Simultaneous Disperse Printing and UV-Protecting of Wool/Polyester blended Fabric

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Abstract:
A new approach for enhancing disperse printability and UV-protection functionality of wool/polyester blended fabric (50/50) was carried out through incorporation of 4-hydroxybenzophenone, as UV-absorber, or ZnO-NP's, as UV-blocker, into the disperse printing formulation [$\beta$CD (10g/Kg), Na-alginate (500g/Kg), Citric acid (10g/Kg), DMDHEU (10g/Kg), PEG-600 (20g/Kg), and Disperse dye (20g/Kg)]. The obtained results show that the enhancement in UV-protection capacity follows the decreasing order ZnO-NP's > 4-hydroxybenzophenone keeping other parameters constant. The opposite holds true for the depth of disperse printings. The improvement of UV-protection ability depends on the loaded UV-protecting agent onto the fabric surface; along with the positive impact of the used disperse dye on absorbing and/or blocking of the harmful UV-B radiation. The durability of imparted UV-protection property is still high even after 15 washing cycles.

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