

What is PUMICE



Completely Natural AGGREGATE



PUMICE TECHNOLOGY



- ☀️ Pumice stone is a natural lightweight aggregate which is formed by the sudden cooling of molten volcanic matter.
- ☀️ Pumice is formed during the volcanic eruption of viscous magma, mostly siliceous and rich in dissolved volatile constituents, especially water vapour.



THE MOST IMPORTANT CONSTITUENTS OF PUMICE

60% - 75 %  SiO_2

13% - 17%  Al_2O_3

1% - 3%  Fe_2O_3

1% - 2%  CaO

7% - 8%  $\text{Na}_2\text{O} - \text{K}_2\text{O}$

low amount  TiO_2

low amount  SO_3

Its hardness is about to 5.5 to 6
according to the MOHS HARDNESS SCALE
and does not contain crystallised water



HOW DO WE PRODUCE PUMICE AGGREGATE ?

No CRUSHING

No BLASTING

ONLY GRADING

WASHING WHEN NEEDED

Thus;

No high energy requirement of 1,000 °C

Film 1



GRADATION : COARSEST TO FINEST

COARSE : 16-32 mm





2-12mm





0-8 mm





0-4 mm





0-2 mm





0-75 micron



DRY LOOSE BULK DENSITY

From 250 kg/m³



Up to 750 kg/m³





DENSITY of CONCRETE

550 kg/m³

upto

1800 kg/m³



STRENGTH of CONCRETE

C2

upto

C30

PARTS OF A NEW BUILDING WHERE PUMICE LIGHT WEIGHT CONCRETE CAN BE USED



Assume a 30 floor building with total area 30,000 m²



Floors

$30,000 \text{ m}^2 \times 15\text{cm} = 4,500 \text{ m}^3 \text{ concrete} \times 2,300 \text{ kg} - 1,600\text{kg} = 700\text{kg}/\text{m}^3 = 3,150 \text{ TONS}$

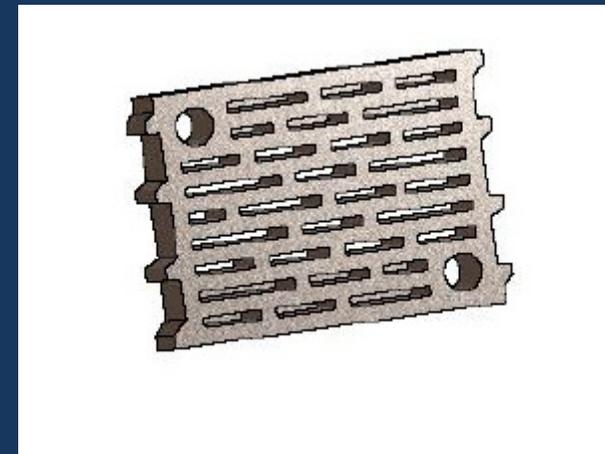
Walls (BLOCKS)

$30,000 \text{ m}^2 \times 1.5 = 45,000 \text{ m}^2 \text{ Wall} \times (140 \text{ kg}/\text{m}^2 \text{ brick} - 90\text{kg}/\text{m}^2 \text{ Ponceblock} = 50 \text{ kg}/\text{m}^2)$
 $= 2,250 \text{ tons}$

