Shear Strength at Sisal Fibre–Polyester Resin Interfaces: Use of Inverse Gas Chromatography to Study Pretreatment Effects

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Abstract

Inverse gas chromatography, IGC, has been used to investigate changes to the surface of Sisal fibres on treatment with sodium hydroxide. By determining the retention of a series of alkane probes and of probes with acidic or basic character, it was shown that little change to the chemical nature of the surface occurs as measured by the enthalpy of adsorption of alkane probes or the dispersion component of the surface free energy. This IGC study supports the conclusion of previous work involving S.E.M. which suggested that the major effect of the treatment was the removal of weak or adventitious layers from the substrate surface, thus increasing the interfacial shear strength when incorporated into polyester resin.

Keywords: Sisal fibre; adhesion; surface energy; inverse gas chromatography