

令皮革回復彈性的嶄新處理方法

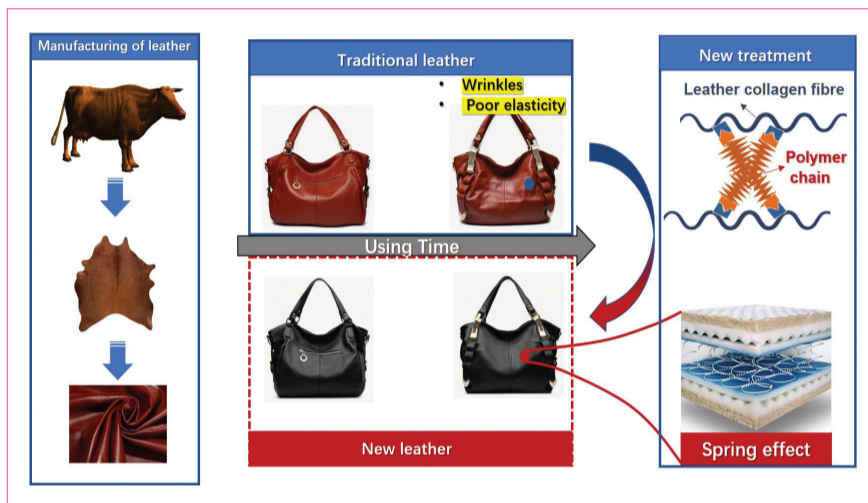
A Novel Treatment for Improving Leather Recovery Performance

含高分子彈性鏈的聚氨酯整理劑可助牛皮革回復高度彈性

A cross-linkable spring-like polymer finishing agent inserted into calfskin leather for high elastic recovery performance

專利申請編號: CN 201610189449.6 (中國)

由於膠原纖維之間的共價鍵（如氫鍵）的鍵合作用，皮革的壓褶回復能力，即壓褶彈性，會在使用過程中逐漸降低。目前提升皮革彈性的方法主要是添加柔順劑和機械拉軟，前者填充劑分子量較小，後者則僅有物理作用，故增強的效果都不明顯，亦不持久。在此項目中，我們利用活性端基之間的反應，在皮革中引入了新的高分子彈性鏈，該高分子鏈不僅能夠支援皮革的膠原纖維網路結構，還可以發揮「彈簧」的作用，幫助皮革在壓褶變形後恢復原來的形狀。



引入高分子彈性鏈支援皮革的膠原纖維網路結構
Inserting Spring-like chains between the collagen fibers to support the fiber network

The recovery property of leather after being stretched or bent will decrease over time because of intermolecular interaction, such as hydrogen bonding between collagen fibers. The current methods to improve leather elasticity include chemical-softening which leads to shorter polymer chains and mechanical-shaking which is a merely physical interaction. All these cannot reach an outstanding or durable effect. In this project, a novel polymer with spring-like chains is inserted between the collagen fibers by cross-linking to the active terminal groups of leather. Those chains will work as “spring” to support the fiber network so that the leather can spring back to its original shape after pressure deformation.

特色與優點

- 新型的聚氨酯整理劑可以與膠原纖維產生交聯反應，提升皮革的柔軟度和彈性。
- 整理工序簡單，該整理劑可以與現有的其他試劑同時使用。
- 該整理劑不含甲醛、重金屬和有毒溶劑，是環保的水溶性材料。
- 彈性回復能力高的牛皮特別適合製作需要易於維持形狀而柔軟度高的皮包。

應用

- 新型整理劑可提升牛皮、豬皮和兔皮等天然動物皮的彈性回復能力。
- 新型整理劑可改善皮革的性能，提高附加價值。
- 用新方法整理過的彈性牛皮革可以取代傳統皮革，應用於皮鞋和皮衣的生產上。

獎項

- 第45屆瑞士日內瓦國際發明展 — 銀獎 (2017年3月)

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Special Features and Advantages

- The new polyurethane-based chemical has spring-like soft segment which can form effective cross-linkages with collagen molecules to improve the elasticity of leather while maintaining soft hand feel.
- The new chemical can be easily used together with existing polymers during the post-processing of calfskin leather such as re-tanning, colouring and softening agents.
- A water-soluble solution, the new chemical is environmentally friendly without containing any formaldehyde, heavy metal or toxic solvent.
- The calfskin leather with good elastic recovery will be particularly suitable for handbag production which requires good shape retention and soft hand feel.

Applications

- The new chemical can improve the elastic recovery property of animal skins, such as calfskin, pigskin and rabbit skin.
- The new chemical can improve the performance and added values of leather.
- The calfskin leather with good wrinkle recovery is an alternative to the leather treated by existing chemicals which is applicable to the production of shoes and jackets.

Awards

- Silver Medal – 45th International Exhibition of Inventions of Geneva, Switzerland (Mar 2017)

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