

A study on the felting propensity of Egyptian and New Zealand wool fibers

Dr. Enas. A. H. El-Okda

Home Economics Dept., Textile & Clothing Division, Women's College- Ain Shams University, Cairo, Egypt

Abstract:

This work focuses on the effect

Felting is a unique property of many animal fibers. It is an ancient and historic way of transforming fleece into felt hats, caps, vests, skirts, boots, scarves and many other manufacturing felted products. In this research, felting propensity of Egyptian and New Zealand wool fibers has been examined. The Aachen felting test method was employed. The diameter of each ball and the density were calculated to recognize the felting degree. The effect of scouring, bleaching as well as four different variables of pre-treatment water baths - pH, temperature, liquor ratio and agitation- on the felting propensity of these pre-treatment fibers were investigated. Also, the effect of four felting medium – acidic, alkaline, salty and soapy mediums - on the degree of felting process was studied. The results show that the pre-treatment wool fibers in different water baths have higher felting propensity than untreated one (control sample) especially with scoured wool. There is a higher tendency of felting for bleached followed with scoured fibers than raw fibers. In the most cases of pre-treatment water baths; acidic medium has a remarkable influence on the propensity of fibers felting specially in case of using temperature and agitation. The acidic felting medium solution has a great influence effect on the values of felting fibers especially with raw wool fibers than scoured fibers in both Egyptian and New Zealand wool; and soapy felting medium has the lowest tendency on wool felting than acidic and alkaline mediums compering with buffer pH=7. The present study would help increasing the utility of the local wool in the industry to revive felt making industry and to increase the competitiveness of the Egyptian product and achieve greater Egyptian industry's ability to integrate into the global economy, creating new jobs and increase national income as a result of increasing the volume of industrial exports and reduce dependence on imports. Also this study can be applied on some agricultural wastes (non-wood plants) as potential resources and alternative fibers in textile and paper industries.

Keywords:

Felting
Scouring
Bleaching
Egyptian wool
New Zealand wool.

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