

# **Factors that Influence Physical Properties of Vegetable Tanned Pig Garment Leather**

*Lihong Fu \*, WeiKuang, Huiln Tian, Xi'an Wang, Yincui Wang*

Shandong Institute of Light Industry, Jinan 250353, P.R. China

\*Corresponding author. Fu Lihong Tel: +86-( 0)531-86529116; Fax:+86-( 0)531-86529116 E-mail:  
fulh12@yahoo.com.cn

**Abstract:** The application of vegetable tanned leather is limited because of its weak intensity, bad flexibility, light fastness and low extensibility. The influence on physical properties of vegetable tanned leather depends on the vegetable tannin extract itself and the process conditions, however, the influence degree and primary and secondary relations of each factor are not clear. The effect of offers of tanning extracts and fat-liquoring agent and fat-liquoring temperature on physical properties of vegetable tanned pig garment leather are studied. A three factors and three levels orthogonal experiment was designed and the influence degree and primary and secondary relations of three factors on each physical property were determined through mathematical statistics and range analysis, on basis of which the internal relations between each factor and physical properties were investigated. The results show that the major factor responsible for physical properties, such as tensile strength, tensile modulus of elasticity, shrinkage temperature, extensibility, flexibility, break-up height and yellowness resistance is offers of vegetable tannin extracts. The break-up strength, tensile strength, extensibility, flexibility and break-up height are mainly affected by the offers of fatliquoring agent. It is benefit for the combination of collagen when increasing amount of vegetable tannin extracts appropriately, but the more fatliquoring agents, the weaker the crosslinked action and the smaller molecular migration steric hindrance. The fatliquoring temperature has relatively little impact on each physical property. Its effects mainly concentrate on break-up strength and tensile strength.

**Key words:** Vegetable tanned pig garment leather; Physical property; Influence factor