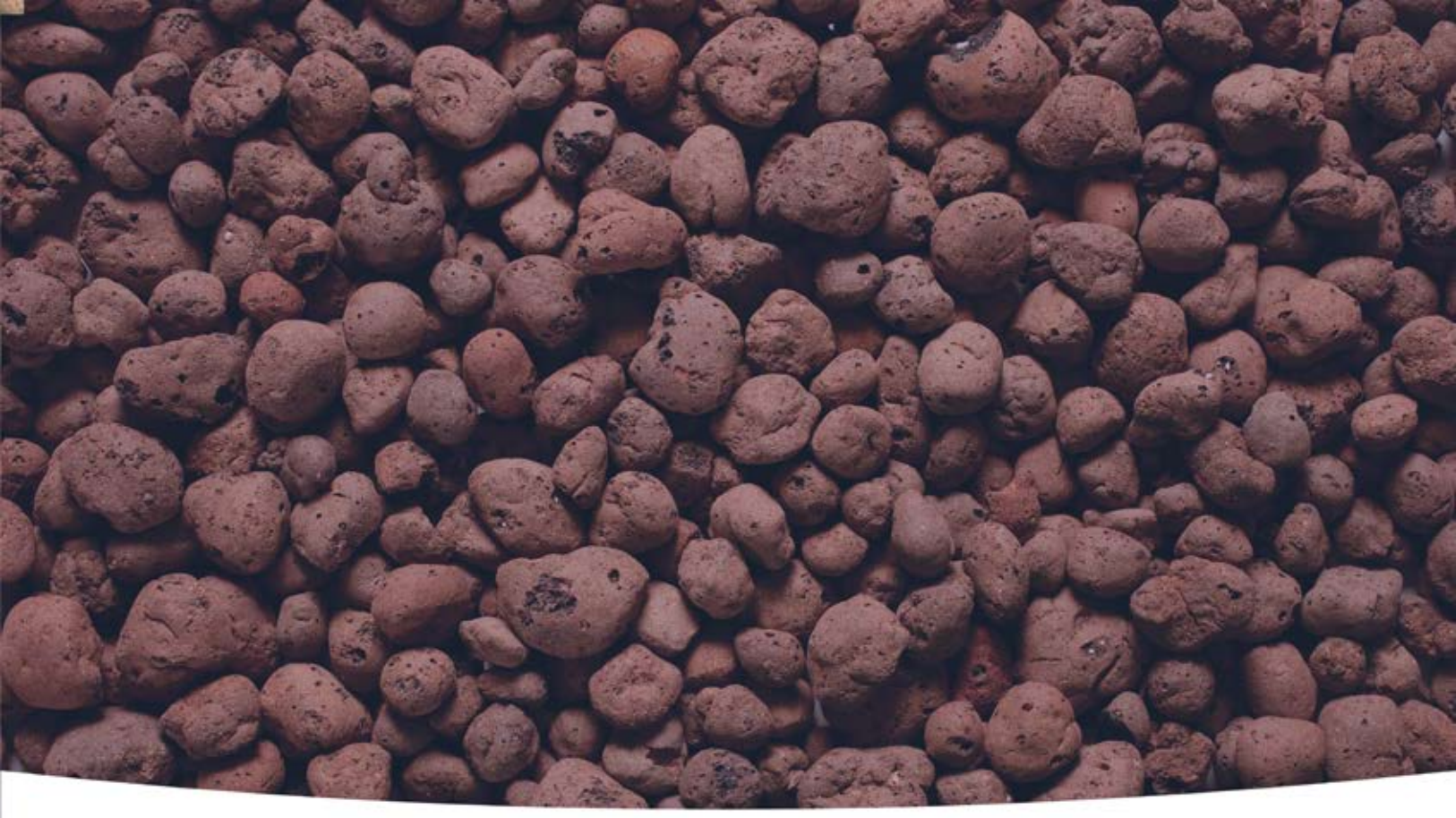


Leca®

Light Expanded Clay Aggregate

Lecanix®

Lecapon

ABOUT LECA(light expanded clay aggregate)

Leca® Light Expanded Clay Aggregate

Leca is the initial letters for light-expanded clay aggregate. Expanded clay aggregates are porous ceramic products with a uniform pore structure of closed cells and with a densely sintered, firm external skin. It is manufactured in rotary kilns from raw materials containing clay minerals. The raw material is prepared, molded, and then subjected to a firing process at temperatures of between 1100 to 1200 °C, resulting in a significant increase in volume due to expansion. The LECA grains' internal cellular structure with thousands of air-filled cavities gives thermal and sound insulation properties.

