

7. Construction Materials

1 What is brick?

-> A Brick is a type of block used to build walls, pavements and other elements.

Brick is a clean natural material that does not impact on the environment.

Bricks are fired at high temperatures so that organic materials are eradicated.

Standard size of Brick: $19 \times 9 \times 9$ cm
 $l \times b \times h$

=> What is Requirement of Bricks?

-> The colour of the Brick should be red or copper.

Bricks Edges should be sharp.

Bricks surface of should be even and free from the cracks.

They should be hard enough and sketched by a finger nail and no sketched mark should be from.

When two bricks are struck there should be metallic ranging sound.

Bricks should be not break when dropped to the ground from height of 1 meter.

Bricks shall not absorb water more than 20% of dry weight when submerged in water 24 hr.

=> What are the use of brick?

This are the use of Brick.

- | | | | |
|---|--|----|---------------|
| 1 | High-quality bricks can be used for permanent structural construction such as dams, roads, bridge etc. | 6 | Timber must |
| 2 | Bricks can be used for construction of walls of any size. | 7 | It sh |
| 3 | Low-quality bricks are used as aggregate for foundation concrete. | => | Write |
| 4 | Bricks can be used for creating informal walkway or path. | 1 | Timber bridge |
| 5 | Refractory bricks are used for lining of chimneys, furnaces and make pizza ovens. | 2 | It + furni |

3 What are

-> This are

1 Timber

2 Timber

3 Timber

4 It sh

5 Freshly sweet

6 Timber must

7 It sh

=> Write

-> Timber of ite

1 Timber bridge

2 It + furni

3. What are the qualities of a good timber.

-> These are the qualities of a good timber.

1. Timber should have dark uniform colour.

2. Timber should have uniform texture.

3. Timber should be free from knots, shakes etc.

4. It should be workable and good machinability.

5. Freshly cut timber should emit sweet smell.

6. Timber's annual rings of the section must be close to each other.

7. It should be dense.

=> Write use of Timber.

-> Timbers are used to make different types of items.

1. Timbers are used to make railway sleepers, bridges, pipes and other items.

2. It is used to make decorative pieces of furniture.

3 It is use to make doors and windows to make decorative,

4 W
m

4 It is also use in make decorative flooring, tablesware.

W
C
a

5 It is use in making match box and different types of boat.

6 Timber use to making cabinet, cupboard, shelves and railings etc.

7 Timber is also popularly used in the form of Plywood and raw wood.

=>

8 Timber is use to make ply blocks and ply boards.

1
2

9 Timber is widely used in work wood producing boxes and ~~can~~ crates.

3
4
5

=>

A

4. What is seasoning of timber? State various methods of seasoning and explain any one.

When a tree is fresh cut, the wood contains considerable quantity of water in the form of sap and moisture.

Remove this water from the wood before it can be used in construction work, this is called seasoning of timber.

Seasoning method is to reduce weight of wood and increase workability.

=> These are the types of seasoning of timber.

1. Natural Seasoning
2. Kiln Seasoning
3. Chemical or Salt Seasoning
4. Seasoning by boiling.
5. Electrical seasoning.

=> Natural Seasoning:

There are two types of natural seasoning:

A. Air Seasoning:

Air seasoning is a natural method of seasoning timber.

In this method, wooden logs are cut in the form of planks and stack ground is prepared for well manner arrangement of wooden.

The stack should be safe from direct winds and direct heat.

In this method, uniform rate of evaporation of wood moisture and sap.

B Water Seasoning:

Water seasoning is natural method of seasoning timber.

In this method, freshly cut wooden logs are placed in running water.

Wooden's sap from sell and walls are washed out, to the running water.

After this stage, wooden logs placed for air seasoning.

This process takes lesser time compared to the air seasoning.

2 Explain the term Cement.

=> This is terms of Cement.

1 Silica (SiO_2): Provides Strength.

2 Lime (CaO): Provides Strength.

3 ~~Al~~ Alumina (Al_2O_3): Makes the cement quick setting.

4 Iron Oxide (Fe_2O_3): Provides colour, hardness and Strength.

5 Magnesia (MgO): Provides hardness and colour.

6 Calcium Sulphate (CaSO_4): Increase the initial setting time.

=> Enlist types of cement and explain any three.

There are many types of cement.

1 Ordinary Portland Cement

2 Rapid Hardening Portland Cement

3 Quick Setting Cement.

4 Pozzolana Portland Cement

5 Low Heat Cement

6 Blast Furnace Cement.

- 7 White Cement.
- 8 Sulphate Resisting Cement.
- 9 Coloured Cement.

=> 1 Rapid Hardening Portland Cement:

- > This cement has initial and final setting time same as a Ordinary Cement.
- > This cement has high ~~est~~ strength in early days.
- > Lime content is more in this cement composition than the Ordinary Cement.
- > This cement required short time of curing.

=> 2 Quick setting cement:

- => This cement is produced by adding a small percentage of Aluminum sulphate.
- > In this cement setting action starts within five minutes and become hard in 30 minutes.
- > This cement is used to running water construction.

=> 3. Pozzuolana Portland Cement:

-> This cement is produced by adding a small percentage of 10 to 30 % of pozzuolana.

-> Pozzuolana Portland cement is a cheap and offers great resistance to expansion.

-> This cement is also used in sewage works and under water construction.

7. What are the types of steel? Write properties of mild steel.

These are the types of steel.

1. Mild Steel.
2. Medium Carbon Steel.
3. High Carbon Steel.

=> This are the properties of Mild Steel

1. Mild Steel is Tough.
2. Mild steel is elastic.

- 3 It has resistance to salt.
- 4 Specific Gravity is 7.80
- 5 It can be easily hardened and tempered
- 6 It is malleable and ductile.
- 7 This steel has melting points are about 1400°C .
- 8 Compressive strength is 8 to 12 tonnes/cm²
- 9 It rusts easily and rapidly.

These are the main properties of mild steel.

6 Write properties of a good sand.

This are the properties of a good sand.

1 Sand should be clean, free from organic and vegetable matter.

2 Sand should be durable.

3 Sand should be shiny luster.

4 Sand colour should be whitish brown.

5 It should be mix with binding material easily.

6 It should be contain sharp, angular grains.

7 It should be well graded.

8 It should be not contain salts which attract moisture from the atmosphere.

5 What is Concrete? Write also Advantages and disadvantages of concrete.

Concrete is a mixture of cement, sand, crushed rock and water.

Concrete is a major building material for constructe work.

=> Advantages of Concrete.

This is main Advantages of Concrete.

- 1 Concrete has a high compressive strength.
- 2 It is more cheaper than steel.
- 3 It is not subject to wweathering effect.
- 4 Concrete has water tightness and strength.
- 5 Concrete is a hard and durable material.

=> Disadvantages of Concrete:

This are the main disadvantages of concrete.

- 1 Concrete develops shrinkage stresses.

- 2 Concrete work requires skill and supervision by technical persons.
- 3 Concrete has poor tensile strength.
- 4 Repairing of concrete work is difficult.
- 5 Curing time of concrete is more.
- 6 It is necessary to maintain the newly placed concrete moist for several days.

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