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# Toughness of a brittle epoxy resin reinforced with micro cork particles: effect of size, amount and surface treatment

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## ABSTRACT

Structural adhesives are increasingly being used for new applications, replacing conventional bonding methods. Epoxy resins are the most common structural adhesives used due to their suitable mechanical, thermal and chemical properties, as well for their low ductility and low toughness. Several researchers, have in the past decades, found it necessary to reverse these properties and find new ways to increase the toughness of these adhesives. There are many processes depicted in the literature on how to increase the toughness of brittle adhesives, the use of rubber particles being one of the most common. The inclusion of particles (nano or micro) is a successful method to improve toughness of structural adhesives. In the present study, natural micro particles of cork are used with the objective of increasing the toughness of a brittle epoxy adhesive. The concept is for the cork particles to act like as a crack stopper leading to more energy absorption. The influence of the cork particle size, amount and the presence of a surface treatment were studied. Cork particles ranging from 38-53 and 125-250 µm were mixed into adhesive Araldite 2020. The amount

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