0.1-4 mm

4-10 mm

10-25 mm

Size	Application
0.1-4 mm	Constructing concrete components, mortar and plaster
4-10 mm	Constructing concrete components, bedding, light filling
10-25 mm	Insulation, capillary effect removal, drainage, constructing concrete components, bedding

ABOUT LECA (light expanded clay aggregate)

Leca is a well-established company that has been providing high-quality construction materials since 1972. With four production lines of light expanded clay aggregates with a capacity of 1 million cubic meters and four production lines of masonry blocks with a capacity of 35 million blocks a year, Leca has become a leading name in the industry. In addition to these products, Leca also manufactures dry pre-mixed products and Leca for agricultural applications. Our commitment to quality and innovation has made us a trusted partner for builders, architects, and contractors across the globe.

LECA introductoion video

ABOUT Pars Block Avizheh

Pars Block Avizheh industrial group is the official representative of leca in producing isolated and light blocks. We've been working over 18 years and in the last 12 years we've been producing isolated Leca blocks under the license of Leca office in Iran.

youtube.com/ @LecaGolestan

instagram.com/ Leca-Golestan

wa.me/ +989113808630

Leca-Golestan.ir

We strive for more sustainability

#1 We don't deplete resources , we strengthen them

Leca is an environmentally friendly and sustainable product. The main ingredient of Leca is clay. To produce LECA, we transform 1m^3 of freshly dug clay into 3m^3 of lightweight expanded clay aggregate. Through this highly resourceful return of 1:3, we feel that our production has the minimum impact on the natural resources.

#2 Recyclable

LECA is made of clay and buildings built with LECA can be recycled and reused. This can reduce the amount of energy being used to manufacture building materials.

#3 Energy saving

LECA building materials have thermal insulation properties and can significantly reduce the amount of energy needed for cooling and heating the building .

#4 Absorbing co_2

LECA is used in civil landscaping , roof gardens and, planters, etc. which not only makes buildings look more beautiful, but also clean the air by absorbing CO2 while producing oxygen.

We strive for more sustainability

LECA (Light Expanded Clay Aggregate) is a Lightweight green construction material that is inert, non-toxic in nature, ethical, and sustainable aggregate also offers thermal insulation by low thermal conductivity coefficient as low as 0.097 W/mK, excellent soundproofing benefits by high acoustic insulation, excellent moisture impermeability, being incompressible under permanent pressure and gravity loads, resistant to decomposing under severe conditions, fire-resistant, having a pH of nearly 7, offering to freeze and melting resistance, offering ease of movement and transportation, ideal aggregate for lightweight backfill and finishing projects, and further offering reduction of dead construction load and lateral earthquake loads in seismic zones.

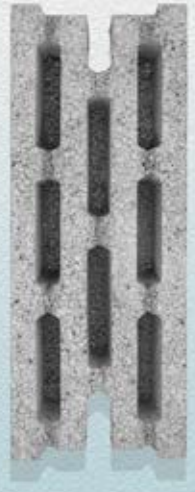
Leca masonry blocks for walls

Leca building blocks' properties

Leca building blocks are produced by mixing leca with cement ,sand ,and water. The blocks are cast in normal block making machines that compact and vibrate the concrete in one single operation.

Leca block is ideal for all types of exterior/ interior walls and suitable for any physical operations such as cutting, nailing, transfixing or scewing, also ridge extending to make proper route for wire pipe and other installing components without any cracking on the surface material.

It has all workability of normal block and does not have any limitation of other lightweight blocks.



Sound Insulation:

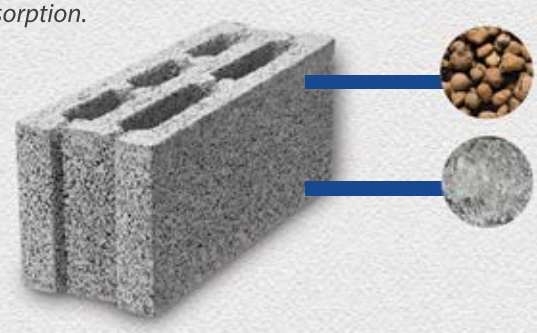
With advanced acoustic specifications, leca sound insulation superiors other building materials. Sound installation of a one layer of leca block wall will ranges from 46 to 53 db, which is appropriate for all kind of building functions.

Lightweight and Rigid:

Leca blocks are supplied in block compressive strength class of 2.5 to 3.5 MPa as per American and Euro standard with a normal dry density of 600 to 800 Kg/m^3.

Minimal Water Absorption:

The absorption of moisture by leca building blocks is minimal and as per standards. The block structure with large pores between the leca grains forms effective protection against sorption.



Fire Resistance:

Leca building blocks are none combustible and to be considered as reaction to fire class a 1 (no contribution to fire).

