



METAL-FREE LEATHERS TANNED WITH OXAZOLIDINE

DESCRIPTION OF THE TECHNOLOGY

The present invention relates to those cases where tanneries and leather processing industries need to meet the market demand for the production of metal-free leathers, thus avoiding the use of traditional mineral tanning agents (trivalent chromium basic salts).

The appearance, qualities and properties of obtained leathers are maintained, hence making them suitable for use in the production of footwear, leather goods, clothing, upholstery, etc.

In particular, this invention describes an innovative tanning process based on a series of chemical and mechanical operations, which are carried out in three stages:

- Tanning, consisting in the stabilisation of the leather structure by the reaction of the collagen proteins with oxazolidine – as main tanning agent – combined with other synthetic or vegetal tanning extracts
- Post-tanning, to improve tanned leathers as regards appearance, strength, touch, flexibility, etc. by means of neutralisation, retannage, dyeing and fatliquoring, and finally,
- Final conditioning, to remove any free formaldehyde content present in leathers, in order to ensure compliance with applicable European legislation related to restricted substances in order to avoid drawbacks when said products are placed on the market.

In short, this invention aims to develop a procedure for tanning, re-tanning and final conditioning of leathers, based on the use of oxazolidine as main tanning agent, combined with synthetic or vegetal tanning extracts. This will allow for obtaining odourless, fine grain leathers of light colours, which have suitable smoothness, softness, fullness and flexibility properties. Also, obtained leathers meet the recommended standards of quality and chemical composition for the manufacture and commercialisation of leather products.

MARKET APPLICATION SECTORS

This invention is applicable to leather tanning industries aiming at obtaining metal-free leathers with suitable appearance, qualities, properties and applications, avoiding the use of mineral tanning agents. This technology is applicable to ovine and bovine leathers (full grain and split leathers) and pigskins, and it could be also applied to other types of animal hides and skins (goat, cross-breed, horse, reptiles, etc.).

TECHNICAL ADVANTAGES AND BUSINESS BENEFITS

This technology provides the following advantages and benefits:

- Obtaining of metal-free tanned leathers with suitable appearance, qualities, physical and chemical properties to be used for the manufacture of leather products.
- Meeting the current growing market demand for metal-free tanned leathers that comply with European legislation related to use of restricted substances.
- Reduction of the environmental impact of waste waters generated during the tanning process due to the absence of metals content, thus improving their biodegradability and enhancing their treatment.
- Reduction of the environmental impact of wastes generated during the process (shavings, trimmings, leather dust and sewage sludge) as well as at the end of the lifecycle of tanned leathers (either as trimmings resulting from the manufacture of leather articles or after the disposal of used products). The fact that these wastes are metal-free increases the possibilities of reuse and simplifies their management.



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CURRENT STATE OF DEVELOPMENT

This technology has been successfully used at semi-industrial and pre-industrial scale for the performance of tanning trials on calf, sheep and pigskins, following the procedure described in the patent. As a result of this process, it was possible to obtain white leathers (using synthetic tanning extracts) or in light beige colour (when vegetable retanning agents were used), odourless, with fine grain, softness, smoothness, fullness and physical-chemical properties suitable to be used for the manufacture of leather products. Furthermore, the suitability of these leathers for the manufacture of different leather articles was also tested; footwear, leather goods, garments and upholstery products were produced, and no incidences were observed in the manufacture of said items.

INTELLECTUAL PROPERTY RIGHTS

This technology is patent protected.

- Title: "Procedure for tanning, retanning and final conditioning of leathers with oxazolidine E"
- Application Number: 201101051.
- Date of application: 27/09/2011.
- Date of grant: 12/02/2014.
- Date of publication of grant of the patent: 19/02/2014.
- Publication Number: ES 2 400 883 A1.

COLABORATION SOUGHT

Companies interested in the following ways of cooperation are sought:

- Patent licensing agreement for the implementation and use of the technology.
- Agreement for the development of an R&D project (technical cooperation) for the final development of the technology and its placing on the market.

RELATED IMAGES



Tests in tanning drums
(semi-industrial scale)



Footwear products manufactured with
oxazolidine-tanned leathers

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