CONSTRUCTION MATERIALS USED IN INDUSTRY AND THEIR SELECTION

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Abstract: *Materials that can absorb force, fall into small pieces, make construction details, and have good physical, mechanical, and chemical properties. There are metallic, non-metallic and composite, casting types. Among the metal construction materials, steel is the most common; except for cast iron, aluminum alloys, beryllium alloys, tungsten alloys, magnesium alloys, titanium alloys, chromium alloys and other construction materials.*

Keywords: *structural materials, titanium, magnesium, aluminum, iron, cobalt, lead, zinc, copper, nickel, lathe, specific resistance, specific gravity.*

Construction materials are materials that absorb force, can withstand pressure, are used for construction details, and have good physical, mechanical, and chemical properties. There are metallic, non-metallic and composite, casting types. Among the metal construction materials, steel is the most common, except for cast iron, aluminum alloys, beryllium alloys, tungsten alloys, magnesium alloys, titanium alloys, chromium alloys, and other construction materials. According to the technological characteristics, the materials are prepared by deformation and rolling, pressing, stamping, casting, welding, baking, gluing; according to the conditions of use, refractory alloys used at normal, low and high temperatures, refractory concrete materials; according to the structure, ferritic and austenitic steels; according to the type of reinforcement, steel and cast iron are divided into types, hardenable, improved, dispersion-reinforced, difficult to dissolve dispersed particles, wearable, high-strength steel and cast iron according to the strength index. Mechanical properties of construction materials, structural strength, fire resistance, viscosity, fire resistance, corrosion resistance, etc. determine their quality indicators. Thermal treatment of Metal Construction materials increases their plasticity. The parts working on large scale are made of remelted steels. In mechanical engineering, cast iron is widely used in crankshafts, gear wheels and parts working at temperatures up to 1200°. Nickel and cobalt alloys keep their strength at temperatures up to 1000-1100°; they are used in the production of aviation and rocket engines, in the production of aircraft, helicopter, and missile bodies of aluminum alloys with a strength of 550-750 Mn/m2. The strength of

titanium bars is more than 1600 Mn/m2 and is widely used in making compressors, aviation engines, and medical devices.

Non-metallic construction materials include concrete, refractories, plastics, glass, ceramics, rubber and wood. They are used in aircraft engineering, rocket engineering, mechanical engineering, radio engineering and shipbuilding. Composite construction materials: thread, wire, stringy crystals, difficult-to-melt compound, etc.

Copper is one of the oldest known metals. In ancient times, copper ore was mined from the island of Cyprus, so it was called Cuprum after the island. Copper is relatively rare in nature. It makes up 4.7-10~3% of the Earth's crust by mass. Copper sometimes contains iron, silver, and rarely gold. Chalcopyrite CuFeS2, chalcosine Cu2S, covellineCuS, bornite Cu5FeS4, malachite CuCO,Cu(OH)2, cuprite Si2O, chryza-colla CuSiO32H2O and others are important among the large number of copper minerals (more than 250).

Titanium (element) is a shiny hard metal like steel. Melting point 1668±5°, boiling point 3227°, density 4.51 g/cm3. Titanium (element) is strong and plastic, easily hammered and spread (rolled), very weakly conductive at normal temperatures. Due to the formation of an oxide film on the surface of titanium (element), it is superior to stainless steel in terms of corrosion resistance. It does not oxidize in air, does not rust in sea water, does not change in aggressive chemical environments. Titanium is one of the most active metals at its melting point. It combines with almost all elements when heated. Forms solid solutions and intermetallic compounds with metals. At a temperature above 600°, it is oxidized by air oxygen and Titanium (element) (1U) oxide turns into TYU2. At a temperature above 700°, titanium (element) nitride forms TiN with nitrogen. At a temperature above 300°, it reacts with hydrogen chloride and turns into titanium (element) (1U) chloride. Titanium (element) reacts with concentrated sulfuric acid to form titanium (element) sulfate Ti(SO4)2 and sulfite anhydride SO2. Acids of titanium (element) containing H2Ti03 and N2TYU4 and peroxyacids containing N4TYU5 and H4Ti08 are known. Titanium (element) can be 2-valent in its compounds.

In industry, magnesium is obtained by electrolytic, metallothermal and coal-thermal methods, but mainly by electrolyzing a mixture of MgCl, KC1 and NaCl solutions. Dolomite is used as a raw material in the metallothermal method, and ferrosilicon or silicoaluminum is used as a reducing agent. In the carbon-thermal method, a mixture of magnesium MgO and carbon is heated in hermetic furnaces at a temperature higher than 2100°.

It is used in pyrotechnics, metallurgy, alloys, hard-to-reduce metals (vanadium, titanium, uranium, zirconium), solid cast iron production, nuclear technology, film, photography and lighting technology.

Summary. Construction materials are made on the basis of the following metals: magnesium, manganese, cobalt, nickel, zinc, tin, lead, chromium, vanadium, and other metals. Metals and their alloys used as structural materials should have requirements such as the most difficult or easily liquefiable, strong corrosion resistance, and corrosion resistance. Today, technology is developing day by day. Today, there is a great need for equipment, electric cars, airplanes, railway stations, machine tools, and other products, and it is necessary to pay attention to their quality.

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