Shaping:

The best tool for dividing and shaping the Leca building blocks is a carbide- tooth saw. Minor jobs can be accomplished using and axe or masonry hammer. Leca blocks are quickly divided using a standard block cutter.

Leca masonry blocks for walls

Thermal Insulation:

Leca aggregates insulates with low thermal conductivity could be used in many products such as block, grout, etc to increase thermal resistance of products. Leca does not deteriorate at time so it is perfect basic material to be used in the creation of permanent thermal insulation elements. Despite of other lightweight and insulating materials with up to 80% whether absorption, leca water absorption is limited to 18% of its weight, which means that its thermal conductivity will not increase owing to moisture content. The accumulation of heat in inner-leaf walls and partitions made of building blocks make a major contribution to the creation of a pleasant indoor climate by neutralizing temperature fluctuations by sunshine or ventilation.

Surface Treatment:

The low moisture absorption and large surface pores made Leca blocks suitable for rendering and plastering by both manual and mechanical means .

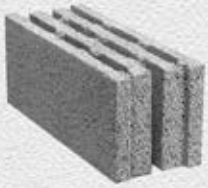
Leca plaster including leca has great advantages in outer and inner walls.

Inorganic:

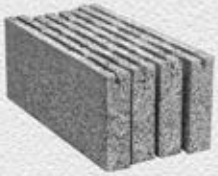
Leca building blocks are inorganic and not susceptible to attack by dry-rot , wet-rot or insects.

Leca masonry blocks for walls

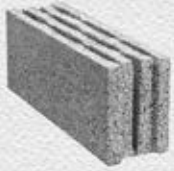
9.5 Size : **39×19×20 cm**



13 Size : **49×19×20 cm**



19.5 Size : **49×25×20 cm**



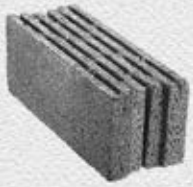
11 Size : **49×14.5×20 cm**

12 Size : **49×19×20 cm**

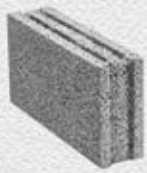
12 Size : **49×19×20 cm**

9.2 Size : **49×12×20 cm**

9.5 Size : **49×14.5×20 cm**

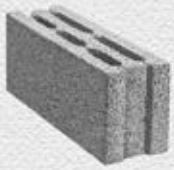


14.8 Size : **49×19×20 cm**



6.5 Size : **40×10×20 cm**

12 Size : **49×17.5×20 cm**

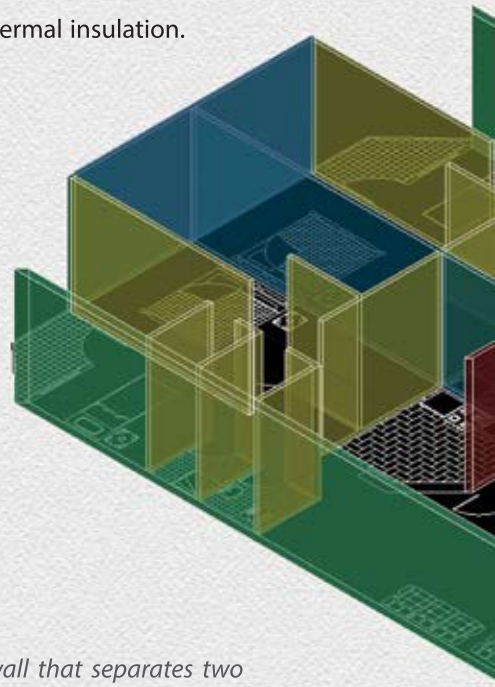


10.7 Size : **49×14.5×20 cm**

External Walls:

External walls are vertical elements that enclose the buildings. External walls are exposed to cold and hot weather. So, an external wall must:

- Effectively block the unwanted noise from the outside.
- provide enough thermal insulation.



Party Walls:

A party wall is a shared wall that separates two apartments units. Party walls are most commonly found in apartments, condominiums, hotels, and office complexes.

A party wall must be an effective sound barrier.

