

DETERMINATION OF PHYSICAL PROPERTIES OF LOCAL WOOD MATERIALS FOR CONSTRUCTION

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Abstract:

In order to meet the demand for wood materials in construction, the main properties of the fast-growing and industrial paulownia tree are studied, and some physical-mechanical determination of them is covered in order to be used as a finishing and structural material in construction.

Key words: wood, paulownia, physical and mechanical properties, density, strength, thermal conductivity, flammability, adhesion.

It is known that wood is one of the main building materials in modern constructions. It is a material that can be built by itself, it is light, it has high strength despite its small volume mass, it is easy to process, it has a small coefficient of heat transfer, it can be used as a heat protection and structural material at the same time, it does not choose the season of buildings and structures to be built on its basis, and it can be built quickly. differs from other building materials. However, as a result of the fact that 90% of the wooden materials brought to the republic for the purpose of construction are converted into foreign currency in exchange for imports, the cultivation of fast-growing construction wood materials in the republic, the cultivation of wood materials used in construction in local conditions is considered one of the urgent problems [1].

One of such types of wood is the world's fastest-growing ornamental, wood-quality, paulownia tree used in construction, and in Uzbekistan, special attention is paid to the propagation of paulownia tree for the purpose of obtaining wood. Based on the decision of the Cabinet of Ministers dated August 27, 2020 " On measures to establish fast-growing and industrial paulownia tree plantations in the Republic", based on the soil and climate conditions of our country, water is scarce, unused reserve areas with groundwater below 30 meters, and water of the forest fund It is planned to establish paulownia plantations in lands with poor or salty soil, and many practical works are being carried out in this regard [2].

Some physical and mechanical properties of this wood were studied in order to use it as a decorative and constructive material in construction. It is known that the moisture content of

wood materials used in construction should be 12% according to the standard, paulownia wood dries faster than other wood materials, does not require excessive time and energy for drying. Its density at 12% humidity is only 282 kg / m³ is This figure is 500 kg/m³ for pine wood , 445 kg/m³ for spruce wood, 435 kg/m³ for cedar wood , 690 kg /m³ for oak wood, 650 kg/m³ for white birch wood , and 440 kg for local poplar wood. /m³ is.

One of the main properties of wood materials is the calculated coefficient of thermal conductivity, it was found that this index is 0.11 for paulownia wood, this index is 0.15 for pine wood, 0.11 W/m °C for spruce wood, and 0.095 W/m °C for cedar wood . , it was found to be 0.20 W/m °C in oak wood , 0.15 W/m °C in white birch wood and 0.17 W/m °C in poplar wood. According to the thermal conductivity coefficient, despite the fast growth of the wood of the paulownia tree, it was found that the pine wood, which is considered the main structural material, is small and equal to the thermal conductivity coefficient of the spruce wood [3,4].

In addition, the main drawback of all wood materials was compared with certain types of wood in terms of their burning rate and the amount of toxic gases released as a result of burning. It is known that thermal decomposition occurs at a temperature of 110 °C in almost all kinds of wood materials . At a temperature of 120-180 °C, first unbound and then chemically bound waters are released, thermally resistant compounds in wood are mainly observed with the release of SO₂ and N₂O. At a temperature of 250 °C, the pyrolysis process begins in wood with SO, SN₄, N₂, SO₂, N₂O, etc., and combustion occurs at a temperature of 250-300 °C , and it was found that paulownia wood can withstand heat up to 450 °C [5].

The above-mentioned physical properties of paulownia wood make it possible to use them as a structural material for low-rise buildings, as a finishing material in the furniture industry.

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