable of providing robust support and dimensional stability, resulting in vertical surfaces free from any lateral distortion. The resulting construction not only delivers remarkable structural capacity but also offers outstanding thermal insulation.

The level of insulation can be adjusted to cater to specific U-value requirements based on the client's specifications. Our range of insulated concrete shuttering comprises various sized blocks and shaped components designed to accommodate commonly encountered building situations. These components seamlessly fit together, forming a stable uniformity that is then filled with our specialized ready-mix concrete.

We remain consistently committed to creating versatile products that comfortably fit into numerous situations. Reducing building costs and maximizing product performance, our focus stays fixed on enabling efficient project execution, ultimately contributing to success in all construction applications.



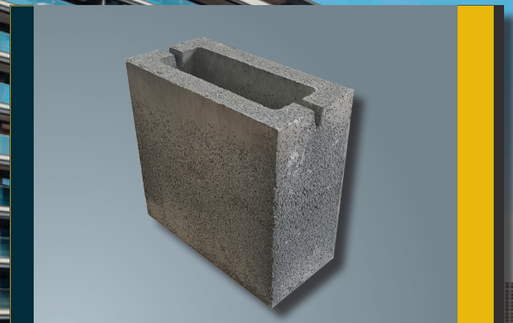
"Exceeding industry standards, our proprietary systems offer permanence, fire resistance, sound insulation, and high thermal capacities in various configurations."

With a conscientious consideration for environmental sustainability, we employ eco-friendly permanent insulating shuttering systems as replacements for conventional construction materials.

This approach has birthed a distinctive method of construction, incorporating enhanced components or add-ons, designed to effectively and securely adapt to diverse profiles.

With the self-curing process complete, the system remains in place, becoming an integral part of the building's insulation. This development stems from the properties of our insulating materials and the specific assembly method employed to form our shuttering.

Providing unwavering support and dimensional stability, ensuring columns and beams are vertically aligned and devoid of lateral distortion.



LWC 112-S

## TECHNICAL PROPERTIES

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Dry Density | $Kg/m^3$ | 500 - 1700 |
| Compressive Strength | $N/mm^2$ | 3.45 |
| Thermal Conductivity | W/m-K | 0.08 - 0.2 |

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Block Weight | Kg | 15 - 30 |
| 'R' Value $m^2k/W$ | $m^2k/W$ | 1.32 - 1.38 |
| Sound Resistance | Rw, dB | 45 |
| Fire Resistance | Class Rated | A1 |

| PROPERTIES | UNITS | RANGE |
|---|---|---|
| Block Size | mm | 400x400x200 |
| Block Per Pack | # of Blocks | 60 |
| $m^2$ per pack | $m^2$ | 9.6 |
| Block Pallet Weight | Kg | 1000 - 1800 |



INSULATED SHUTTERING

# LWC 112-S

## DESCRIPTION

The LWC Shuttering Series is a comprehensive range of non-load/load-bearing permanent concrete shuttering kits/systems, formulated with hollow, thermally-insulating blocks. The purpose of these systems is to encase fresh lightweight insulated concrete during the erection of columns and beams. Once assembled, the system functions as the structural core of the column/beam, and if specified, includes any integrated finish.

Following the assembly process, the blocks are then filled with our proprietary lightweight ready-mix concrete, designed to match the client-provided strength capacity specifications, with optional reinforcement.

Even though common finishing options like rendering, cladding, plastering, or dry-lining do not come as individual components in the kit, they are available as part of an all-inclusive system. These systems are pre-assembled at our manufacturing plant and are incorporated into the on-site construction workflow.