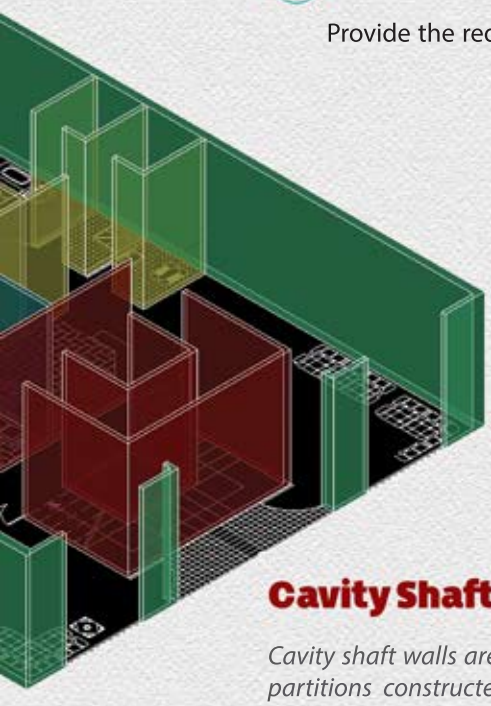
leca masonry blocks for walls

Partition Walls:

A partition wall is a divider wall, typically non load bearing, used to separate spaces in residential, commercial, and industrial buildings. Partition walls must:

Be lightweight to reduce the dead load of the building.

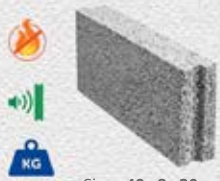
Provide the required strength



Cavity Shaft Walls:

Cavity shaft walls are non-load-bearing, fire-rated partitions constructed to enclose elevator shafts and stairs where the design requires resistance to both fire and air pressure.

A cavity shaft wall must be fire resistant.



Size : **49×8×20 cm**

Size : **49×10×20 cm**

Size : **40×7×20 cm**

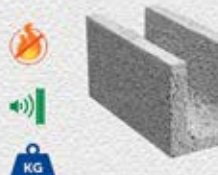
Size : **40×10×20 cm**

Size : **24×17.5× 20 cm**

Size : **24×19×20 cm**

Size : **24×12×20 cm**

Size : **24×14.5×20 cm**



Size : **40×19×20 cm**

Size : **49×19×20 cm**

Size : **20×5×10 cm**

Size : **20×10×20 cm**

Leca dry ready-mix(lecamix)

Until the middle of the last century, cement-based mortars were prepared by mixing cement, sand, and water at the job site, referred to as job-site mixing technology. The quality of the job-site mixed mortar depends on the quality of the raw materials and blending ratio. In addition, in traditional mixing methods, workability is increased by adding more water. However, adding more water will reduce the strength. Therefore, producing high-quality mortar at the job-site has always been challenging.

Lecamix has solved these problems. Thanks to LECA aggregates, Lecamix provides properties like low weight, sound and thermal insulation, and fire resistance. Since the ingredients are premixed at the factory, Lecamix is easy to use. Meaning that, even an ordinary construction worker will be able use this product by just adding water. The amount of water to be added is specified to reach the maximum strength and workability. Thanks to the shape of LECA aggregates and the additives that have been added to the mix, Lecamix provides high workability without compromising durability and strength.

Lecamix is an environmentally friendly and sustainable product. The main ingredient of Lecamix is LECA aggregate. To produce LECA, we transform 1m^3 of freshly dug clay into 3m^3 of lightweight expanded clay aggregate. Through this highly resourceful return of 1:3, we feel that our production has the minimum impact on the natural resources.

In addition, since Lecamix products are easy to handle and transport, they help reduce city traffic by eliminating the need for transporting different materials separately to the job-site.

Lecamix is a homogenous mixture of cement, gypsum, polymers, and LECA aggregates. Leca Company produces different types of dry ready-mix products for various applications.

Leca dry ready-mix(lecamix)

Advantages of Lecamix

1. *Improved quality and consistency*
2. *Better workability*
3. *Ease of handling – just add water*
4. *Very low wastage of material at the site*
5. *Ease of application*
6. *High efficiency – faster construction possible*
7. *Helps ensure application safety and reliability*
8. *Less consumption of cement due to thinner layers*
9. *Optimum use of material*
10. *Special properties possible with additives*

Leca dry ready-mix(lecamix)

DRY READYMIX MASONRY MORTAR

Lecamix mortar is manufactured from precisely weight-batched materials under carefully monitored conditions to ensure optimum quality. Both the finished product and all component materials comply with relevant Standards.

DRY READYMIX MASONRY MORTAR

MA100 is easy to use and can effectively eliminate thermal bridges while providing strength, versatility, and workability.

The volume of water to be added	7 litre/bag
The density of hardened concrete	1200 kg/m3
The required amount to have 1 m3 mortar	50 bags
Weight of one bag	20 Kg
Recommended thickness	10-15 mm
Compressive strength	20 Mpa
Tensile adhesion	0.2

DRY READYMIX MASONRY MORTAR

MA200 is highly workable and provides strong adhesion.

