

BUILDING MATERIAL

Many naturally occurring substances, such as clay, rocks, sand, thatch and wood, even twigs and leaves, have been used to construct buildings.

Mud and clay

Clay based buildings usually come in two distinct types. One being when the walls are made directly with the mud mixture, and the other being walls built by stacking air-dried building blocks or bricks. Other uses of clay in building is combined with straws to create light clay, wattle and daub, and mud plaster



Stone or rock

Rock structures have existed for as long as history can recall. It is the longest lasting building material available, and is usually readily available. There are many types of rock throughout the world, all with differing attributes that make them better or worse for particular uses. Rock is a very dense material so it gives a lot of protection too; its main drawback as a material is its weight and awkwardness. Its energy density is also considered a big drawback, as stone is hard to keep warm without using large amounts of heating resources.



Sand

Sand is used with cement, and sometimes lime, to make mortar for masonry work and plaster. Sand is also used as a part of the concrete mix. An important low-cost building material in countries with high sand content soils is the Sandcrete block, which is weaker but cheaper than fired clay bricks.



Thatch

Thatch is one of the oldest of building materials known; grass is a good insulator and easily harvested. Many African tribes have lived in homes made completely of grasses and sand year-round. In Europe, thatch roofs on homes were once prevalent but the material fell out of favor as industrialization and improved transport increased the availability of other materials. Today, though, the practice is undergoing a revival. In the Netherlands, for instance, many new buildings have thatched roofs with special ridge tiles on top.



Wood and timber

Wood is a product of trees, and sometimes other fibrous plants, used for construction purposes when cut or pressed into lumber and timber, such as boards, planks and similar materials. It is a generic building material and is used in building just about any type of structure in most climates. Wood can be very flexible under loads, keeping strength while bending, and is incredibly strong when compressed vertically



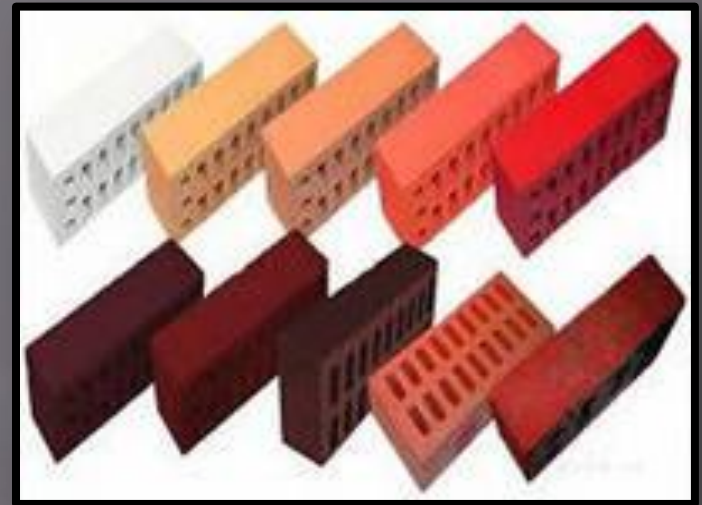
The Gliwice Radio Tower (the second tallest wooden structure in the world) in Poland (2012).



Apart from naturally occurring materials, many man-made products are in use, some more and some less synthetic.

Fired bricks and clay blocks

Bricks are made in a similar way to mud-bricks except without the fibrous binder such as straw and are *fired* ("burned" in a brick clamp or kiln) after they have air-dried to permanently harden them. Kiln fired clay bricks are a ceramic material. The individual bricks are placed upon each other in courses using mortar. Successive courses being used to build up walls, arches, and other architectural elements. Building with brick gained much popularity in the mid-18th century and 19th centuries. This was due to lower costs with increases in brick manufacturing and fire-safety in the ever crowding cities.



