

## DEVELOPMENT OF MISCELLANEOUS AUTHORITIES OF WOOD-POLYMER COMPOSITES IN CHAS

**Kopilov S.O., Cherkashina G.M., Bliznyuk O.V., Lebedev V.V.**

*National Technical University*

*"Kharkiv Polytechnic Institute", Kharkiv*

In order to identify the influence of operational factors on the complex of strength and operational characteristics of wood-polymer composites (WPC), the developed composites were studied. Based on the requirements for WPC, the strength properties were studied during long-term storage and operation in atmospheric conditions. In WPC, the stabilization period depends on both the curing method and the composition of the WPC. The change in the properties of WPC over time depends on the curing method and confirms the obtained experimental data on the higher degree of curing of the developed WPC. A higher degree of curing contributes to the rapid completion of the relaxation processes occurring in the WPC, and, as a consequence, stabilization of the strength properties. Table 1 presents the physical and mechanical properties of WPC samples after 24 years.

Table 1 - Physico-mechanical power of WPC components after 24 years

| Composite | P g/cm <sup>3</sup> | A kJ/cm <sup>2</sup> | σ, MPa |
|-----------|---------------------|----------------------|--------|
| 1         | 1,084               | 8,7                  | 21,5   |
| 2         | 1,066               | 6,4                  | 15,5   |
| 3         | 1,067               | 6,7                  | 16,5   |
| 4         | 1,068               | 5,7                  | 16,4   |
| 5         | 1.085               | 9,27                 | 14,38  |
| 6         | 1,125               | 8,09                 | 14,60  |

On the other hand, from the experimental data given in Table 1 it is evident that all the indicators of the properties of the 6 WPC formulations developed by us are high. Moreover, the increased indicators of the strength properties of the developed WPCs are preserved for a long time (45 days). In addition, the strength indicators of the properties of the developed WPCs are stable during long-term storage and operation. A change in the composition of the WPC leads not only to a change in the absolute values of the strength indicators of the WPCs, but also to a change in the period of their stabilization during storage and operation. From the given Table 2 it is evident that the indicators of the strength properties of the developed WPCs after 45 days are quite high.

Table 2 - Physical and mechanical properties of WPC samples after 45 days

| Composite | P g/cm <sup>3</sup> | A kJ/cm <sup>2</sup> | σ, MPa |
|-----------|---------------------|----------------------|--------|
| 1         | 1,084               | 7,7                  | 22,9   |
| 2         | 1,066               | 5,4                  | 17,77  |
| 3         | 1,067               | 5,7                  | 18,58  |
| 4         | 1,068               | 4,7                  | 16,46  |
| 5         | 1.085               | 6,56                 | 15,78  |
| 6         | 1,125               | 8,0                  | 16,81  |

Thus, developed compositions of WPC, samples of which have high indicators of physical and mechanical properties for 45 days, and there is no tendency for them to decrease. The developed WPC compositions have high performance compared to existing WPCs.