

STUDY, APPLICATION AND CHARACTERIZATION OF ECO-FRIENDLY SOLUTIONS FOR ANTIBACTERIAL TEXTILE FINISHING

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Abstract: The Spoke 3 ("Green and sustainable products & materials from non-critical and secondary raw sources") of the MICS ("Made in Italy Circolare e Sostenibile") project is focused on creating products and materials for advancing sustainability and circularity of Made-in-Italy sectors using alternative raw sources: waste, industrial residues and non-critical minerals. In particular, to promote greater sustainability of the textile supply chain, we are studying, developing, and characterizing bio-based treatments for textile substrates of both natural and synthetic origin.

In the DONIZETTI project ("Study, application and characterization of eco-friendly solutions for textile finishing"), in response to the growing demand for sustainable textile materials, formulations with components of natural origin (up to 75%) are being selected, using as a criterion the relative availability in the market that ensures their immediate industrial scalability. Furthermore, these products are chosen with the aim of identifying useful compositions for the development of matrices through which to propose functionalizing finishes (antibacterial, flame retardant, water repellent, photo-catalyst and, more generally, films with barrier effects).



Figure 1 Key elements of the project

Various bio-based polyurethane resins, citric acid, sol-gel, chitosan [1] and keratin extracted from wool were tested on cotton and polyester fabrics for textile antibacterial functionalization. Formulations containing natural bio-based antibacterial products were selected

and developed. These innovative and eco-friendly formulations were deposited on fabrics by impregnations and characterized for their antibacterial properties and resistance to washing.

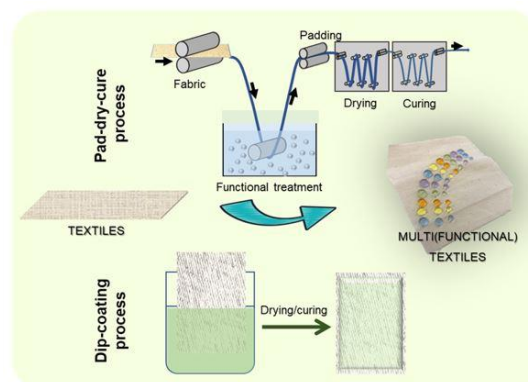


Figure 2 Deposition processes on textiles

Keywords: textile, bio-based treatments, antibacterial functionalizations.

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