

### Tecnological innovation on wool dyeing using liposomes

The design of industrial processes using milder experimental conditions (eg. lower temperatures, lower contamination, etc) is one of the most important challenges for the textile field. In this project, a new industrial dyeing strategy has been envisaged using liposomes. This process has been optimized, avoiding the use of conventional and synthetic dyeing auxiliaries. Basically, wool fibres at different presentation forms has been considered although other natural fibres (angora, silk, cachemir, mohair) and some textiles blends (eg. wool/acrylic) have been also dyed.

It has been demonstrated the suitability at industrial level of a liposome sample at a commercial competitive cost. The stability and physico-chemical characteristics of that liposome have been analytically checked. Additionally, some other liposome formulations have been investigated in order to improve dye migration in specific technical cases.

The industrial feasibility of this new dyeing process has been demonstrated maintaining or improving the quality of the dyed samples specially during the next stages of the wool processing. In fact, the previous dyeing of raw wool improves the material weight yield during the subsequent spinning process. A reduction of the temperature of the wool dyeing process based on the use of liposomes (about 10 °C) with the corresponding energy saving is the most striking advantage of the process. Additionally, the reduction of the pollutant charge of the dye bath wastewater due to the inherent biodegradation of the biological nature of the lipids used, may be an important aspect to consider this process as a clean technology. A value aspect added for the process is a better smoothness appreciated in the textil dyed.

Link : [Exhaustion curve of Metal Complex dyes](#) .

Link : [Results on linear density and twist of the yarns analysed](#) .

Link : [Results on mechanical properties of the yarns analysed](#) .

Link : [Friction results of the yarn analysed](#) .

Link : [Ecological impact of the dyeing process](#) .

Link : [Calculations of economical saving when liposomes were used](#) .