

'TEXSHIELD: Environmental friendly and durable Oil and Water Repellent Finish on Textile'



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Project concept

In the current market, the well-known brands of textiles are usually protected with Perfluorocarbon chemistry to provide high durable oil and water repellent finish (OWR). The most common treatments are based on padding the fabrics with perfluorocarbons (PFCs) into the fabrics, due to their good water & oil repellence properties.

Unfortunately, the best performing PFCs, known as C8 also raise significant health and environmental concerns, by being very stable in the environment (bio-accumulative). Research has indicated that they are possible carcinogens and, consequently, PFC-C8) are currently subject to high regulatory pressure.

Various alternatives have been considered. However, neither the shorter chain PFCs (C6 or C4) nor the current silicone-based alternatives have been developed to a point where they deliver the necessary performance to meet the industry's durability and repellence standards.

Consequently, there is an urgent need to develop durable and equally performing alternatives to PFC-C8. Within the project a novel, cost-effective and environmental safe OWR-finish will be developed based on sol-gel chemistry or silicones providing equal performance and resolving the concerns of the current PFC-C8 based products.

Project Funding

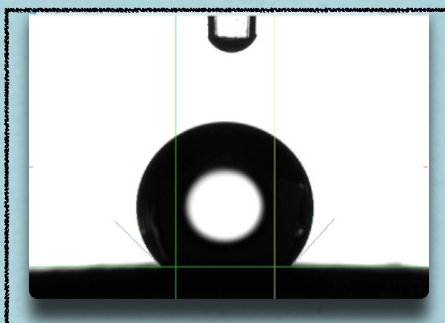
The project has received funding from the European Union's 7th Framework Programme for research, technological development and demonstration under



Project Objectives

The main purpose of the TEX-SHIELD project is to address the problems associated with textile protection by:

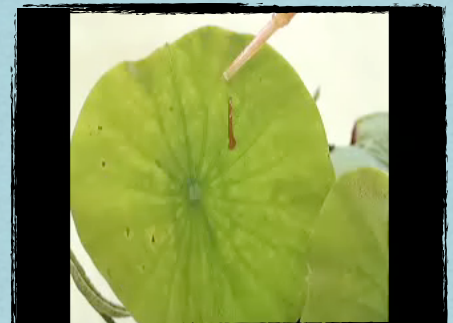
1. Eliminating problems with C8 PFCs-C8 by-products during finishing
2. Providing cost-effective alternative treatments to PFC-C8 with durable water (and oil) repellency.
3. Reducing the total fluorine content in the treatment by means of new sol-gel derived additives in the form of nanoparticles or inorganic-organic hybrid networks.
4. Developing a durable and flexible solution for a broad range of textile substrates with a low ecological footprint, based on REACH-proof chemicals and taking in to account safety and health issues.
5. Demonstrating performance on a representative scale, with regards to key technical parameters including soil resistance, abrasion resistance, cleaning cycle resistance.
6. Providing a full Life Cycle Analysis (including washability cycle) and assessment of techno-economic benefits, via benchmarking against current products.
7. Providing the necessary technological transfer and training via SME associations to ensure awareness and take up throughout the EC.



Superhydrophobic properties on textile



Pilot-coating machine for fabric treatments



Biomimetics: Lotus-leaflet as an example of self-cleaning surface