The volume of water to be added	8 litre/bag
The density of hardened concrete	1200 kg/m3
The required amount to have 1 m3 mortar	49 bags
Weight of one bag	20 Kg
Recommended thickness	5-8 mm
Compressive strength	12 Mpa
Tensile adhesion	0.4

Elimination thermal bridges

Having LECA aggregates as the main ingredient makes this category of products suitable to be used with insulation masonry units like Leca blocks since they result in a uniform structure by eliminating thermal bridges at the joints between blocks. This will improve insulation properties of the wall. Well-insulated walls can reduce energy consumption in a building by preventing heat loss during the winter and heat gain during the summer. This means that less energy is required to maintain a comfortable temperature inside, resulting in lower heating and cooling costs.

Thermal bridge

"When conventional mortar is used"

Thermal bridge is eliminated

"When lecamix mortar is used"

Leca dry ready-mix(lecamix)

DRY READYMIX PLASTER

Plasters are divided into four categories and suit various applications. High-quality ingredients and additives guarantee minimum shrinkage and low cracking risk. One of the advantages of these products is that, when mixed with water, the excessive moisture is at first absorbed by LECA aggregates and then will return to the mixture during cement hydration. This advantage will eliminate the need for external curing and improve the overall quality of the plaster.

DRY READYMIX PLASTER

PL60 (Grey) - PL61 (White) provide effective thermal insulation and will reduce energy loss. They improve the thermal and sound resistance of the wall by up to 300%.

The volume of water to be added	6.5 litre/bag
The density of hardened concrete	350 kg/m3
The required amount to cover 1 m2 (1mm thick)	600 g
Weight of one bag	11 Kg
Recommended thickness	10-30 mm
Compressive strength	0.4 Mpa
Thermal conductivity coefficient	0.07 w/m.k

DRY READYMIX PLASTER

PL110 (Grey) - PL111 (White) provide high versatility and workability while having insulation properties. They improve the thermal and sound resistance of the wall by up to 80%.

The volume of water to be added	5.5 litre/bag
The density of hardened concrete	1150 kg/m3
The required amount to cover 1 m2 (1mm thick)	1100 g
Weight of one bag	13 Kg
Recommended thickness	15-30 mm
Compressive strength	15 Mpa

DRY READYMIX PLASTER

PL120 (Grey) - PL121 (White) provide very low shrinkage and high workability. The end surface is smooth, beautiful, and with no cracks.

The volume of water to be added	5.5 litre/bag
The density of hardened concrete	1300 kg/m3
The required amount to cover 1 m2 (1mm thick)	1300 g
Weight of one bag	16 Kg
Recommended thickness	2-5 mm
Compressive strength	12 Mpa

DRY READYMIX PLASTER

PL180 (Grey) - PL181 (White) can effectively insulate the wall against moisture. One of the advantages of this product is that it can be applied traditionally by hand or by using modern plaster-spraying machines.

The volume of water to be added	3.5 litre/bag
The density of hardened concrete	1900 kg/m3
The required amount to cover 1 m2 (1mm thick)	1900 g
Weight of one bag	23 Kg
Recommended thickness	30-15 mm
Compressive strength	30 Mpa

Leca dry ready-mix(lecamix)

DRY READYMIX FLOORING CONCRETE

Flooring concrete is used to form a flat surface or a slope. Leca dry ready-mix products are lightweight, durable, and provide high strength.
FL400, FL700, and FL1200 are classified as lightweight non-structural concrete with thermal insulation and fire resistance, whereas FL2200 is moisture insulation and heat conductive, so it is very suitable where floor heating systems are used. In addition, FL700 and FL400 can be good alternatives for conventional flooring concrete.

DRY READYMIX FLOORING CONCRETE

FL400 is ultra-lightweight providing effective thermal and sound insulation between floors.

The volume of water to be added	3 litre/bag
The density of hardened concrete	400 kg/m3
The required amount to have 1 m3 concrete	57 bags
Weight of one bag	6 Kg
Recommended thickness	≥30 mm
Compressive strength	0.4 Mpa
Thermal conductivity coefficient	0.07 w/m.k

DRY READYMIX FLOORING CONCRETE

FL700 provides high strength while lowering the dead load of the building by up to 70%.

The volume of water to be added	2 litre/bag
The density of hardened concrete	700 kg/m3
The required amount to have 1 m3 concrete	58 bags
Weight of one bag	13 Kg
Recommended thickness	≥30 mm
Compressive strength	3 Mpa
Thermal conductivity coefficient	0.1 w/m.k

DRY READYMIX FLOORING CONCRETE

FL1200 provides a smooth and polishable floor. It is fire-resistant and has thermal and sound insulation properties.

The volume of water to be added	5 litre/bag
The density of hardened concrete	1200 kg/m3
The required amount to have 1 m3 concrete	55 bags
Weight of one bag	19 Kg
Recommended thickness	≥30 mm
Compressive strength	15 Mpa

DRY READYMIX FLOORING CONCRETE

FL2200 provides up to 50Mpa of compressive strength. The finished surface is smooth and polishable. High execution speed is one of the advantages of FL2200.

