



SNS COLLEGE OF TECHNOLOGY



AN AUTONOMOUS INSTITUTION

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COIMBATORE

DEPARTMENT OF CIVIL ENGINEERING

23GET102 – BASIC CIVIL AND MECHANICAL ENGINEERING

I YEAR / I SEMESTER

Unit 1 : Civil Engineering Materials and Surveying

Topic : Bricks and Classification



Bricks

- A **brick** is a type of block used to build walls, pavements and other elements in masonry construction.
- Properly, the term *brick* denotes a block composed of dried clay, but is now also used informally to denote other chemically cured construction blocks.
- Bricks can be joined together using mortar, adhesives or by interlocking them.
- Bricks are produced in numerous classes, types, materials, and sizes which vary with region and time period, and are produced in bulk quantities.



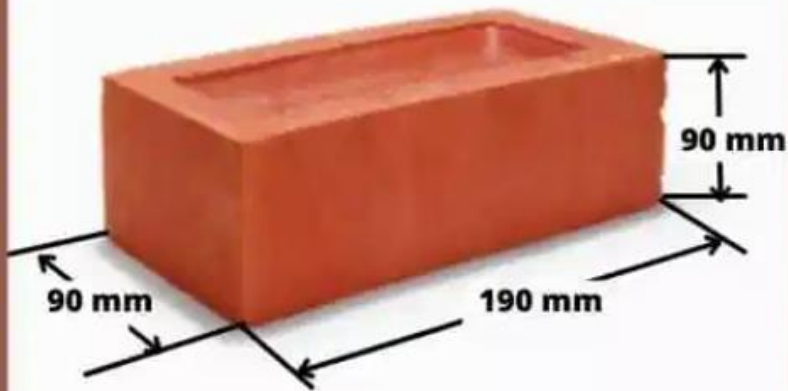
Bricks



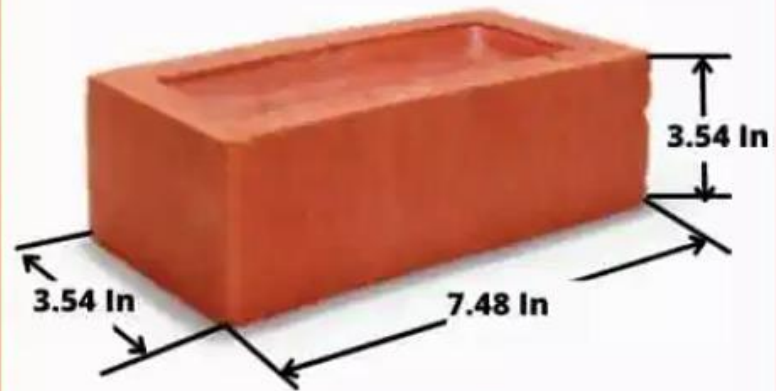


Size of Bricks

What Is Standard Size of Brick In India



**Standard Size of
Brick in mm**



**Standard Size of
Brick in Inches**



Frog

- Frog is an indentation or depression on the top face of a brick made with the object of forming a key for the mortars. This reduces the weight of the bricks also.
- It is kept on the top face while constructing a wall so that mortar is filled properly in it.
 - Size of frog = 100mmx40mmx10mm
 - Depth of frog = 10mm to 20mm

Purpose of frog:

