Surface and bulk chemical analysis of the durability of an easy care finish on cotton

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Abstract

The wash durability of the easy care finish Dimethylol Dihydroxyethylene Urea (DMDHEU) on cotton fabric under ISO 105 CO6 and CO9 test conditions and extended domestic laundering conditions was investigated by surface and bulk sensitive techniques, in particular X-ray photoelectron spectroscopy, elemental analysis and crease recovery angle performance. The presence of the finish was detected at the fibre surface through the N (1 s) photoelectron signal and saturation of the fibre surface with finish was demonstrated. The stability of the DMDHEU to ISO 105 CO6 and ISO 105 CO9 washing and domestic laundering was investigated and the durability of the DMDHEU finish on cotton demonstrated. The type of cross-linking between the DMDHEU and the cellulosic polymer chains was studied and related to the crease recovery performance. The implications for recycling of the treated fibre via fibre regeneration are discussed.

Keywords Easy care Cotton DMDHEU XPS Durability Laundering