

Thermal analysis of aging of a matrix polymer material reinforced with a glass fiber.

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Abstract : The objective of this work is to evaluate the influence of temperature variation on the oxidation induction time of a fiberglass-reinforced polymeric matrix material for prosthesis of a tibia. To do this, we used the differential scanning calorimetry (DSC) technique to calculate the oxidation induction time this last one is the time needed to start the oxidation of the material in an oxygenated environment with an isotherm. And thanks to which we could determine the variation of an isotherm for different temperatures as a function of time. The experimental results obtained show that the time required to start the oxidation of the material in an oxygenated environment with an isotherm (OIT) decreases with the increase of the temperature of the sample this is confirmed by a hardness test.

Keywords : thermal analysis, Polymer material, Oxidation induction time (OIT), hardness test