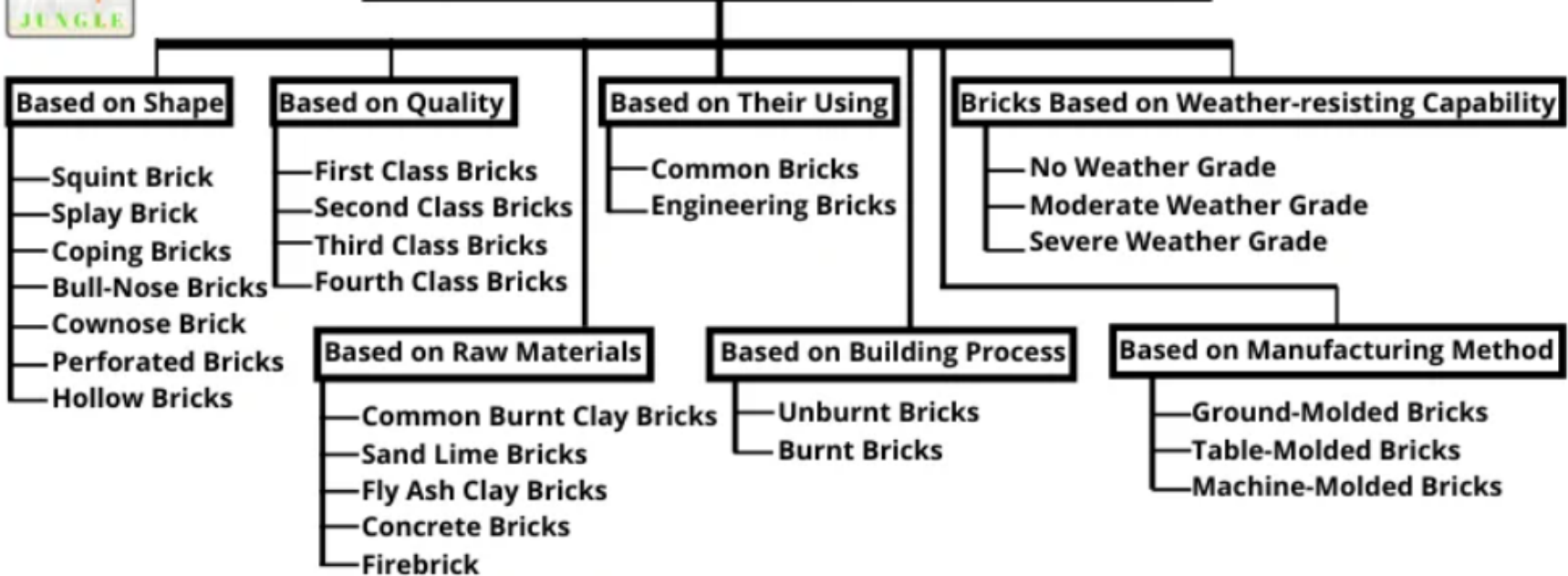
- It will provide a key for holding mortar in brick masonry.
- It can be used for branding purpose.



Classification of Bricks



Classification of Bricks Different Base

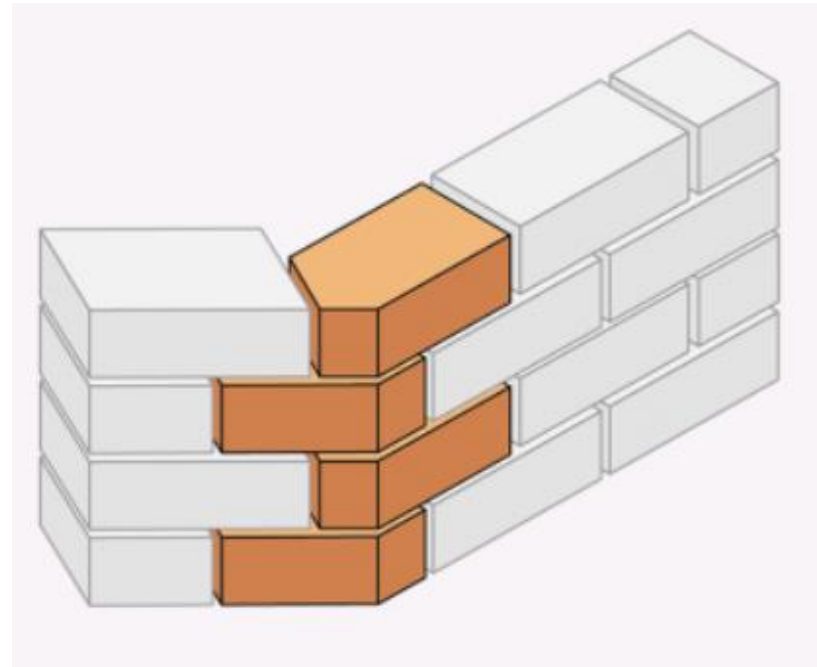
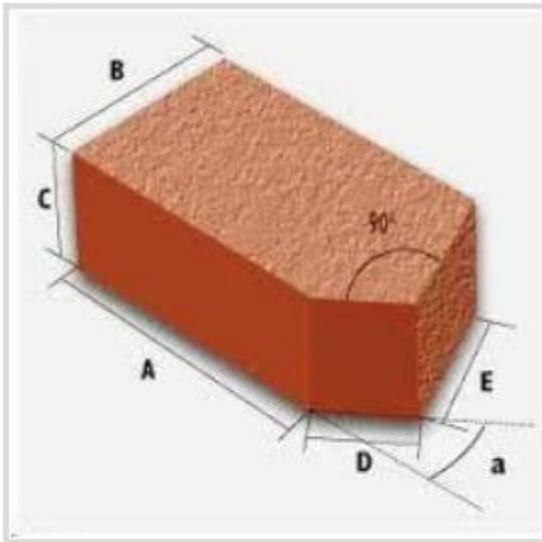




