Improving the Functional Properties of Endless Felt Blanket Used in Transfer-Printing Machines

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Abstract:
Technical textiles are the textile materials and products manufactured primarily for their technical and performance properties. Endless felt blanket is one of the technical textile which named Nomex endless felt, also called Nomex blanket or sublimation felt. This blanket is a very important part of printing process and has direct effect on printed image quality. The purpose of the sublimation felt is to press the fabric against the printed-paper and both against the heated calendar. The contact between the fabric and the printed paper needs to be long enough, to ensure the transfer of the dyestuffs to the fabric, using high temperatures (up to 230° C / 450° F), or less than 250° C. At the end of usage. The problem of this research is the repetitive exchange for the endless felt blanket on Transfer printing machines due to the long working hours that reaches to 18 Hrs. per day. The continuous rotational motion expose the endless felt blanket to tensile strength, elongation, compression force, abrasion and high temperatures (230° C). This leads to exchange it every 3 or 4 months which considered tremendous financial cost especially with rapid cost increasing of both Nomix fibers and it's importation cost.

The objective of the paper has been: to produce the nonwoven endless felt blanket suitable for using in the transfer printing machine with high tensile strength, low elongation at break, high abrasion resistance, high compression force resistance, high dimensional stability and high heat resistance, and to produce endless felt blanket with longer consumption period that exceeds 12 months by improving its properties by supporting the material with 3 or 4 layers of woven instead of 1 or 2 layers.

The obtained test results are presented and discussed. The sample made of 100% Nomix with (3400 g/m², puncture depth 13 mm) achieved the best results.

| Paper received 9th November 2016, Accepted 25th December 2016, Published 15th of January 2017 |

Keywords:
Dyestuff endless felt
Inner scrim
Nomex blanket
sublimation felt
transfer printing