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First page example

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Study on Clean Leather Deliming Process with Sulfonated Phthalic Magnesium Salt

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Introduction

Leather deliming is a necessary link of leather processing, and even deliming will remove effectively the alkaline materials in the limed hide, and help processing material in the following procedures penetrate. The major materials adopted during common leather deliming are ammonium bicarbonate, ammonium chloride, ammonium sulphate and other ammonium salts, which feature low costs, simple processing and excellent effects. However, ammonia gas will be released from the deliming process applied with such salts and the content of ammonia and nitrogen in the waste liquid is high, jeopardizing the operators and environment seriously. Driven by the policy and regulations launched with regards to pollution prevention and control, and demands of clean leather making of leather making industry, the research aimed at developing and applying deliming agent without ammonium and nitrogen has become one of the hot spots of leather making industry.

These days, the deliming options without ammonia and nitrogen under discussion are mainly CO2, magnesium salt, organic acid and organic acid ester compounds [1]. Organic acid will actualize effectively deliming, and the speed is quick. But, the pH value drops greatly at the initial stage. In that case, the grain side of the limed hide is damaged easily and the leather quality is compromised. In addition, H2S will be generated when the pH value is quite low during the deliming process, doing harm to operators' health and polluting the environment [2]. CO2 is feasible theoretically for deliming, but the conditions for actual application are not ready in terms of equipment [3]. Magnesium salt can perfectly remove the calcium in the cup leather, as a result the content of ammonia and nitrogen in the waste liquid will be reduced greatly. This deliming process is mild, pH buffering is excellent, and grains for leather formation won't be affected [4]. Sulfonated phthalic acid is a kind of organic acid containing carboxyl and sulfonic group. It is mild by nature and will combine with calcium ion strongly. The sulfonated phthalic acid will be converted into magnesium salt, Sulfonated phthalic magnesium salt. With the excellent pH buffering performance of magnesium salt and the strong binding ability with calcium ion of organic acid, it can fully actualize safe and efficient deliming. The organic calcium salt that is easily to resolve will be produced in the deliming process.

In this article, the non-ammonium deliming agents sulfonated phthalic magnesium salt (SPMS) is used to carry out comparative leather deliming experiment against the ammonium sulfate and the major examination indexes are deliming speed, pH value change of deliming solution, and content of