Based on Shape

Squint Brick:

- They are cut at a corner at an angle of more than 90 degrees.
- They are required to shape the outer or inner corner in a wall.

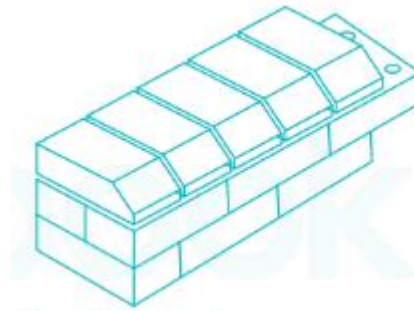




Based on Shape

Splay Brick:

- They have a level or part, width-wise, length, or in both directions.
- These are used in door and window jambs and in plinths.

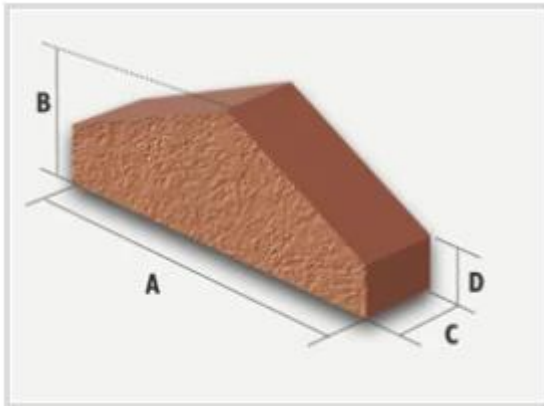




Based on Shape

Coping Bricks:

- They are used for coping on the walls to give them a good appearance and can also be used for easy drainage of water.
- When a coping is is to be provided to a wall, a particular shape may be desired.





Based on Shape

Bull-Nose Bricks:

- These bricks have rounded corners and are usually preferred in buildings from an architectural point of view.
- They are mostly used in the construction of steps, sills, and capping walls.
- It is a standard brick with one edge rounded.

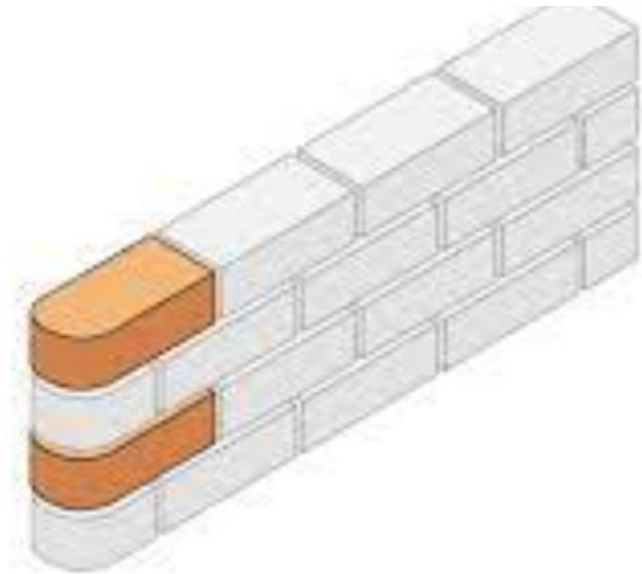
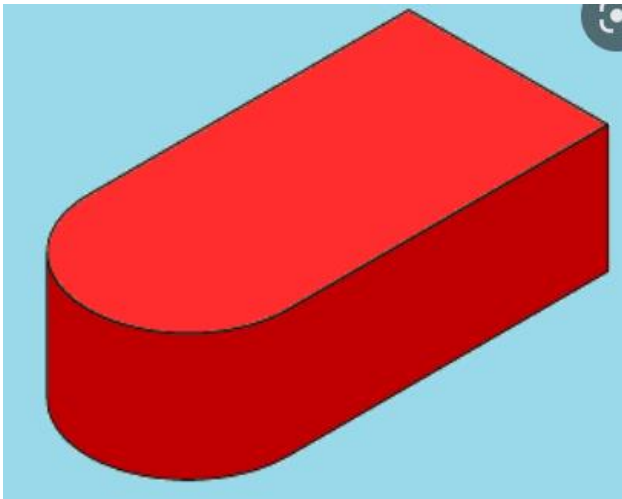