The volume of water to be added	2.3 litre/bag
The density of hardened concrete	2200 kg/m3
The required amount to have 1 m3 concrete	81 bags
Weight of one bag	26 Kg
Recommended thickness	≥30 mm
Compressive strength	50 Mpa

Leca dry ready-mix(lecamix)

DRY READYMIX STRUCTURAL CONCRETE

Lightweight structural concrete provides the same strength and durability while reducing the structure dead load by up to 25%-40%, which decreases the overall cost. In addition to weight saving, lightweight concrete has substantially better fire-resistant qualities than normal weight concrete, significantly lower heat transmission, remarkable moisture resistance and more durability. This product can be used to construct columns and beams.

Lecamix structural lightweight concrete has opened up a wide range of applications and possibility to have tall building frames, long-span roof and bridge structures and thin shell construction. Also, owing to LECA's long term water absorption, LECA will act as an internal source of water for internal curing which will help to avoid shrinkage and improve long term strength.

DRY READYMIX STRUCTURAL CONCRETE

High execution speed, high compressive strength, sound and thermal insulation, and fire resistance are some of the features of **SC1400**.

The volume of water to be added	4.5 litre/bag
The density of hardened concrete	1400 kg/m3
The required amount to have 1 m3 concrete	58 bags
Weight of one bag	24 Kg
Recommended thickness	≥30 mm
Compressive strength	25 Mpa

DRY READYMIX STRUCTURAL CONCRETE

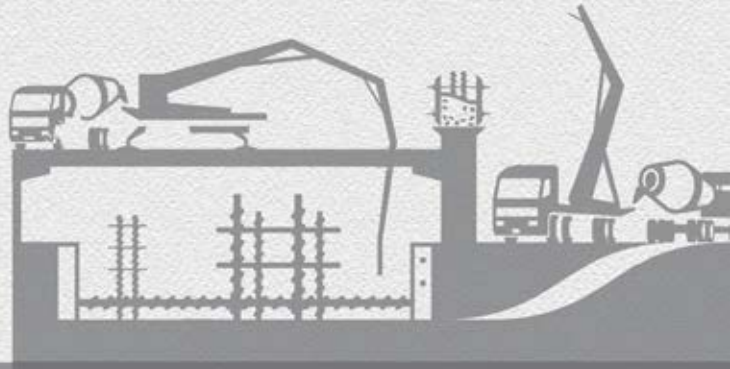
SC1600 reduces the dead load of the building while bringing high strength and durability.

The volume of water to be added	3.2 litre/bag
The density of hardened concrete	1600 kg/m3
The required amount to have 1 m3 mortar	86 bags
Weight of one bag	18 Kg
Recommended thickness	≥30 mm
Compressive strength	35 Mpa

DRY READYMIX STRUCTURAL CONCRETE

SC1800 provides up to 45Mpa compressive strength. It is fire-resistant and has thermal and sound insulation properties.

The volume of water to be added	3.4 litre/bag
The density of hardened concrete	1800 kg/m3
The required amount to have 1 m3 mortar	85 bags
Weight of one bag	20 Kg
Recommended thickness	≥30 mm
Compressive strength	45 Mpa



This dry pre-mixed product comes with a liquid admixture which is added to the mix at the job-site. The admixture enhances its pumpability, workability and strength.

Leca in geotechnics

ADVANTAGES

Light Expanded Clay Aggregate (LECA) has been used as a geotechnical fill material in many countries since as far back as 1958. It possesses properties that can solve many problems simultaneously, providing simple solutions to civil engineering challenges.

Why is leca is ideal for use in geotechnical applications?

Stability:

Leca reduces risk of landslide and deformation.

Reduced settlement:

Leca grantees less damage to road structure, rail beds, pipelines and other structures.

Reduced earth pressure:

Leca is one of the best fill materials for backfills, foundations, retaining walls, and bridge abutments.

Compaction:

When properly compacted, the compaction degree will be approximately 10-12%. Low density and ease of handling, coupled with consistent high quality make Leca a highly competitive alternative to other lightweight materials.

Drainage:

Owing to its shape and characteristics, it provides proper drainage in sports fields, slopes, and roads.

Leca in geotechnics

Application

Sub Base Compensation

A loose lightweight material can grant high drainage capacity with a low density. This feature may solve problems in filling a foundation on soft layers that could not support the whole building load. In the case of soils with low bearing capacity that will have acceptable settlements, the foundation with Leca is a proper solution.

Filling in foundations and behind retaining walls

When used against retaining walls, Leca will reduce the weight acting on the rear of the structure by at least 75%, in comparison with traditional fill materials. This weight reduction avoids potential sliding, overturning, slip, and tilting or bearing failures and enables savings by increasing spacing between buttressing walls and reducing structural dimensions.

