PROPERTIES OF PMMA COMPOSITES AND RECYCLE INORGANIC FILLER

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In our studies, based on ecological concerns and search for materials and processes less harmful to environmental, there were used Poly(methyl methacrylate) (PMMA)/Recycle inorganic filler composite.

Poly(methyl methacrylate) - PMMA - is an important commercial plastic with application in many sectors such as aircraft glazing, signs, lighting, architecture, transportation, and civil construction. Recycle inorganic filler mainlyconsisting of iron oxide of industrial waste type of low cost.

The main goal of this work is improving PMMA performance by recycle inorganic filler, aiming to the obtainment of materials with a better performance and a comprehensive understanding of structure/properties correlation.

PMMA/recycle inorganic filler was prepared by polymerization. Polymeric formulations were prepared by a mechanical mixing of the components. It was relevant to provide the optimization of some experimental parameters such as the nature of organic peroxide, temperature, stirring, viscosity and polymerization process in order to prepare a material comprising an excellent dispersion of filler and an effective PMMA / filler interaction, besides a good appearance.

Several samples containing recycle inorganic filler previously mentioned were prepared. TGA, DSC and SEM techniques were accomplished. Afterwards, there were run. Characterizations from DSC and TGA indicated excellent resistance to high temperatures, an aimed property for product scope. SEM showed that the recycle inorganic filler are completely covered by polymeric matrix and the material presented an acceptable aspect.

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