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Effect of acetic acid as catalyst on the properties of epoxy foam

Abstract

In this study, the effect of acetic acid used as catalyst in promoting the decomposition rate of blowing agent (sodium bicarbonate) in epoxy foam was done. Hard epoxy foam was produced using mechanical mixing technique. Epoxy foam has been tested with adding acetic acid at 5 phr and different content of sodium bicarbonate which are 0, 5, 10, 15, and 20 phr, respectively. The effect of acetic acid on the viscosity, density, mechanical properties, and dielectric constant has been studied. The results were compared between with and without acetic acid in the system. Viscosity reading was increased with increasing the content of sodium bicarbonate due to the rapid production of bubbles that created porosity in the structure of epoxy foam. The addition of acetic acid is able to reduce the dielectric constant. In overall, the density, flexural strength and modulus dropped for the epoxy foam with acetic acid as compared to that of without acetic acid.

Keywords — Acetic acid, blowing agent, dielectric constant, epoxy foam, sodium bicarbonate