Polymeric particle composites with filler saturated matrix

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Composites are materials which combine properties of two and more phases and create entirely new material. In case of the polymeric particle composites one phase – a matrix is represented by the polymeric material most often in a form of an epoxy resin and the second phase – a filler is composed of inorganic particles. The paper deals with the polymeric particle composites whose matrix is composed of the epoxy and polyester resin with a high concentration of a waste corundum (Al_2O_3) particles. The paper focuses on chosen mechanical qualities of these materials: an abrasive wear resistance and an impact strength. Increased portion of the filler in the matrix predetermines these systems to considerable abrasive wear resistance. This hypothesis was confirmed by carried out experiments when the volume loss decrease of the composite systems with the matrix saturated with the particle filler reached values 0.04 cm^3 whereas the volume decrease loss of the epoxy resin without the filler reached 0.56 cm^3. The maximum applied saturation of the matrix with the particle filler was reached at the polyester resin when this value corresponded to 50 volume percentages.

Keywords: abrasive wear, corundum, impact strength, saturated matrix

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