Road Embankment

Leca's ability to reduce settlement can offer massive benefits, reducing timescales from years to a few months for new or extended carriageways or embankments and, in some cases eliminating settlement periods together.

Tunnels and structural elements

In areas prone to mining subsidence or where ground conditions contain natural sub formation voids, drainage, culvert, or tunnels and there is a danger of collapse, expensive techniques such as load transfer are often considered.
However, using Leca can eliminate these costs and considerably lighten the load to provide similar benefits to those when used in weak soil areas.

Installation of Pipelines

Maintaining levels within any foul or surface water drainage system can be difficult when the drain runs across a soft soil site. Leca can be used as a lightweight pipe surround, reducing the pressure on the underlying soils and minimizing the likelihood of irregular settlement. Surrounding utilities and drainage carried within bridge beams on either side of the carriageway with Leca is a lightweight, simple-to-install alternative to the sand traditionally used to support and insulate these services.
The added benefit of using the lightweight round granules of Leca as a pipe surround is that there is little danger of any damage to pipelines during backfilling and the likelihood of damage from the settlement is also reduced.

Leca in urban landscaping

Lecapon

Advantages of Lecapon

Lecapon is one of the products of Leca Company and offers numerous advantages:

- *It is light weight, compared to agricultural soil, which has a density of around 1800 kg/m^3, Lecapon (about 250-450 kg/m^3) can be easily used in roof gardens and green walls without imposing heavy loads on the building.*
- *It restricts the germination and growth of unwanted herbaceous plants or weeds.*
- *It provides proper aeration, porous structure of Leca balls provides proper ventilation for the root which can enhance the overall health of the plant.*
- *It thermally insulates the soil, reducing extreme temperature changes in the root system.*
- *It protects the soil from erosion and compaction caused by rainfall and watering.*
- *It does not degrade and requires minimal maintenance and replenishment.*
- *It reduces moisture loss from the substrate due to evaporation. This minimizes water stress in the plants in hot weather and reduces the need for watering.*
- *It provides a decorative finish to gardens, pots, and planters.*
- *It is a good substitute for soil because it is lighter, prettier, and cleaner.*
- *It discourages the spread of plant diseases because it is an inorganic material.*
- *It cannot be attacked by rodents, insects, or fungus.*
- *It is non-combustible and does not propagate fire (refractory material).*

Leca in urban landscaping

Application

Leca for Green Roof

Leca Lightweight Expanded Clay Aggregate has been an important ingredient for civil engineers throughout the world in providing the perfect material to solve a variety of engineering issues when developing Green Roofs within a city landscape.

In general, Leca Lightweight Expanded Clay Aggregate is used to reduce, compensate or prevent settlements, to improve the stability of a fill structure or landscape or to decrease soil pressure on a retaining structure produced by backfill. In the same applications, Leca Lightweight Expanded Clay Aggregate can be used both as drainage intensifying and as moisture-retaining for vegetation and also as a frost protection layer.

Leca for sports field drainage

Effective sports field drainage is essential to create a fully efficient playing surface (made either of natural or synthetic grass, earth, or sand) for frequent use, including in bad weather or after sudden heavy rain.

The drainage requirements for natural grass playing fields are particularly demanding because of the need for frequent watering and because they can become unusable if damaged by stagnating water, mud, or puddles.

A drainage system made from Lecapon makes possible:

- *Effective water removal because of its high permeability*
- *Prevention of settlements and subsidence over time*
- *Ease of installation on existing built structures such as sports areas on roofs or on top of underground car parks*
- *Under a whole playing field as a continuous layer that drains in all directions. Maximizing usability of the playing surface*

Lecapon can be used in the drainage systems of soccer, rugby, athletic fields, golf courses, tennis courts surfaced with red clay or grass, racecourses, riding schools, beach volleyball courts, bowling greens, and recreational or open-air play areas in general.

Leca in urban landscaping

Application

Leca for Urban Landscaping, Urban Planting, Urban Gardens

In urban situations or other built-up areas, the microclimate, quality, and comfort of public spaces can be significantly improved by planting or re-naturalizing.

Lecapon offers the possibility of landscaping roofs and infrastructures, thanks to the low weight and reduced pressure on the containment structures, as well as any type of landscape embankment.

Leca for Mulching

Mulching consists of covering the soil at the base of plants with a protective layer, bringing considerable advantages to gardens and plant health.

Advantages:

•It reduces moisture loss from the substrate due to evaporation. This minimizes water stress in the plants in hot weather and reduces the need for watering.

•It thermally insulates the soil, reducing extreme temperature changes in the root system.

