

OXATAN

Environmentally friendly oxazolidine-tanned leather

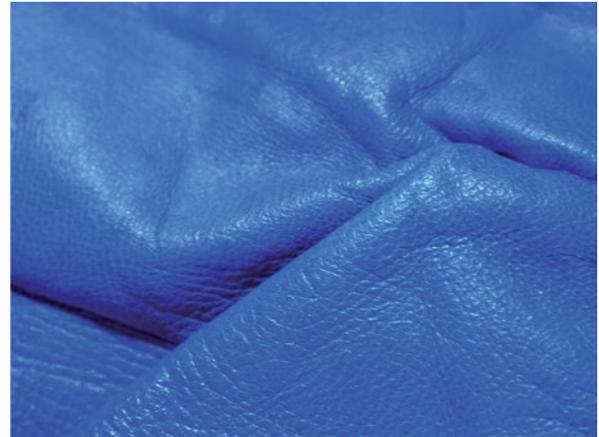
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INFORMATION ON THE ECO-INNOVATIVE SOLUTION PROVIDER

This eco-innovative solution is the output from the project titled “Environmentally-friendly oxazolidine-tanned leather” co-funded by the European Commission within the framework of the LIFE-Environment Programme. This solution has been developed by a team coordinated by INESCOP in partnership with the Italian company (CGS) and the Fundación Comunidad Valenciana - Región Europea (FCVRE).

SHORT DESCRIPTION OF THE ECO-INNOVATIVE SOLUTION

The eco-innovative solution consists of a new process for tanning leather with oxazolidine, in combination with synthetic or vegetable tanning agents. This innovative technology represents an alternative to traditional chrome-tanning, which can consequently improve the environmental impact of leather processing industries. The leather obtained by the new process has good physical strength and adequate smoothness, softness, fullness and flexibility. Also, the tanning degree of leather assessed by determining the shrinkage temperature (Tg), allows high quality leather with a lower environmental impact to be obtained for the footwear, upholstery and leather goods industries.

INDUSTRIAL SECTOR – MARKET SEGMENT AND ACTUAL APPLICATION IN INDUSTRY

31 Leather and leather products

INDUSTRIAL CLASSIFICATION - NACE CODE;

15 Manufacture of leather and related products

1. DESCRIPTION OF ECO-INNOVATIVE SOLUTION

Technical aspects of the eco-innovative solution

The oxazolidine tanning technology allows more environmentally-friendly leather to be obtained, which has a similar appearance, quality, properties and applications to those achieved using conventional tanning processes, usually chromium tanning. In this way, it is possible to considerably reduce the environmental impact generated during the leather tanning process as well as at the end of the material's lifecycle, either in the form of leather scraps in factories or when the leather articles are disposed of, because wastewater and wastes are chromium-free.

Oxazolidine tanning technology does not require a change in the equipment because this new technology is about a change in the tanning formulation (products and operational conditions)

The proposed solution allows leather to be tanned using a metal-free tanning agent without the need of using traditional, trivalent Chromium salts. Thus, both technologies can be used completely separately.

Oxazolidine tanning technology includes a final washing stage using a formaldehyde sequestering product, which yields a soluble complex that can be eliminated in the washing stage, meaning no formaldehyde waste results from this process.

The main technical operating conditions are available in the INESCOP patent that could be used by any interested tannery, by means of a technology transfer agreement.

Economic and environmental benefits of the eco-innovative solution

There is no need for new equipment investment but costs in chemicals are higher compared to those for chromium tanning. There is an increase of about 0.40 €/ft² of leather.

The basic price for accessing the patent is 9,500 € for the first year, including a one-week stay in INESCOP's laboratories and pilot tanning plants in Spain for one person, in order to get to know and practise the tanning recipes for the standard Oxatan tanning of cowhides. In the second and subsequent years, the right to use the patent amounts to 6,000 €/year. This new tanning technology can significantly reduce the environmental impact of tanneries wastewaters since it:

- Prevents the presence of heavy metals like chromium in the wastewater of the tanning process. In the traditional tanning process, 70 Kg chromium is consumed at different production steps for each ton of tanned leather that is processed. As a result, it prevents the presence of heavy metals in wastewater treatment sludge;
- Improves the biodegradability of wastewater, which favours biological treatment over the physical-chemical treatment.

2. AVAILABILITY OF THE ECO-INNOVATIVE SOLUTION AND BUSINESS PARTNERSHIP

Market readiness, Trade mark, existing market coverage, commercialization strategy

The solution is ready for full scale deployment but not on the market yet.

Requirements to adapt the solution to the local market and potential applications/market size

The process only needs to be adapted to the type of raw materials processed (bovine, ovine, etc.), type of leather manufactured (grain, split, covered grain, nubuck, etc.) and the final use of the leathers, e.g. footwear, leather goods, upholstery, garments, etc.

On-site after-sales services support and the technical assistance requirements

The solution is patented as "Procedure for the tanning, re-tanning and final dressing of leathers using oxazolidine E". Application No. P-201101051 (Filing date: 27th September 2011). Publication No. ES-2400883 Theoretical and practical training courses about this new tanning technology are provided at INESCOP's facilities in Spain, with the necessary equipment at pilot scale for the transference of knowledge.

Targeted local business partners

Tanneries

Type of local business partnership sought

Licensing