

## NEW WOOL DRY SCOURING PROCESS

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### Abstract

Wool taken directly from the sheep is called "raw" or "greasy wool." It contains sand, dirt, grease, and dried sweat (called *suint*); the weight of contaminants accounts for about 30 to 70 percent of the total greasy wool. The world production of wool in 2012 was 2.06 million tons (Source FAO STAT-United Nations (2014)) and Europe was the fourth largest wool producer in the world after China, Australia and New Zealand. Effective wool scouring is an essential step to remove contaminants that would otherwise impede its further processing. To remove these contaminants, the wool is scoured in a series of alkaline baths containing water, soap, and soda ash or a similar alkali.

The current outgoing effluent from wool scouring is extremely polluting, leading to the discharge of an effluent with high organic content. Wool scouring has a high environmental impact due to the wastewater generated, which involves difficult treatment and disposal, as well as an intensive use of resources, such as water and energy.

The LIFE project, Eco-Friendly Dry Wool Scouring with Total By-Products Recovery (WDS), develops a new methodology based on closed-loop processing with organic solvents enhancing the clean wool quality and recovering as by-products grease wool, and wool dust, avoiding waste generation of aqueous scouring.

The principal objectives of WDS project are the following ones:

- To develop and design a new wool scouring process using organic solvents.
- To obtain valuable clean wool of good quality.
- To maximize the value and recovery yield of wool by-products: suint, lanoline and dust.
- To save water and energy: reducing pollution loads in waste streams.

A prototype has been designed and constructed with the aim of achieving project objectives.

The WDS process has been focused on maximising the value of clean wool. Moreover, the WDS process separates and recovers each component of wool as by-products (wool grease for lanolin and suint and dirt for fertilizers). In comparison to

conventional aqueous scouring, there is a reduction in the amount of contaminant load of the generated waste effluents. Thus the complex and expensive conventional waste treatments and waste disposal are reduced.

In this LIFE+Environmental Policy and Governance project, two textile industries, one technological centre and one research centre have participated during the last three years.

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