Based on Shape

Cownose Brick:

- It is similar to the bullnose, but it has both sides rounded to one side.
- It can also be called double bullnose bricks.
- They have the same use as bullnose, but they only give additional roundness.

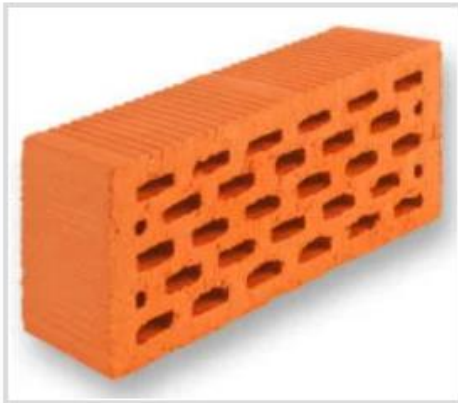




Based on Shape

Perforated Bricks:

- These bricks have holes, produced by pushing iron bars within the bricks.
- The purpose of producing these holes is to reduce the overall weight of the brick, thus minimizing the self-weight of the structure.
- However, these bricks do transmit sound and are also not suitable to be used in the hydraulic structures.

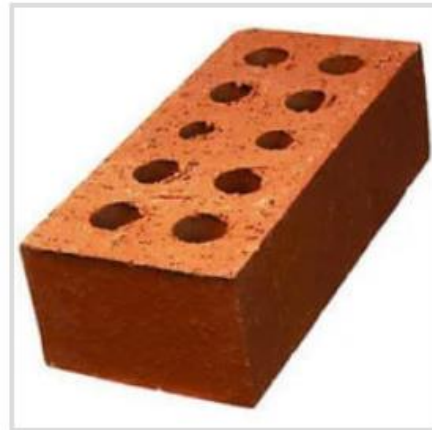




Based on Shape

Hollow Bricks:

- These bricks are used for insulation purposes.
- They are strong against distributed loads; however, they may easily fail against concentrated loads.
- They are different from perforated brick as a number of holes in the hollow brick are less, but the size of holes is bigger as compared to those in perforated bricks.





Based on Quality

First Class Bricks:

- These are the high-quality bricks, having a uniform shape.
- Color and texture. They have sharp edges. They are sound and well burnt.
- If scratched with a nail, they leave no mark.
- Moreover, if struck against each other, a clear metallic sound is produced.
- They are free from efflorescence, cracks and other flaws.
- The crushing strength of these bricks is approximately 105 kg/cm^2 .
- The water absorption after 24 hours in the water is no more than 10- 15 percent by mass of the brick.
- Owing to the highest quality, they are used in load-bearing walls and pavements.



Based on Quality

Second Class Bricks:

- Although sound and well burnt, the second class bricks have certain irregularities in shape and texture.
- Like first class bricks, they are also free from cracks, considerable efflorescence, and flaws.
- The water absorption after 24 hours in the water is about 20 percent by mass of the brick.
- They are also used in load bearing walls but of moderate capacity, usually in single-story buildings.
- However, they are widely used in partition walls.
- Moreover, they are preferred as brick ballast in foundations and floorings.



