

## WHAT IS LECA:

Leca is an acronym term for (light expanded Clay Aggregate) which is produced in rotary kiln at about 1200 degree centigrade Leca Co. Iran, is the only Leca lightweight aggregate and lightweight concrete block producer in the region and winner of technical certificate. Leca block being in conformity with universal and Iran National Standards, brings you safety and economical advantages.



## PROPERTIES

### LIGHTNESS:

Lightness of Leca is for the multi-separated air spaces which exist inside and among the aggregates, density of aggregates, depending on the size of Leca, is fluctuated from 380 to 710 kg/m<sup>3</sup>

### THERMAL INSULATION:

Referring to test carried out by Iran Building and Housing Research Center, thermal conductivity coefficient for Leca aggregate is about  $0.09 < \lambda < 0.101$  and for Leca concrete 0.208 w/mc° with density of 800 kg/m<sup>3</sup>. (Standard No. 12667) the results have stamped the high quality for insulating feature of Leca products.



### SOUND INSULATION:

Leca aggregate and block are among the best insulating materials and according to conducted tests, sound in Leca blocks with 10 cm width and 15 cm width respectively fades 45db and 46 db and refers to relevant standards codes are suitable for most of purposes.



### FIRE RESISTANCE:

Since Leca aggregates are exposed to 1200 degree centigrade temperature in rotary kiln, these aggregates are suitable fire resistance and have already passed the practical test during the producing process.

walls made of Leca blocks (about 130 kg/m<sup>2</sup>) can resist 3 hours against fire and fire stretch which should be considered a crucial safety element.



### NON-DECOMPOSABILITY:

Leca aggregate strongly resists against alkaline and acidic substances and pH of nearly 7 makes it neutral in chemical post reaction with concrete.



### WATER ABSORPTION:

For closed inside porousness, average water absorption of Leca aggregate (0-25 mm) is about 18 percent of volume in saturated state during 72 hours.



### APPLICATIONS AND ADVANTAGES:

Leca aggregates in Iran are presented in various sizes. Four usual gradations are 0-4mm, 4-10mm, 10-25mm and 0-25mm. Leca bulk dried density and their applications for different gradations are illustrated in table below:

Leca wide applicability	Leca Gradation	Density (Max)
Leca Light Weight Concrete, light weight block, Prefabricated Panels&Slabs. Light Filler, Leca Mortar and Water Purification system. Agriculture & Aquaculture.	0-4 mm	710 kg/m <sup>3</sup>
Light Weight Concrete, light weight block, Prefabricated Panels & Aquaculture, Ornamentation.	4-10 mm	480 kg/m <sup>3</sup>
Lightweight Filler Concrete, Sewage system. Landscaping, Agriculture and Aquaculture, Drainage.	10-25 mm	380 kg/m <sup>3</sup>
Floor and Roof sloping, Light weight Filler, Road Construction.	0-25 mm	430 kg/m <sup>3</sup>

## LECA IN CONSTRUCTION

### Lightweight aggregates concrete:

In all the cases which lightening and insulation should be considered in buildings, Leca light weight aggregate (structural & non- structural) comparing to autoclaved aerated concrete foam concrete or concrete made of pumice or scoria has a wider range of applicability.

### Leca lightweight concrete block:

Leca block is produced by mixing of Leca aggregates, Cement, sand and water. Using of Leca aggregate decreases the concrete density.



## ADVANTAGES:

- 1- Lightening up to 30% of dead load.
- 2- Self thermal & Sound Insulation
- 3- Appropriate Behavior in Earthquake.

Low Module of elasticity of Leca Concrete, and having cement base material as well as its mortar, in addition to the lightness, reduces the destructive effects of earthquake on structure. Shapes of Leca blocks are designed for conducting vertical mortar in joints which minimizes the rubble threat.

Referring to mentioned reasons, using of Leca blocks prevents buildings from asymmetric settlement and other detrimental side effects.



### 4- Physical Operation:

Leca Blocks are suitable for any physical operation like cutting, nailing, transfixing and ridge extending to make proper route for wire, pipe and othe installing components without any cracking.



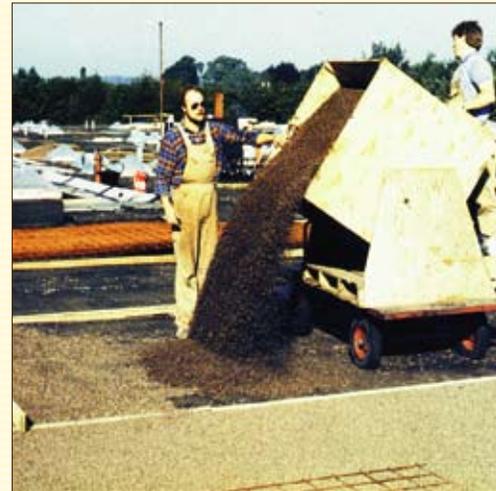
### 5- Accelerating Construction, Saving time, Labor, and material:

For lightness and different sizes and dimensions of Leca blocks, walling up could be done in high speed which leads to save time, labor and material.

**6- Safe for Installation:**

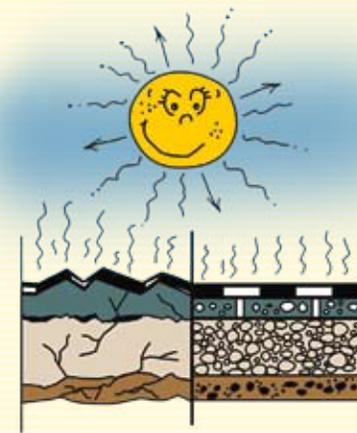
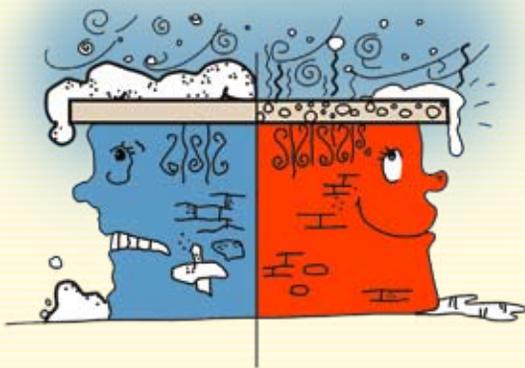
Being chemically neutral, Leca aggregate and blocks are the best bed for buiding installation and prevent pipe and wires from decay.

Leca blocks are designed in a way not to be only lightweight but cover all required.



**FLOORING AND ROOFING:**

Lightness, insulating, durability, non-decomposability, structural stability, and chemical neutrality features are collected in Leca as the best lightweight aggregate for flooring and roofing and in the most suitable and reasonable replacement for pumice, scoria and



Leca built home keeps you warm in winter and cold in summer

polystyrene, moreover Leca aggregates are used to mark insulating lightweight concrete for all floors substructures under stone, marble or ceramic etc. Wasting energy is 35% through the roofs while it is 15% for the walls.



**LECA AGGREGATE IN AGRICULTURE:**

Leca prepares the best convenience bed for growth of plants due to:

Ventilating of the soil and root, preventing soil from evaporation and saving water for sponge like body of aggregate, water feeding adjustment, lightness insulation, chemically neutral, environmental-friendly, cleaner than soil and no pestilential effects on soil, plants or your hands.

**FILTRATION:**

Being utilized in house waste water treatment as Leca-made filters, is supported by its features in question.

