

STUDY OF THE STRENGTH CHARACTERISTICS OF COMPOSITES BASED ON POLYARYLATE

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Compression test is one of the widely used experimental methods for materials mechanical properties determination. To understand the mechanical behaviour of composites based on aromatic polyester polyarylate the effect of the nature and content of discrete chemical fibers on the physical and mechanical properties of the polymer binder was studied. Discrete glass fiber M-5, carbon fiber and organic fiber Vniivlon in the amount of 5-35 mass % are used as reinforcing fibrous fillers. The research data (Table 1) indicate that the fibrous filler nature significantly affects on the composites strength characteristics: more stiffness glass and organic fibers provides the bigger increase of the tensile strength at the compression in comparison with the binder (on 49-92 and 42-85 MPa higher than the polyarylate accordingly).

Table 1. Influence of of the content and fiber nature on strength characteristics of composites based on polyarylate

Fiber filler		Tensile strength, MPa	Elasticity modulus, MPa	Destruction work, kJ
-	-	168	900	2888
Uglen	5	182	1138	3531
	15	231	1163	4931
	25	165	1263	2300
	35	155	1375	2332
Vniivlon	5	210	800	3348
	15	231	1000	2933
	25	242	1600	2413
	35	253	2670	2535
Glass fiber	5	217	750	2760
	15	235	1200	3115
	25	245	2000	4020
	35	260	2100	4636

In general, the research results shows us that reinforcing of the complex polyester by discrete chemical polyarylate fibers provides the exceeding of its strength capacities by an average of 24-35%.