

Utilization of microparticles of cork as reinforcing material for fragile structural adhesives

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Abstract— The inclusion of particles (nano or micro) is a method to improve the mechanical properties, such as toughness, of structural adhesives. Structural adhesives are known for their high strength and stiffness but also for their low ductility and toughness. There are many processes described in the literature to increase the toughness, such as rubber particles. In the present study, natural micro particles of cork were used with the objective to increase the mechanical properties of a brittle epoxy adhesive. The cork particles act like as a crack stopper leading to higher displacement of the specimen. The influence of the inclusion of cork particle was studied. Particles of cork ranging from 125 to 250 μm were mixed in the epoxy adhesive Araldite 2020 from Huntsman. This evaluation was made using tensile and impact tests and it was evident that mechanical properties were related to amount of cork particles in the resin, considering a uniform particle distribution.

Index Terms— cork; structural adhesive; mechanical properties; reinforcement material.

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