## APPLICATIONS

- Columns
- Beams
- Internal/External Walls (optional)

## MATERIALS

- Portland Cement
- GFRP Fibers (optional)
- Water (potable)
- Expanded Perlite
- Superplasticizer

## INTENDED USAGE

The primary function of our non-load bearing shuttering kits/systems, constructed from hollow block thermal insulating material and reinforced with optional GFRP fibers, is for insulating columns/beams, though they can be adapted for wall construction purposes. The completed columns/beams can be either load-bearing or non-load bearing and are suitable for both internal and external applications, as well as seismic-prone areas. Moreover, the kit is designed to withstand indirect exposure to soil and water.

## QUICK ASSEMBLY

Unique to the LWC Shuttering Series is the Quick Assembly feature, an industry-leading convenience designed to expedite the overall construction process. The thermally-insulated concrete shuttering kits come with pre-assembled hollow blocks for an efficient and streamlined assembly. Once assembled, our Quick Assembly feature allows for immediate filling of the hollow blocks with our proprietary lightweight ready-mix concrete, speeding up the construction timeline while maintaining the project's amenability to customization based on your specific needs.

## DURABILITY/LIFESPAN

The LWC Shuttering Series is estimated to possess a significant working lifespan of 100+ years when correctly installed, with the actual product lifecycle in regular use conditions potentially stretching even longer without significant degradation affecting essential performance characteristics. Please note that these insights about the product's expected lifespan should be interpreted as an approximation of the economically reasonable working life and do not constitute a guarantee provided by the manufacturer or its representatives.

## ADVANTAGES

Light Weight | High Thermal Insulation | Fire Resist | Sound Resist | Seismic Resist | Energy Savings | Cost Savings | Rapid Build | Durable/Strong | ECO System | Long Life | Non Toxic

# INSULATED PLASTER

"**Al Khajah's insulation solutions** proficiently shield buildings from heat transfer and noise pollution, enhancing the comfort and functionality within structures."

The innovation of Al Khajah's Insulated Plaster introduces a versatile, cohesive solution, allowing the adaptability and customization necessary to fulfill diverse requirements. This technology efficiently meets energy guidance laws for existing buildings by providing retrofit options, as well as catering to new construction projects that necessitate optimum insulation properties to augment the performance of the building's envelope.

Our cutting-edge formulation combines the expanded Perlite as an insulating aggregate unique blend, creating breathable, lightweight application options offering substantial improvements in thermal and acoustic insulation for both internal and external walls but can also endure temperatures of up to 1250°C without compromising its structural integrity.

The distinctive open-cell, honeycomb structure of the expanded Perlite forms a thermal resistance barrier that significantly minimizes heat and sound transmission when utilized as an external render or an internal plaster. One of its key attributes is high vapor-permeability, allowing the structure to breathe, reducing the risk of damage from moisture build-up and mold growth. Through the amalgamation of its porous structure our insulated plaster ensures that the building retains its breathability. As a result, it effectively eliminates the conditions that lead to the formation of condensation and humidity, which can create unhealthy living spaces and facilitate mold growth. This feature, as crucial as thermal insulation for maintaining a healthy living environment, is one of the numerous benefits offered by Al Khajah's product line. With its low-density characteristics and its unique physical structure, our insulated plaster maintains a comfortable home temperature throughout the year - warm during winter and cool in the summer. It provides excellent protection against the potential damages caused by condensation, making it a cornerstone for building support and longevity.



> "Applying a single 20mm coat of IP 33-T external wall plaster render to a bare masonry wall will result in a remarkable 250% improvement in the wall's thermal resistance."

Effective building insulation is crucial for ensuring the longevity and durability of structures. One prominent issue faced by buildings is poor insulation, which can lead to various detrimental effects over time. Adapting Al Khajah Insulated Plaster buildings can enjoy extended lifespans and heightened resilience against the damaging effects of time.

Al Khajah offers high-quality insulation solutions that surpass industry standards due to their exceptional properties, buildings are effectively shielded from heat transfer and noise pollution. These products contribute to the creation of lighter, breathable structures that exhibit enhanced fire resistance.

