

ABOUT THE MECHANICAL PROPERTIES FOR A TYPE OF GREEN COMPOSITES WITH HYBRID DAMMAR/SANDARAC MATRIX AND NATURAL REINFORCEMENTS

C.M. Mirițoiu¹, M.M Stănescu¹, D. Bolcu¹, G. Jiga^{2,*}, A.I. Rădoi¹, D.I. Tudose²

1 University of Craiova, Department of Applied Mechanics and Civil Constructions, Calea Bucuresti Street, No. 107, Craiova, Romania, miritoiucosmin@yahoo.com

*2 University Politehnica of Bucharest, Strength of Materials Department, Splaiul Independentei Street, No. 313, Bucharest, Romania, gabijiga@yahoo.com
gabijiga@yahoo.com**

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Abstract.

Biopolymers are obtained from renewable resources and, in recent years, have gained or are growing in importance due to oil-based polymers. Resins hybridize for part of the biopolymer category and involve a combination of two basic constituents: one organic and one inorganic. Most are such resins that are found in the coating industry characterized by natural resin dissolved in alcohol, oil or turpentine. These lakes have been used since medieval times by people in order to beautify and to protect paintings, musical instruments or pieces of furniture.

This paper presents the mechanical properties for sandwich core strips with a 60% sandarac combination core and Resoltech 1050 epoxy resin with 1055 40% hardener, and the upper and lower layers reinforced with cotton, silk and linen fabric, and the matrix is a combination of 60% dammar resin and Resoltech 1050 epoxy resin with 1055 40% hardener. For these materials we determined: static mechanical properties from tensile stress (Young elastic modulus, yield strength, breaking strength), mass loss as a function of temperature by Thermogravimetric analysis of the two hybrid resins (dammar with epoxy resin, sandarac with epoxy resin), chemical composition by EDS (Energy dispersive spectroscopy) analysis with an SEM (Scanning Electron Microscopy) microscope.

It was observed that dammar resin, in all the cases, has increased mechanical characteristics compared to sandarac. Also, the samples reinforced with cotton have better mechanical properties compared to the ones reinforced with flax and silk.