

AN EXPERIMENTAL STUDY ON MECHANICAL OF A COMPOSITE MATERIAL FOR ORTHOPEDIC USE

M.BOULKRA, K. BEY, L. Alimi, S. BOUDIAF, A. Azzi

Abstract : This study consists in the mechanical characterization of a composite material used in the fabrication of orthopedic prostheses by ONAAPH (Annaba- Algeria). The studied composite is the result of a combination of a polymethyl methacrylate (PMMA) resin, fiberglass reinforcements and an absorbent of the resin, namely Perlon. The method adopted for obtaining specimens is the same as that used in the manufacture of prostheses. except that the shape of the mold used in our study is rectangular, allowing to obtain composite plates. The three-point bending tests were carried out on a MTS43 universal machine in the Advanced Materials Research Unit (URMA / CRTI, Annaba/Algeria). The identification of the damage mechanisms according to the mechanical loading conditions as well as the degradation of the constitutive elements, will be discussed.

Keywords : composite, mechanical tests, mechanical behavior, Finite Elements