Roof concreting

Basement leveling concrete

Film 2 ponceblock





PARTS OF AN EXISTING BUILDING WHERE PUMICE LIGHT WEIGHT CONCRETE CAN BE USED FOR RENOVATION

Lightweight concrete for floors C20-C30 1,300 kg/m³ - 1,700 kg/m³

Lightweight screeds C10- C30 1,000 kg/m³ - 1,700 kg/m³

Lightweight self compacting concrete 1,600 kg/m³ - 1,800 kg/m³

Film 3

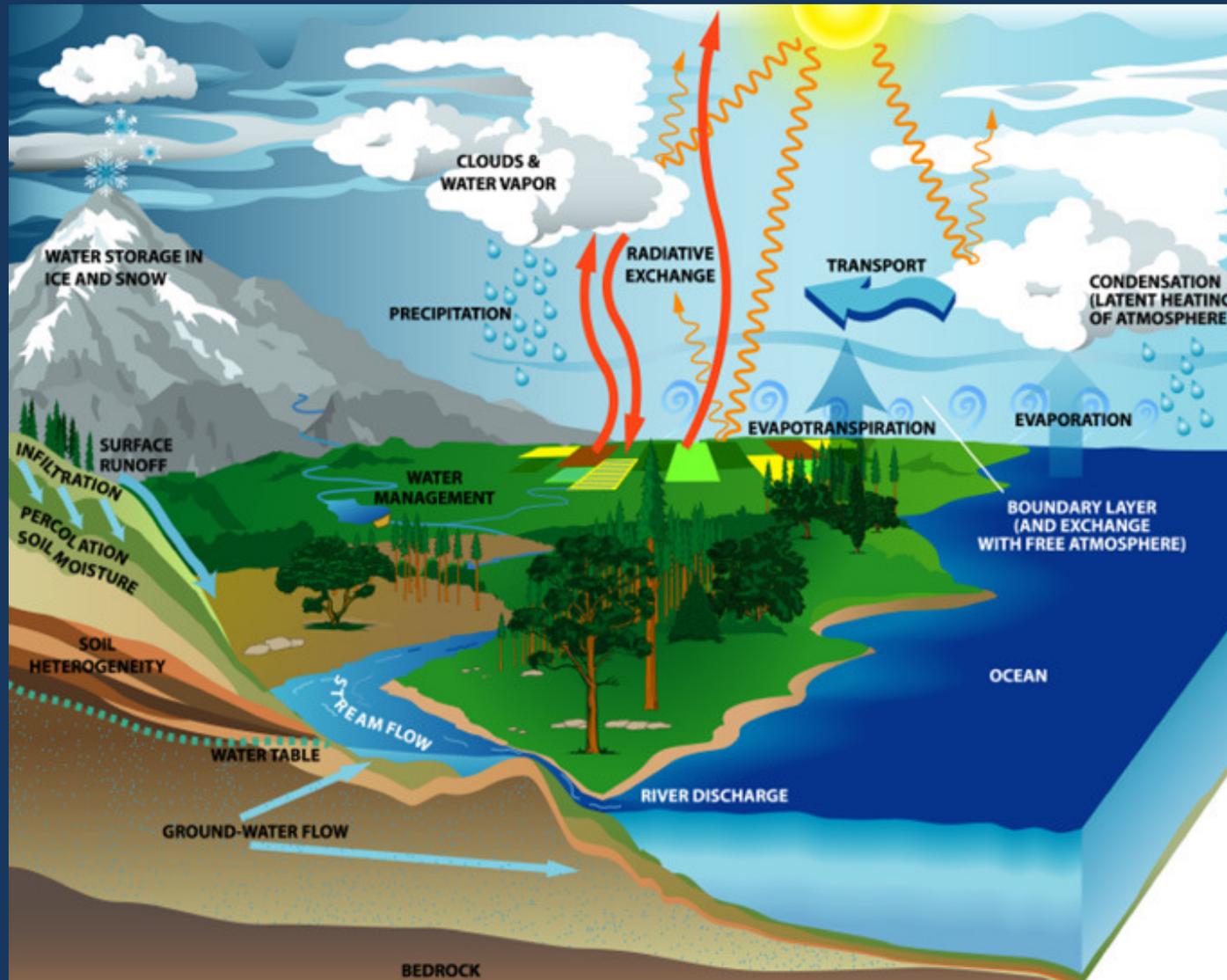


LIGHT WEIGHT THERMAL PLASTERING

700 KG/M3

FILM4

The benefits of pumice consumption in GREEN concepts.
1- USING PUMICE BRINGS WATER TO THE WORLD



IF WE USE 5,000,000 TONS OF PUMICE EACH YEAR WE
WOULD BRING AN **EXTRA 2,500,000 TONS** OF
WATER TO THE PLANET



When you use lightweight pumice concrete you decrease the load of the building (for 30 floor building 5,200 tons) you will save from each building 1,200 m³ concrete or 1,000 tons of steel which needs much more energy to be produced.



So first you decrease the consumption of natural materials.

Second you decrease the energy needed to produce them which results in less CO₂ emission

Because the trucks will carry $\frac{2}{3}$ of the ordinary concrete weight, less diesel will be consumed which results in less natural sources being used plus less CO_2 emission.



Also the trucks will carry less load, then the wheels will be able to be used for a longer time. Thus less energy will be consumed in the production of new tires and in the disposal of old tires.



The lamda value is 0.12 which will enable us very good heat insulation.

This makes pumice blocks A1 Green material.

Also, in pumice lightweight concrete you can easily use fly ash or blastfurnace slags , wich will create a greener environment

In self compacting concrete, the consumption of chemicals and cement will decrease which also gives us a greener environment.

Workers will carry 1.2 tons less PER day PER person.



**Thank you for
sitting still long
enough to listen to
me today.**