SVOJSTVA NA PULTRUDIRANI KOMPOZITI SO STAKLENI VLAKNA

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Apstrakt: Vo ovoj trud e diskutirana tehnologijata za proizvodstvo na pultrudirani kompoziti, so specijalen pregled na nivnite svojstva i prednosti vo odnos na drugite tehnologii za kompozitni materijali. Izraboteni se kompozitni profili vrz baza na poliesterska, epoksidna i vinilesterska smola zajaknati so stakleni vlakna, po pultruziona postapka. Ispitani se fizi~kite, mehani~kite i termi~kite karakteristiki na kompozitite. Rezultatite od istra`uvawto poka`aa deka glavna prednost na pultrudiranite kompozitni profili e mo`nosta za modelirawe na nivnite svojstva so menuvawe na sostavot na smolata i dodatocite. Najdobri mehani~ki karakteristiki poka`aa kompozitite vrz baza na epoksidna smola (ja~ina na pritisok 378,5 MPa, ja~ina na svitkuvawe 667,3 MPa i modul na elasti~nost 42,5 GPa) dodeka najlo{i onie vrz baza na poliesterska smola. Iako zajaknuva~ot ima dominantna uloga vo determiniraweto na mehani~kite osobini na kompozitite, pravilniot izbor na matricata i procesnite parametri doprinesuvaat za podobra iskoristuvawe na potencijalnite mo`nosti na zajaknuva~ot odnosno vlaknata. Od prezentiranite rezultati mo`e da se zabele`i deka prednostite na pultrudiranite kompozitni profili vo odnos na klasi~nite materijali se pove}estepeni: imaat golema cvrstina i `ilavost, niska gustina (povrzano so toa i te`inata, mali tro{oci za transport, lesno rakuvawe i manipulacija), golema aksijalna ja~ina, stabilni popre~ni dimenzii po celata dol`ina na profilot, mali tro{oci za odr`uvawe (dokolku odr`uvawe voop{to e potrebno) kako i mo`nost za "kroewe" na materijalot (t.e. svojstvata) prema barawata na nara~atelot.
Svojstvata na pultrudiranite kompoizti, kako i nivnite prednosti, uka`uvaat na pri~inata za nivnata se' po{iroka primena vo site granki na elektro-, naftenata i grade`nata industrija, vo proizvodstvoto na sportski rekviziti, patnata mre`a i dr.

PROPERTIES OF THE PULTRUDED COMPOSITES REINFORCED WITH GLASS FIBERS

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Abstract: The paper presents the pultrusion technology with a special overview of the properties and benefits of usage of pultruded products. Composites based on polyester, epoxy and vinylester resins reinforced with glass fibers, are produced by pultrusion process. The physical, mechanical and thermal properties of the composites are analyzed. The test results has shown that the main advantage of pultruded composites is the possibility of tailoring of their properties by changing the ratio of the components of the resin system. The best test results has shown the composites based on epoxy resin (compression strength 378,5 MPa, flexural strength 667,3 MPa, and the modulus of elasticity 42,5 GPa) and the worst - those based on polyester resin. Although the reinforcement has a dominant role in determination of the mechanical properties of the composites, the resin matrix and the process parameters can contribute for better conversion of the fiber potentials into the composite properties. From the presented results it could be noticed that the advantages of the pultruded composites in comparison with classic materials are multiple: they have high strength and toughness, low gravity (witch means low weight, low transportation cost, easy handling and manipulation), high axial strength, stability of the pultruded shapes, low maintenance cost (if the maintenance is necessary at all) as well as the possibility for tailoring the material properties according to the requirements of the customer. The obtained results of the pultruded composites and their advantages, are the good reason for the potential application of these materials in the electronic, transportation, leisure, civil engineering and other industries.