5.9 FIRE PROOFING OF MATERIALS

Fire proofing is something resistant to fire or incombustible or material for use in making anything fire proof.

Passive Fire Protection (PFP) is an integral components of structural fire protection and fire safety in a building.

Fire proofing is a type of fire protection measure. It refers to the act of allowing materials to be more resistant to fire outbreaks.

There are a huge variety of fire proofing materials used to make clothes, construction materials and many other items.

A material may be fire proof due to an infused chemical whereas others are fire proof by nature.

- Fire proof materials are designed to resist burning and withstand heat.
- Natural fibers like wool and cotton can also be treated with fire proof chemicals or even fire inhibiters to provide effective fire resistance.
- Fire blankets are also made with fiber glass and are most appropriate for smaller household kitchen fires or a small fire that starts from clothing.
- Nearly 40% of fire victims have been killed in their sleep due to smoke inhalation of fire. There is a high demand for fire proof building materials such as dry wall, paint, roofing materials and exterior sides.
- There are also many other types of fire proof building materials used on interiors, exteriors, roofs of a house such as cast iron, steel brick, stone, concrete and fire proof wood products.
- Fire proof materials that are used in construction are all designed to maintain their durability, strength and structural intensity as the temperature rises during a fire outbreak.

- Fire proof materials used for buildings also include a dry wall where by non-combustible material and glass fibers have been fused into the core of the gypsum. This prevents the wall board from disintegration and slows down the spread of a fire.
- There is also fire proof brands of paint made available. Most of these brands are fire resistant.

Fire-proofing properties of common building materials

The fire-resisting properties of common building materials such as stone, brick, timber, cast-iron, glass, steel and concrete are mentioned below.

1. **Stone**

The stone is a bad conductor of heat and it is also a non-combustible building material. But if suffers appreciably under the effect of a fire. The stone is also liable to disintegrate into small pieces when heated and suddenly cooled.

2. **Brick**

It is found that the bricks are not seriously affected until very high temperatures of 1200°C to 1300°C are reached. This is due to the fact that a brick is a poor conductor of heat.

3. **Timber**

As a general rule, the structural elements made of timber ignite and get rapidly destroyed in case of fire. Further, they add to the intensity of fire.

4. **Cast-iron**

This material is rarely used as structural material at present. This material flies into pieces when heated and suddenly cooled. @LS10B = 5. Glass

This material is a poor conductor of heat and its expansion due to heat is small. The cracks are formed in this material when heated and then suddenly cooled.

5.Steel

The steel is a non-combustible building material, but it is a good conductor of heat and hence, it is rapidly heated in case of a fire.

6. Aluminium

This material is a very good conductor of heat. But it possesses poor fire-resisting properties. Hence, its use is restricted to those structures which have very low fire risks.

7. Asbestos cement

This is a non-combustible building material with low coefficient of expansion. It therefore possesses high fire resistance. Hence, the asbestos cement products are widely used for the construction of fire-resistant partition walls, roofs, etc.

8. Concrete

This material is a bad conductor of heat and it is an effective material for fire-resisting construction. The concrete offers a much higher resistance to a fire than any other material.