BRICKS

Manufacturing process of Bricks
The **manufacturing process of bricks** generally consists the following steps, they are Gathering, crushing, grinding, screening, and mixing the raw materials; brick making and setting, drying, firing, packaging and inventorying the final products.

**Preparation of Raw Material**

**Manufacturing process of bricks** begins with collecting surface clays and shale from the quarry. In the preparation for crushing, raw materials are transported to storage. The crusher breaks up the large pieces of clay passes it to conveyers heading for the grinders. The materials are crushed by the grinders to a fine consistency. The crushed material passes over a vibrating screen, in which the fine material will be passes through to the next step and the coarse material is returned to the grinder. Till this the material will be kept dry. Soon after screened, the materials will be sent to the pug mill, where it will be tempered to for shaping in the required brick form. The pug mill consists of a chamber that has one or two revolving shafts with attachment of blades rigidly, which mixes the material thoroughly, water is added provide proper plasticity and manganese are added to change the body color.

**Making Process**

The next step in **manufacturing process of bricks** is to make the material into shape of brick. Handmade, machine molded or extruded are used to shape the material. In Handmade method, a soft mixture is passed through the extruder; it is cut into slugs and conveyed to work stations. Then the slugs are picked up, rolled in sand and thrown into a pre sanded wooden mold. In machine molded, bricks are made from clay material is mixed with water and positioned in the machine that squashes the wet mix into molds. Then the mold box is bumped and dumped. The variety of sands is used to keep brick from sticking in the molds.

**Setting and Drying**

Once the brick is formed using the above mentioned method, the unit is sent into Kiln cars. Before sending into kiln the unfired or green brick should be dried. The drying process is done by keeping the green brick in enclosed dryers.

**Firing and Packing**

The continuous tunnel kiln involves the combination of vertical and horizontal drafts. The preheating, cooling, and burning is done in the zone where the temperature varies up to 2000 degree. When the green brick enters the kiln, the manufacturer will determine the type of firing required for producing the color. After coming out of Kiln, the brick is allowed to cool before handling.

**First Class bricks**
This brick is the well burnt table moulded brick, which is red or copper colour. This **first class bricks** has the uniform length and width and sharp well defined edges. This kind of bricks have reasonable smooth surface without having any flaws, cracks and stone grits. This is used for the construction of superior work.

**First class bricks characteristics**

- They are sound well burnt bricks of uniform color.
- They are hard enough, so that scratch with finger will not leave a mark.
- They are uniform in size, rectangular in shape and well defined sharp edges.
- They are not very smooth but they have clean surface.
- If it stuck against the same type of brick, good metallic sound is obtained without any breeding.
- If it is fractured, the interior surface of the bricks shows the uniform textures.
- They do not absorb water of more than 15% of the dry weight.
- They have of the minimum crushing speed strength of 10.5N/mm$^2$.
- Efflorescence presence is very little. These are characteristics of **first class bricks**.

**First class bricks** are made from good earth which is free from saline deposits and are sand molded. You can identify the First class brick by following field tests and laboratory tests.

- You can see the bricks should be burnt thoroughly without being vitrified and have deep red, cherry and copper color.
- Bricks should have regular and uniform in shape and size with sharp and square edges and parallel faces.
- Bricks should give a clear ringing sound on being struck together and are free from flaws, cracks, chops, stones and lime.

**Laboratory tests:-**

- Bricks should not absorb water more than 20% of its own dry weight after 24 hours, immersion in cold water.
- Bricks should have a minimum crushing strength of 105 kg per sq. cm when tested according to the specification.
• Bricks should not show appreciable sign of efflorescence either in dry state or subsequent to soaking in water.

How it helps for the building strength?

First class bricks have more strength than second class and third class, as it is clear from minimum crushing strength of bricks i.e. First class bricks have minimum crushing strength 105 kg/ sq cm where as second class bricks have 70kg/ sq cm. First class bricks are fully brunt so there surface are more strong than second class bricks. For more information about bricks you can take help from the given below articles.

First class bricks Uses

This brick is used for sound work of permanent nature, construction of load bearing walls, facia work which is not plastered but not properly jointed, reinforced brick work, pavements, walkaways and flooring.

Second Class Bricks

This brick is the well burnt table moulded brick, which is red or copper colour. This second class bricks has the uniform length and width and sharp well defined edges. This kind of bricks have reasonable smooth surface with fine hair cracks and mild distortion.

Characteristics of Second Class Bricks

• They are well burnt or slightly over burnt
• If the struck against the same type of brick they use to emit ringing sound.
• They are rectangular in shape and have well defined edges but not in equal size
• They have clean surface but with certain small irregularities
• They are free from cracks but have slight flaws and chips
• Even if it soaked for 24hours it will absorb less than 22% of water.
• They have the minimum crushing strength of 7 N/mm².
**Uses of Second Class Bricks**

The **second class bricks** are used in masonry constructions, where ate faces are to be plastered, is used for the construction of load bearing walls of single storey houses, used as brick ballast in R.C.C work and in lime concentrate.

**Third class Bricks**

This **third class bricks** are burned in clamps and they are ground moulded bricks, and also they may be table moulded bricks which are slightly under burnt.

**Characteristics of Second class Bricks**

- The bricks are slightly under burnt.
- They are light colored and are relatively soft.
- When they stuck with the same type of brick it emits dull sound.
- They are not in uniform sizes and slightly distorted.
- They do not have well defined sharp edges and corners.
- They may show intensive sign of efflorescence.
- In the fractured surface of the bricks they don’t have the proper uniform textures, it may show pebbles.
- These bricks will have the water absorptions of 20 % to 25 %.
- They have the minimum compressive strength of 3.5 N/mm².

**Third class bricks uses**

This **third class bricks** are used in the construction of unimportant structures; they are used in the constructions of low height, where the loads are much less, such as construction of huts, sheds, etc; used in the construction of boundary walls; used in the areas where it is not exposed to rain.

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