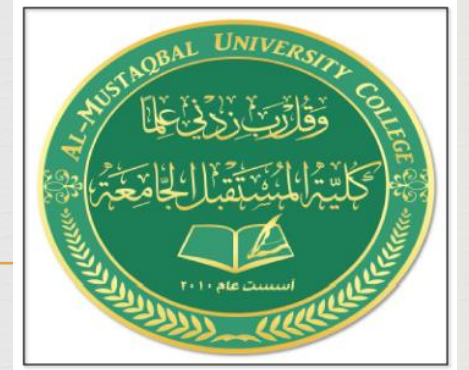


Al-mustaqbal university college

---

**Building and Construction Engineering  
Department**



**Constructional Technology**

**2<sup>nd</sup> Class  
Lecture ((3**

**Ruqayah Hayder**

## **Classification of Bricks Based on their Quality**

(i) First Class Bricks: These bricks are of standard shape and size. They are burnt in kilns. They fulfill all desirable properties of bricks.

(ii) Second Class Bricks: These bricks are ground moulded and burnt in kilns. The edges may not be sharp and uniform. The surface may be somewhat rough. Such bricks are commonly used for the construction of walls which are going to be plastered.

(iii) Third Class Bricks: These bricks are ground moulded and burnt in clamps. Their edges are somewhat distorted. They produce dull sound when struck together. They are used for temporary and unimportant structures.

(iv) Fourth Class Bricks: These are the over burnt bricks. They are dark in colour. The shape is irregular. They are used as aggregates for concrete in foundations, floors and roads.

## **Uses of Bricks**

Bricks are used in the following civil works:

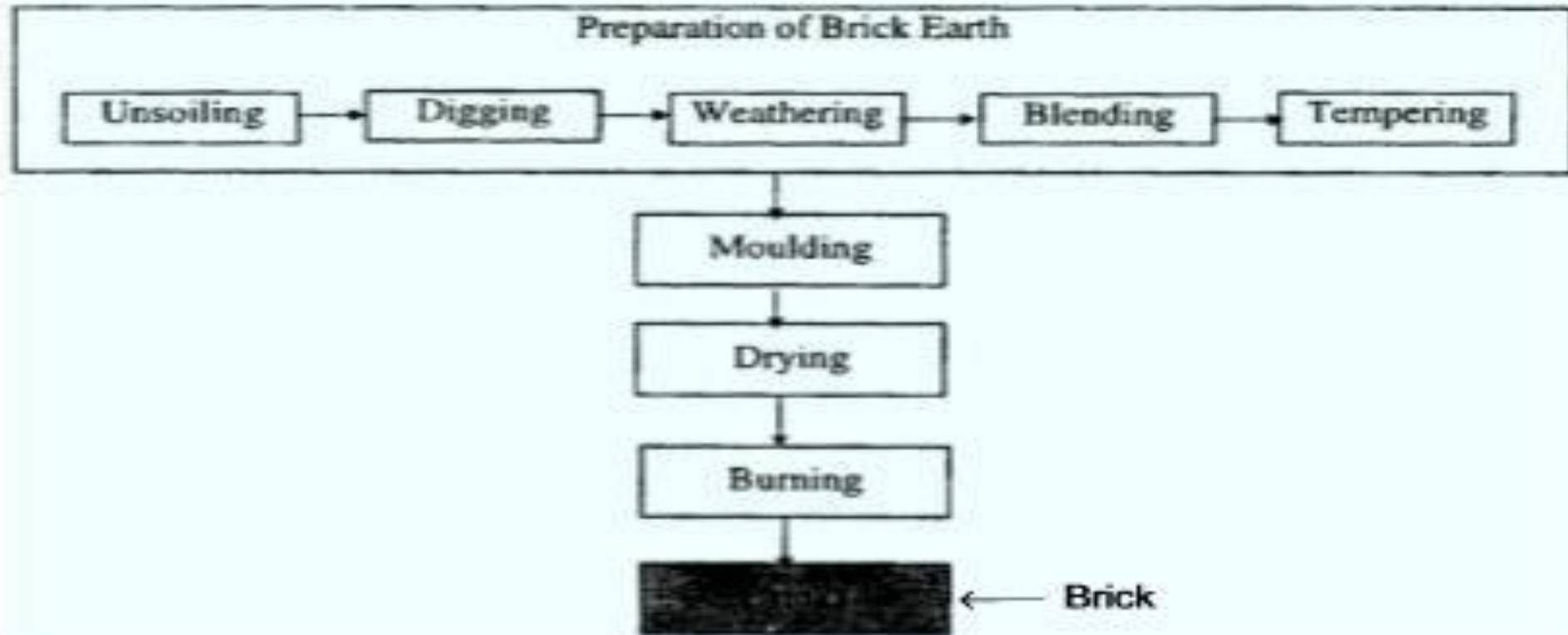
- (1) As building blocks.
- (2) For lining of ovens, furnaces and chimneys.
- (3) For protecting steel columns from fire.
- (4) As aggregates in providing water proofing to R.C.C. roofs.
- (5) For pavers for footpaths and cycle tracks.
- (6) For lining sewer lines.

# Manufacturing of

# brick

Manufacturing process for clay brick can be schematically represented as in figure below.

**S**





## **Preparation the earth of brick**

It consists of the following operations.

### **Unsoiling:**

The soil used for making building bricks should be processed so as to be free of gravel, coarse sand (practical size more than 2 mm), lime and kankar particles, organic matter, etc. About 20 cm of the top layer of the earth, normally containing stones, pebbles, gravel, roots, etc., is removed after clearing the trees and vegetation.

## **Weathering:**

Stones, gravels, pebbles, roots, etc. are removed from the dug earth and the soil is heaped on level ground in layers of 60–120 cm. The soil is left in heaps and exposed to weather for at least one month in cases where such weathering is considered necessary for the soil

### **Blending:**

The earth is then mixed with sandy-earth and calcareous-earth in suitable proportions to modify the composition of soil. Moderate amount of water is mixed so as to obtain the right consistency for moulding. The mass is then mixed uniformly with spades. Addition of water to the soil at the dumps is necessary for the easy mixing and workability, but the addition of water should be controlled in such a way that it may not create a problem in moulding and drying. Excessive moisture content may effect the size and shape of the finished brick

## *Tempering*

Tempering consists of kneading the earth with feet so as to make the mass stiff and plastics (by plasticity, we mean the property which wet clay has of being permanently deformed without cracking). It should preferably be carried out by storing the soil in a cool place in layers of about 30 cm thickness for not less than 36 hours. This will ensure homogeneity in the mass of clay for subsequent processing. For manufacturing good brick, tempering is done in pug mills and the operation is called pugging.



Pug mills

## **Moulding**

It is a process of giving a required shape to the brick from the prepared brick earth. Moulding may be carried out by hand or by machines. The process of moulding of bricks may be the soft-mud (hand moulding), the stiff-mud (machine moulding) or the dry-press process (moulding using maximum 10 per cent water and forming bricks at higher pressures). Fire-brick is made by the soft mud process. Roofing, floor and wall tiles are made by dry-press method. However, the stiff-mud process is used for making all the structural clay products

