

MICROSTRUCTURAL CHARACTERIZATION OF GRANITE USED AS A LOADING ELEMENT IN EPOXY RESIN

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Brazil, besides having large reserves of ornamental stones is one of the main exporters of stones in the world. Linked to this production, it is observed the generation of a significant amount of waste from the cutting and processing of the rocks, which entails great environmental impacts. In this way, the great challenge of the ornamental stone sector is the rational use of this waste, making them an economically viable by-product for commercialization. The polymer industry, on the other hand, uses the incorporation of fillers to improve the thermo-mechanical properties, alter the surface appearance and, in particular, reduce the costs of the polymer composition. Thus, the knowledge of the characteristics of the load element and its influence on the polymer matrix is necessary. The objective of the present work is to characterize the granite powder prepared by conventional and high energy milling and its influence as reinforcing load on the thermo - mechanical properties of the epoxy resin. Different mixtures compositions (0% wt, 5% wt, 10% wt granite) were cast in silicone molds to obtain samples having the following dimensions: 50 mm x 10 mm x 3 mm. The results were obtained from the characterization of the powders using Scanning Electron Microscopy (SEM), dispersive energy spectroscopy (EDS) and X-ray diffractometry (XRD), with a better homogeneity of the obtained particles By means of high energy milling. The epoxy / granite composites were evaluated in a dynamic-mechanical analyzer (DMA), in the preliminary results, the formation of a material with very distinct properties when compared to the pure epoxy resin matrix.