| S/N | MATERIALS | USES | PROPERTIES |
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| 1 | Concrete | Concrete is used for many applications, including basic foundations, superstructures, wastewater treatment facilities, water treatment facilities, parking structures, floor construction, and exterior surfaces. | Concrete is a versatile construction material, adaptable to a wide variety of agricultural and residential uses. Concrete has strength, durability, versatility, and economy. It can be placed or molded into virtually any shape and reproduce any surface texture. |
| 2 | Cement | Cement is mainly used as a binder in concrete, which is a basic material for all types of construction, including housing, roads, schools, hospitals, dams and ports, as well as for decorative applications (for patios, floors, staircases, driveways, pool decks) and items like tables, sculptures or bookcases. | Some key parameters control the quality of cement. The physical properties of good cement are based on: fineness of cement, soundness, consistency, strength, setting time, heat of hydration, loss of ignition, bulk density, specific gravity (relative density) |
| 3 | Timber | Timber used in heavy-duty construction is called swan-wood and comes from coniferous trees. Swan-wood is commonly used as planks, beams, and boards. In heavy-duty construction, timber is also used for the construction of trusses, piles and columns. | The following are the properties/characteristic of a good timber: Durability, strength, permeability, hardness, toughness, elasticity, workability and weight |
| 4 | Steel | Construction is one of the most important steel-using industries, accounting for more than 50% of world steel demand.<br>Buildings - from houses to car-parks to schools and skyscrapers - rely on steel for their strength. Steel is also used on roofs and as cladding for exterior walls. | The properties that need to be considered by designers when specifying steel construction products are:<br>Strength<br>Toughness<br>Ductility<br>Weldability<br>Durability |
| 5 | Asphalt | The vast majority of refined asphalt is used in construction: primarily as a constituent of products used in paving and roofing applications. According to the requirements of the end use, asphalt is produced to specification. This is achieved either by refining or blending. It is estimated that the current world use of asphalt is approximately 102 million tonnes per year. Approximately 85% of all the asphalt produced is used as the binder in asphalt concrete for roads. It is also used in other paved areas such as airport runways, car parks and footways | Essential Properties of Asphalt are as follows:<br>Stability<br>Durability.<br>Flexibility<br>Fatigue Resistance<br>Skid Resistance<br>Impermeability<br>Workability |
| 6 | Polymers | They include plastics, rubbers, thermoplastic elastomers, adhesives, foams, paints and sealants. Well established applications of polymers in construction include areas such as flooring, windows, cladding, rainwater, pipes, membranes, seals, glazing, insulation and signage. | Some of the useful properties of various engineering polymers are high strength or modulus to weight ratios (light weight but comparatively stiff and strong), toughness, resilience, resistance to corrosion, lack of conductivity (heat and electrical), color, transparency, processing, and low cost. |
| 7 | Sand | Sand is in very commonly use in construction, often providing bulk, strength and stability to other materials such as asphalt, concrete, mortar, render, cement, and screed. Sand is also used as a base layer known as ‘blinding’, that is laid above a layer of hardcore to provide a clean, level and dry surface for construction works. It can also be used in its raw form as a decorative material in landscaping.<br>Sand is used in liquid form to manufacture glass, and is also used for moulding metal casting. It can be used as an abrasive in the process of sandblasting which cleans structural elements, steelwork, and so on. Sandpaper is also made using sand. | Properties of Good Sand consists of the following:<br>Should be completely inert. ...<br>Grains should be sharp, strong & angular.<br>Should not contain any hygroscopic salts (i.e., $CaCl_2$, $MgCl_2$, etc.).<br>Should not contain clay & silt; usually 3-4% clay & silt is ordinarily permitted for practical reasons.<br>There should be no organic matter. |
| 8 | Mortar | Mortar is a material used in masonry construction to fill the gaps between the bricks and blocks. Mortar is a mixture of sand, a binder such as cement or lime, and water and is applied as a paste which then sets hard. | Three important properties of mortar are workability, bond, and compressive strength.<br>Workability: Workability is perhaps the most important property of plastic (fresh and not yet hardened) mortar.<br>Bond: Bond is an important property of hardened mortar. Two facets if bond critical to a masonry assembly's performance are extent-of-bond and bond strength (known to structural engineers as flexural tensile strength<br>Compressive strength: Compressive strength is not as important to the performance of the masonry assembly as workability and bond. |
| 9 | Brick | Bricks are used as an alternative of stones in construction purpose. Here some main uses of construction brick are given below.<br>Construction of walls of any size<br>Construction of floors<br>Construction of arches and cornices<br>Construction of brick retaining wall<br>Making Khoa (Broken bricks of required size) to use as an aggregate in concrete<br>Manufacture of surki (powdered bricks) to be used in lime plaster and lime concrete | Generally good bricks possesses following properties-<br>Bricks should be uniform in color, size and shape. Standard size of brick should be maintained.<br>They should be sound and compact.<br>They should be free from cracks and other flaws such as air bubbles, stone nodules etc. with sharp and square edges.<br>Brick should not change in volume when wet.<br>Bricks should neither over-burnt nor under-brunt.<br>Bricks should be sound proof.<br>Bricks should be non-inflammable and incombustible. |

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| 10 | Glass | It is most typically used as transparent glazing material in the building envelope, including windows in the external walls. Glass is also used for internal partitions and as an architectural feature. When used in buildings, glass is often of a safety type, which include reinforced, toughened and laminated glasses. | Characteristics of Glass as a Building Material are as follows:<br>□Hardness and Brittleness. It is a hard material as it has great impact resistance against applied load<br>□Weather Resistance<br>□Insulation<br>□Chemical Resistance<br>□Colour and Shape Varieties<br>□Transparency<br>□Fire Resistant Glazing<br>□Property Modification |