Concrete

Cement bonded composites are made of hydrated cement paste that binds wood, particles, or fibers to make pre-cast building components. Various fibrous materials, including paper, fiberglass, and carbon-fiber have been used as binders



▣ Falkirk Wheel

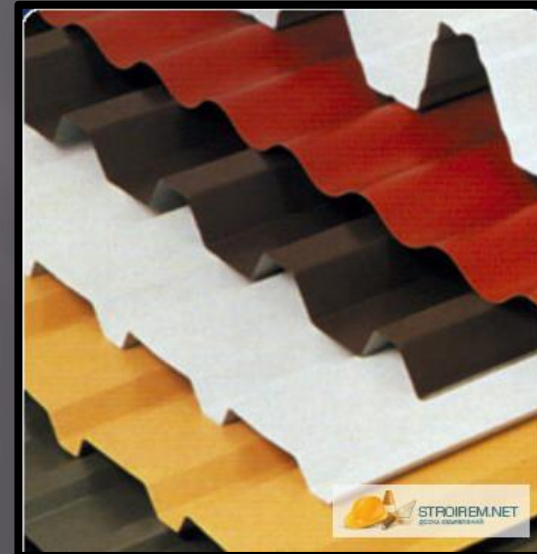
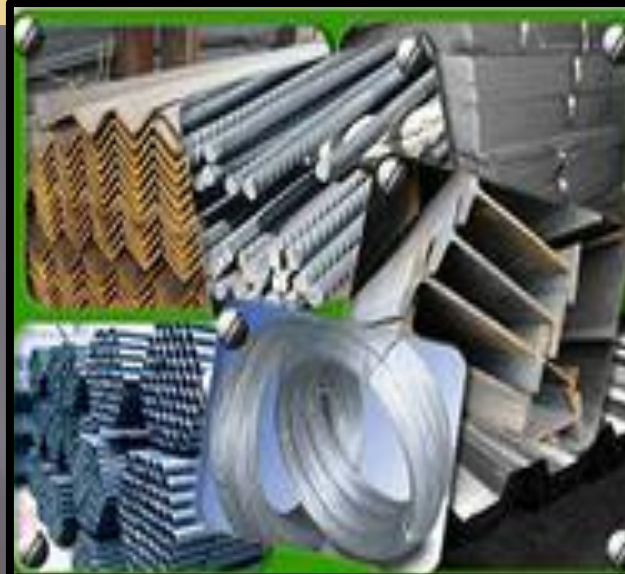
Foam

Recently, synthetic polystyrene or polyurethane foam has been used in combination with structural materials, such as concrete. It is lightweight, easily shaped, and an excellent insulator. Foam is usually used as part of a structural insulated panel, wherein the foam is sandwiched between wood or cement or insulating concrete forms.



Metal

Metal is used as structural framework for larger buildings such as skyscrapers, or as an external surface covering. There are many types of metals used for building. Metal figures quite prominently in prefabricated structures such as the Quonset hut, and can be seen used in most cosmopolitan cities. It requires a great deal of human labor to produce metal, especially in the large amounts needed for the building industries.



Plastics

The term "plastics" covers a range of synthetic or semi-synthetic organic condensation or polymerization products that can be molded or extruded into objects, films, or fibers. Their name is derived from the fact that in their semi-liquid state they are malleable, or have the property of plasticity. Plastics vary immensely in heat tolerance, hardness, and resiliency. Combined with this adaptability, the general uniformity of composition and lightness of plastics ensures their use in almost all industrial applications today.



VOCABULARY

Timber - лесоматериалы

concrete - бетон

steel - сталь

lime - известь

stone - камень

brick - кирпич

sand - песок

fine sand - мелкий песок

mortar - минометр

plaster - штукатурка

metal - металл

plastics - пластик

foam - пена

№1. Translate the following combinations into Russian.

Wood veneers, laminated wood

Strip of land strips, of wood glued, together

№2. Which of words given below are nouns, verbs, adjectives, adverbs? Translate every word.

Height, high, deepen, depth, deeply, strength, strengthen, strong, long, highly, lengthen, length, hard, hardly, harden, hardness.

№3. Answer the questions

- 1. What materials are used in building construction?**
- 2. What materials form very important elements in masonry structures?**
- 3. What is the most accurate method of measuring proportions?**