

University of Zagreb Faculty of Textile Technology



BOOK OF PROCEEDINGS

**13th International
Scientific – Professional Symposium
TEXTILE SCIENCE & ECONOMY**

University of Zagreb Faculty of Textile Technology

**TEXTILE SCIENCE AND
ECONOMY
CHINESE-CROATIAN FORUM
BOOK OF PROCEEDINGS**

13th International Scientific – Professional Symposium

**Innovation, Design and Digitalization in the
Textile and Leather Sector**



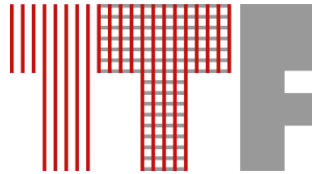
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HIST – Croatian Association of Textile Engineers



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COMFORT AND ANTIMICROBIAL PROPERTIES OF TEXTILES AND FOOTWEAR (IP-2016-06-5278)

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Abstract: Comfort of textiles for making garments worn next to the skin, for a specific type and level of activity and environmental condition is mainly determined by the type of raw material, type of yarn and knitted fabric structure. To differentiate the level of comfort and to propose a greater benefit, knitted fabrics made from single tricot yarns (ring-spun, rotor-spun and aerodynamic), SIRO yarn are used. Yarns (ring, rotor and air-jet) are spun from regenerated cellulosic fibres: Viscose, Tencel, Modal and micro Modal fibres. Knitted fabrics for making clothing are knitted in rib construction, while hosiery are made in plain jersey, in plated construction, multiple plated and jacquard construction. Polyamide multifilament yarn is added to knitted fabrics for making hosiery (socks).

In addition to the basic structural and tensile characteristics of yarns, knitted fabrics and socks, the thermophysiological properties (thermal and water vapour resistance using Sweating Guarded Hot Plate, and Foot model) of raw and finished samples are examined. Investigations of antimicrobial treatments of knitted fabrics against pathogenic bacteria include achieving satisfactory level of antimicrobial protection, good stability under daily use and care. Knitted fabric samples are antimicrobially treated using commercial available as well as new agents applied to the material by conventional finishing procedures and using plasma as a new environmentally friendly technology in the treatment of textile materials. Leather (for front side, lining and insole) and samples of other materials for the footwear samples are tested for the properties of thermophysiological comfort as well as parameters of thermophysiological comfort.

Antimicrobial activity of knitted fabrics and leather are determined according to 3 types of bacteria (*A. baumannii*, *S. aureus* and *E. coli*). On a number of samples of leather, the Comet test will be carried out (quick detection of damage and repair in a DNA molecule).

The evaluation of performance and functional characteristics of knitted fabric, leather and multi-layered material constructions by defining durability and stability of the performed treatments of materials by simulating the conditions of application and use (by implementing repeated cycles of washing and drying, abrasion, bending and assessing colour fastness rate to different influences) will be performed.

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