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Investigation into the removal of a formaldehyde-free easy care cross-linking agent from cotton and the potential for subsequent regeneration of lyocell-type fibres

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Abstract

1,2,3,4-Butane tetracarboxylic acid (BTCA)-treated cotton fabrics were immersed in alkali for increasing time periods and the effectiveness of alkali in removing the cross-linking agent was investigated by surface (X-ray photoelectron spectroscopy, XPS) analysis, attenuated total reflectance Fourier transform infrared spectroscopy and solubility in specific solvents. The cellulose yield after the chemical ‘stripping’ processes was established and the effect of the alkali treatments on the degree of polymerization of the resultant cellulose determined. Surface analyses and solubility tests suggested that the alkali alone could successfully remove the BTCA from the crease resist-treated cotton fabric and produced a commercially viable yield of cellulose.