What sets Al Khajah apart is not only the superior performance of its products but also its commitment to environmental sustainability. The company's insulation products are composed of natural and eco-friendly materials, providing long-lasting solutions, ensuring the longevity and resilience of structures in both traditional and inorganic construction methods.


IP 33-T

## TECHNICAL PROPERTIES

| ESSENTIAL CHARACTERISTICS | PERFORMANCE | METHOD OF TEST |
|---|---|---|
| Dry bulk density (kg/m³) | 500 kg/m³ ±10% | EN 1015 - 10 |
| Thermal Conductivity | 0.08 | EN 1745:2012<br>EN 12664:2009 |
| Reaction to fire | A1 | EN 13501-1 |
| Compressive Strength | 7N/m² | EN 1015 - 11 |
| Sound insulation (db) | 23db (3cm/500Hz) | EN ISO 10140-2 |

| ESSENTIAL CHARACTERISTICS | DETAILS |
|---|---|
| Colour & appearance | Grey granule |
| Yield | approx. 3.3m²/25kg @ 15mm |
| Drying time | 8 hours (at 23°C, 50% relative humidity) |
| Application temperature | 5° – 35°C |
| Applicable depth (Single Coat) | Minimum 10mm, maximum 35mm |



# IP 33-T

INSULATED PLASTER

## DESCRIPTION

The IP 33-T product utilizes expanded Perlite as an insulating aggregate to create a render/plaster solution that offers notable improvements in strength, thermal insulation, and acoustic insulation for both internal and external walls. This lightweight material features an open cell, honeycomb structure that acts as a thermally resistant barrier, effectively reducing heat and sound transmission when applied as an external render or internal plaster.

Additionally, the high vapor permeability of this system allows for proper breathability, minimizing the potential risks associated with moisture damage and the growth of mold.

## MIXING METHOD

- To prepare IP 33-T, it is recommended that one 25Kg bag of the product be mixed with 10-12 litres of water in a sufficiently large container.
- The mixing process involves pouring 80-90% of the water along with the 25Kg bag into the container, and then the mixture should be mixed at a speed of 100-150rpm using a mixer. It is important to note that the mixing process should not exceed a duration of 3-4 minutes to avoid crushing the insulating aggregate.
- To achieve the desired consistency, the remaining water can be gradually added. After this, it is advised to allow the mixture to rest for 2 minutes before further mixing for an additional minute.
- Do not add water to the mix once the mixed mortar starts to harden.

## USAGE

IP 33-T is a versatile solution that can be effectively incorporated into insulation/facade systems in new construction projects or used as a valuable thermal upgrade measure for older properties. The product is conveniently supplied in 25kg bags for on-site mixing with water, allowing for easy application as a straightforward render or plaster base coat. Optional color that has been imbedded into our plaster available on request.

## APPLICATION

To achieve optimal results when applying IP 33-T insulated plaster, it is recommended to apply a single or multiple layers on rough surfaces. On smooth surfaces, it is advised to apply the plaster subsequent to the application of a splatter dash coat. After immediate application, it is essential to rod or level the plaster to ensure a uniform thickness, followed by smoothing the material to attain the desired appearance. In the case of multiple layers, it is important to allow the first coat to partially dry for a period of 60-120 minutes, dependent on the prevailing weather conditions. Subsequently, the second coat should be applied to the specified thickness to adhere with ASTM C926 procedures to achieve optimal layer application results, irrespective of weather conditions.

## CURING

To facilitate the curing process, it is advised to apply water to the surface at intervals of 8-12 hours for a minimum duration of 3 days. In instances of hot and dry conditions, it is recommended to extend the curing period to a minimum of 5 days. This approach is vital in achieving high mechanical strengths and reducing the likelihood of surface cracks.

## ADVANTAGES

Light Weight | High Thermal Insulation | Fire Resist | Sound Resist | Seismic Resist | Energy Savings | Cost Savings | Rapid Build | Durable/Strong | ECO System | Long Life | Non Toxic

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