•It restricts the germination and growth of unwanted herbaceous plants or weeds.

•It protects the soil from erosion and compaction caused by rainfall and watering.

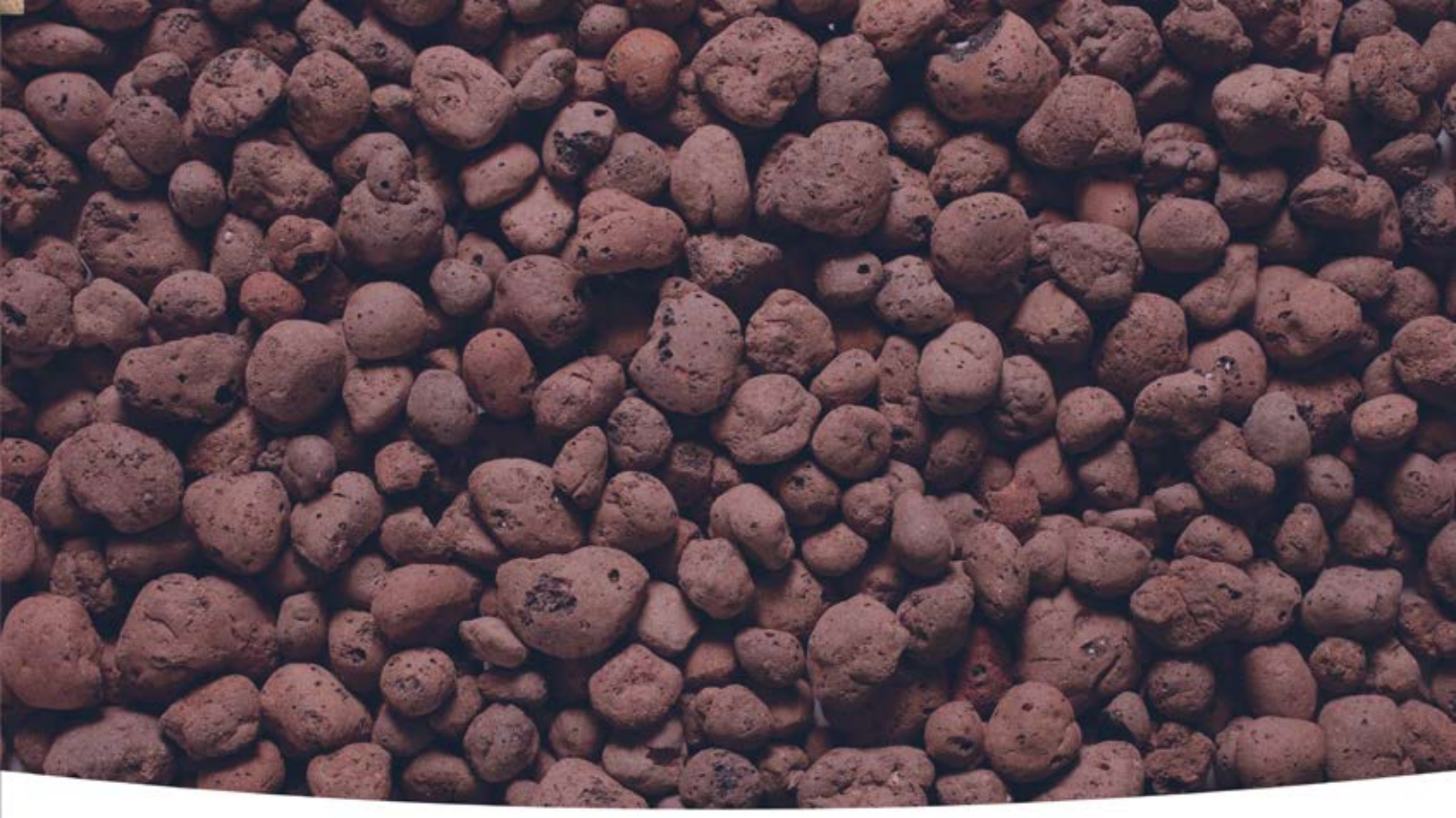
•It provides a decorative finish to gardens, pots, and planters.

•It discourages the spread of plant diseases because it is an inorganic material.

•It cannot be attacked by rodents, insects, or fungus.

Leca for Indoor and Outdoor Pots and Planters

LECA is more than just Light Expanded Clay Aggregate. It is a Semi Hydroponic or Hydroculture growing system. Pots and planters benefiting from Lecapon allow the plant roots to self-manage their water and nutrients. Therefore, Lecapon can be a good substitute for soil in indoor and outdoor posts and planters.



CONSTRUCTION

BRIDGES

LANDSCAPE

HIGHWAYS

RAIL