

# Kareem Kalejaiye

## Ojutalayo

Civil Engineering

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1. **Concrete:** In its simplest form, **concrete** is a mixture of paste and aggregates, or rocks. The paste, composed of portland **cement** and water, coats the surface of the fine (small) and coarse (larger) aggregates.

Uses	Properties
1. It's an important building product. Concrete is chosen over wood as a construction material.	1. Durability
2. It keeps home safe from insects	2. Compressive strength
3. Concrete is used in driveways and patios.	3. Fire resistant

4. Concrete is a sustainable choice for residential and commercial projects	4. Impact resistance
5. It is used as aggregate in roadbeds or as granular materials while making new concrete.	5. Porosity and density

2. Cement is a binder, a substance used for construction that sets, hardens, and adheres to other materials to bind them together. Cement is seldom used on its own, but rather to bind sand and gravel together.

Uses	Properties
1. It is used for making joints for drains and pipes.	1. Strength
2. It is used in mortar for plastering	2. Setting time

plastering, masonry work, pointing, etc.	
3. It is used in the preparation of foundations, watertight floors, footpaths etc.	3. Soundness
4. It is used for water tightness of structure.	4. Fineness of cement
5. It is used in the construction of important engineering structures such as bridges, culverts, dams, tunnels, lighthouses etc.	5. Bulk density

3. Timber: **Timber** is a type of wood which has been processed into beams and planks. It is also

wood prepared for use in building and carpentry.

Uses	Properties
1. For heavy construction works like columns, trusses, piles.	1. Hardness
2. For decorative works like showcases and furnitures.	2. Strength
3. For other permanent works like for railway sleepers, fencing poles, electric poles and gates.	3. Durability
4. For temporary works in construction like scaffolding, centering, shoring and strutting, packing of materials.	4. Elasticity

5. For light construction works like doors, windows, flooring and roofing.	5. Workability
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4. Aluminium: It is present on the surface of earth crust in most of the rocks and clay. But to produce the metal bauxite ( $\text{Al}_2\text{O}_3 \cdot 2\text{H}_2\text{O}$ ) is ideally suited ore.

Uses	Properties
1. Aluminium powder serves as pigments in paints.	1. It is very light in weight.
2. Aluminium structural members are becoming popular.	2. It is highly ductile and malleable.
3. It is used to make door and window frames.	3. It is good conductor of electricity.
4. Aluminium wires are	4. It has very good

used as conductors of electricity.	resistance to corrosion.
5. It is used as a foil.	5. It melts at 66°C.

5. Plastic is an organic material prepared out of resin. It may or may not contain fillers, plasticisers and solvents. Plastic may be defined as a natural or synthetic organic material which are having the property of being plastic at some stage of their manufacture when they can be moulded to required size and shape.

Uses	Properties
1. Corrugated and plain sheets for roofing.	1. Fire resistant
2. For making jointless flooring.	2. Transparent
3. Flooring tiles.	3. Durability
4. Decorative laminates and mouldings.	4. Electrical Insulation

5. Overhead water tanks	5. No maintenance needed
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6. Bitumen: **Bitumen** is defined as an amorphous, black or dark-colored, (solid, semi-solid, or viscous) cementitious substance, composed principally of high molecular weight hydrocarbons, and soluble in carbon disulfide.

Uses	Properties
1. For pavements	1. It is susceptible to oxidation, forming blisters and cracks.
2. For paints	2. It is dark black or brown in colour.
3. Damp proofing	3. Consists of components like carbon (87%), oxygen (2%) and hydrogen (11%).

7. Asbestos is a general name for several varieties of fibrous minerals which are available in nature. But presently, most of the commercial asbestos produced is 'chriotile' [ $Mg_6SiO_{11}(OH)_6 \cdot H_2O$ ].

Properties	Uses
1. It is flexible, soft and non-porous.	1. With bitumen it forms good damp proof layer.
2. It is fire proof and acid proof material.	2. It is used for preparing fire proof ropes and clothes.
3. It is a good insulator of heat and electricity.	3. It is used as covering material for fuse and electric switch boxes.

8. Glass: Silica is the main constituent of glass. But it is to be added with sodium potassium carbonate to bring down



melting point. To make it durable lime or lead oxide is also added. Manganese oxide is added to nullify the adverse effects of unwanted iron present in the impure silica. The raw materials are ground and sieved. They are mixed in specific proportion and melted in furnace. Then glass items are manufactured by blowing, flat drawing, rolling and pressing.

Uses	Properties
1. Windows and doors	1. It has excellent resistance to chemicals.
2. Tableware	2. It is an excellent electrical insulator.
3. Reinforcement structures	3. It is strong and brittle

9. Stone is a 'naturally available building material' which has been used from the early age of civilization. It is

available in the form of rocks, which is cut to required size and shape and used as building block. It has been used to construct small residential buildings to large palaces and temples all over the world. Red Fort, Taj Mahal, Vidhan Sabha at Bangalore and several palaces of medieval age all over India are the famous stone buildings.

Uses	Properties
1. It's used in paving of roads.	1. Weathering
2. It's used in flooring	2. Density
3. Stone slabs are used as damp proof courses, lintels and even as roofing materials.	3. Hardness

10. Bricks: Brick is obtained by moulding good clay

into a block, which is dried and then burnt. This is the oldest building block to replace stone. Manufacture of brick started with hand moulding, sun drying and burning in clamps.

Uses	Properties
1. For lining sewer lines	1. Texture
2. As building blocks	2. Soundness
3. For protecting steel columns from fire	3. Hardness