

SUSTAINABLE APPROACH ON HOW TO REDUCE THE WATER FOOTPRINT IN TEXTILES

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Abstract: In the textile sector, the water footprint refers to the total volume of water used to produce a textile product, from the cultivation of raw materials to the processing, finishing of the final product and multiple launderings used by the user. The water footprint includes both direct water use, such as the water used in textile processing, and indirect water use, such as the water used to grow the raw materials and to wash the final goods. The textile industry is one of the largest consumers of water worldwide, and its production processes generate a significant amount of wastewater. Even more, daily-care of clothing and household textile products includes multiple launderings during the entire life cycle of these products. Raising awareness of the water footprint and implementing strategies to reduce it is essential for the protection of the environment and human health.

The sensation of wetness humans experience while wearing clothing is one of the most important factors contributing to the physiological and psychological comfort during wearing [1]. The level of wetness of clothing can be defined as the combined effect of the amount of sweat rate and the ability of the fabric from which particular clothing is produced to absorb this moisture [2]. The accumulation of sweat below the armpit, which naturally is odorless, contributes to the growth of bacteria. Human microbiota consists mainly of Gram-positive bacteria. Using sweat pads to solve the sweat-related issues in the underarm region is an effective solution. These underarm pads can be easily incorporated into clothing and can be changed every day. The best result can be achieved by using double-layered textile pads composed of one highly hydrophilic layer and another layer which is highly hydrophobic [3,4]. Double-layered textile sweat-absorbing underarm pads with a natural antimicrobial treatment can be used to effectively solve the problem of the wetness sensation in the case of increased physical activity or human

hyperhidrosis. In addition, such changeable pads help to decrease the number of clothing launderings, i.e., significantly reducing water consumption and pollution during the entire life cycle of the clothing. Additional important aspect of sustainability is that the underarm pads can be produced from clothing production waste which is also a big challenge in the textile industry.

Keywords: water footprint, double-layered knits, sweat absorption.

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