Based on Quality

Third Class Bricks:

- Slightly under burnt bricks are termed as third-class
- They are not uniform in shape and size.
- Their crushing strength is about 30 kg/cm^2 far below than that of first-class bricks.
- The water absorption is about 25 percent by mass of the brick after 24 hours of submersion in water.
- They produce a dull sound when struck against each other.
- Though they have poor strength and texture, yet they are highly economical and can be used in the construction of temporary and rural structures.



Based on Quality

Fourth Class Bricks:

- They are slightly over burnt thus have very low strength and are not recommended for application in major construction works.
- However, they can be used in flooring, and inferior construction works.



Based on Using

Common Bricks:

- These bricks are the most common bricks used.
- They don't have any special features or requirements.
- They have low resistance, low quality, low compressive strength.
- They are usually used on the interior walls.





Based on Using

Engineering Bricks:

- Engineering bricks are bricks manufactured at extremely high temperatures, forming a dense and strong brick, allowing the brick to limit strength and water absorption.
- Engineering bricks offer excellent load bearing capacity damp-proof characteristics and chemical resisting properties.





Based on Raw Materials

Common Burnt Clay Bricks :

- Common burnt clay bricks are formed by pressing in molds.
- Then these bricks are dried and fired in a kiln.
- Common burnt clay bricks are used in general work with no special attractive appearances.
- When these bricks are used in walls, they require plastering or rendering.





Based on Raw Materials

Sand Lime Bricks :

- Sand-lime bricks are made by mixing sand, fly ash and lime followed by a chemical process during wet mixing.
- The mix is then molded under pressure forming the brick.
- These bricks can offer advantages over clay bricks such as their color appearance is grey instead of the regular reddish color.
- Their shape is uniform and presents a smoother finish that doesn't require plastering.
- These bricks offer excellent strength as a load-bearing member.





Based on Raw Materials

Fly Ash Clay Bricks:

- Fly ash clay bricks are manufactured with clay and fly ash, at about 1,000 degrees C.
- Some studies have shown that these bricks tend to fail poor produce pop-outs, when bricks come into contact with moisture and water, causing the bricks to expand.





Based on Raw Materials

Concrete Bricks:

- It is made of concrete. It is the least used bricks. It has low compression strength and is of low quality.
- These bricks are used above and below the damp proof course.
- These bricks are used can be used for fences and internal brick-works because of their sound reductions and heat resistance qualities. It is also called mortar brick.
- It can be of different colors if the pigment is added during manufacturing. It should not be used below ground.





Based on Raw Materials

Firebrick:

- It is also known as refractory bricks. It is manufactured from a specially designed earth.
- After burning, it can withstand very high temperatures without affecting its shape, size, and strength.
- It is used for the lining of chimney and furnaces where the usual temperature is expected to be very high.





Based on Building Process

Unburnt Bricks:

- Unburn or sun-dried with the help of heat received from the sun after the process of molding.
- These bricks can only be used in the construction of temporary and cheap structures.
- Such bricks should not be used in places exposed to heavy rains.





Based on Building Process

Burnt Bricks:

- Burnt bricks are made by burning them in the kiln.
- First-class, Second Class, Third Class bricks are burnt bricks.





Based on Manufacturing Method

Ground-Moulded Bricks :

- The ground is first made level and fine sand is sprinkled over it.
- Mould is dipped in water and placed over the ground to fill the clay.
- Extra clay is removed by wooden or metal strike after the mold is filled forced mold is then lifted up and raw brick is left on the ground.
- Mould is then dipped in water every time lower faces of ground molded bricks are rough and it is not possible to place the frog on such bricks.



Based on Manufacturing Method

Table-Moulded Bricks:

- Molding is done on a table of size 1m x 2m with the help of hands, molds and various tools.



Based on Manufacturing Method

Machine-Moulded Bricks:

- The molding of bricks is carried out with the help of a machine.
- This method results in better shape and a high production rate.
- This approach is used when a larger number of bricks are required in a very limited time span.



Based on Weather Resisting Capability

1. No Weather Grade:

These bricks do not have any weather resisting capabilities and used on the inside walls.

2. Moderate Weather Grade:

These types of bricks are used in tropical countries. They can withstand any high temperature.

3. Severe Weather Grade:

These types of bricks are used in the countries which are covered in snow most of the time of year. These bricks are resistant to any kind of freeze-thaw actions.



Thank You!!