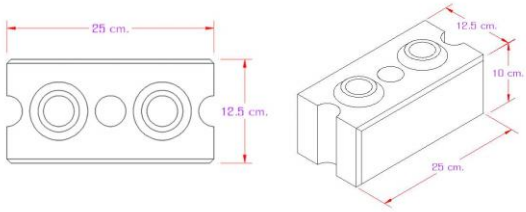
Technology Blockprasan for Low Cost Housing

About Blockprasan

Blockprasarn is one of masonry member. It has been designed to have interlock and core shapes allowing block can be laid dry and lock into place. Because of this characteristic, the process of building walls is faster and more convenience. Blockprasarn is constructed from mixing suitable local raw material such as laterite soils, stone dust, sand and wasted material from mining and industry with cements and certain amount of water. After molding, 7 days are required for curing and creating high-density compressed solid block. Blockprasan are different from conventional bricks since they do not require mortar to be laid in masonry work. Therefore, walls and buildings built with this block are stronger, cheaper and aesthetically appealing when compare to other building built with other kind of block.

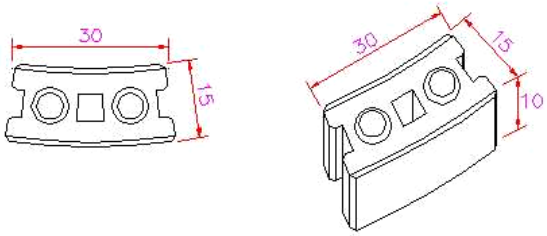
Blockprasarn can be classified into 2 groups upon construction purpose as follow:

1. **Rectangular interlocking block for construction.**



Dimension 12.5x25x10 cm

2. **Curved interlocking block for curved wall such as water tank**



Dimension 15 x 30 x 10 c.m.

Raw materials

Raw materials or aggregate for making Blockprasan shall be laterite soil, stone dust, sand and fly ash with particle size not larger than 4 mm and shall comply with ASTM D3282 (Standard classification of soils and soil aggregate mixture

for highway construction purposes). The clay content of soil and aggregate shall be 35% or less of total mixture by mass. The clay content may be roughly determined by sedimentation test method as follow: Fill half of clear bottle with soil and then filled the water until nearly full. Shake the bottle vigorously to break up the soil aggregates. Place a mark on the side of the jar at the top first layer that has settled out just after stop shaking. Allow the suspended soil to further settle until the water becomes totally clear. Separately measure the thickness of each layer. To arrive at the percentage divide each layer depth by the total soil depth. The percentage of slit should not exceeding 15 % by volume. The soil is sieved to remove the coarse particles and to achieve good compact and smooth finish.

Cement

Cement is most common stabilizer used. High quality cement such as Portland cement will be preferred to achieve higher block strength and higher water resistivity of the block. Mortar cement will be rather used, but will need more quantity of cement to get the right mixing and strong blocks.

Compositional ratio

Depending on the soil mix, there will be an optimum quantity of it to be introduced into the machine mold to ensure facility of compression and maximum density. Typically the proportional ratio of Portland cement to soil found to be 1:6 or 1:7.

Pressing machine

For making Blockprasarn, there are two types of pressing machine.

Hand press machine:

1. Principle of this machine is based on laws of lever.
2. The output capacity is about 200-400 units per day.

Hydraulic press machine: This kind of press machine can produce 2 to 4 blocks per time. The output capacity is 1000 to 1300 unit per day.

Procedure for making Blockprasarn

1. A site evaluation has to be carried out to make sure to have suitable soil for block making and to identify suitable cement-soil ratio.

2. In order to achieve good compact and smooth finish, raw material should be dried and kept in the shady area. If the soil is lumpy or, the soil must be sieved into 2-4 mm of size fraction

3. Mixing with the right amount of water is absolutely essential. The proportioned dry mix was spread on big tray, and the calculated quantity of water was slowly sprinkled to the mix.

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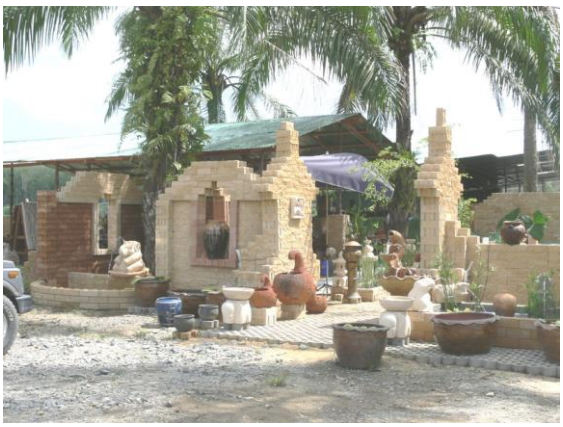
4. Depending on the soil mix, there will be an optimum quantity of it to be introduced into the machine mold to ensure facility of compression and maximum density. Then the known amount of wet mix was transferred to the mould, placed in position on the press machine. Note that, to prevent the setting of cement before used, the mixing must be used within 30 minutes.

5. After pressing, all blocks are then left in dry and shady for 1 day to cure, block will then be cured takes for minimum periods of 7 days.

Wet Curing

All block are stacked in dry and shady for 1 day. The wet curing process start with watering stack blocks with shower or sprinkler system. Then, cover the stack blocks with plastic or polyethylene sheet to retain moisture within the stack. Bocks are cured under plastic sheeting for a minimum of 7 days. While curing, blocks should be stored in a place where they will not be disturbed and close to where they will be used. It is important to control the block moist. High humidity can cause a white haze residue on the surface of the blocks Try to regularly spray the stack with less amount of water.



Building with Blockprasan

1. The materials required for block production and building construction are usually locally available in most regions.
2. Compared with conventional masonry, the dry assembly of interlocking blocks saves construction time by the dry assembly of interlocking blocks, instead of infill walls between a structural framework and pre-fabricated on site through the processes or timber or plywood formwork installation.
3. With the speed of construction and without the need for high-waged skilled masons the building costs are lower than for standard masonry construction.
4. The blocks have a high finish design and aesthetics. Construction with Blockprasarn typically will not require painting.
5. Promote employment and supplementary occupation to the city and rural community members.
6. Construction with interlocking blocks provides an alternative to the commonly used fired brick in , which currently is the cause of grave environmental degradation due to deforestation, and destruction of wetlands.

First blockprasan's housing build in B.E. 2527

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