P-9-940

COMPARATIVE STRENGTH TESTS OF SELECTED POLYCAPROLACTAM (PA6) ADHESIVE BONDED JOINTS

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The article presents the results of comparative PA6 lap joints strength tests. The analysis focused on twotypes of lap joints applied in various structures: most commonly used, single-lap joints and single-lap groove joints, which enable to lap join thick elements. The type of adhesive joints tested was the glue joint, the sample material was a 6 mm thick polycaprolactam (PA6), widely applied as a construction material in machine building. Owing to the selected thickness of the material in question it was possible to introduce structural modifications to the lap joint shape, in order to create a single-lap groove joint. The joining process included one of surface treatment operations - degreasing, with an aramid-epoxy composite applied as an adhesive. Once the joints have been performed the samples were subject to seasoning process at ambient temperature of 20±20C and humidity approx. 36±2%. Subsequently, strength tests were performed with a view to determining the destructive force for the analysed shear-loaded joint types along with determining and comparing the shear strength of the sample joints. The study was performed on aramid-epoxy composite samples, differing in the type of aramid fabrics used for the composite, both in terms of properties and thickness. In the case of the first composite type, the tested sample consisted of a two-layer (2 x 0.3 mm) aramid material marked KV-EP 285 199-46-003. The other sample was a two-layer (2 x 0.3 mm) aramid material marked KV-EP 285 199-46-002. The aramid fabrics were set at a 90 degree angle and submitted to a hardening process (applying proper technology).