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Application of highly carboxylate resins in aqueous emulsion for leather coating avoiding the use of isopropyl alcohol

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Abstract

Today, the first stages of the finishing processes of buffed cattle hides or full loose grain—known as impregnation—are largely carried out with acrylic resins and penetrating agents (typically, a mixture of surfactants and solvents). This application aims to strengthen the partially buffed grain layer bound to the rest of the dermis. To that end, a composition of emulsified acrylic resins is used, as well as a penetrating agent – usually isopropyl alcohol –, and water.

The process examined consists in the application of acrylic polymers in an aqueous emulsion that, because of their structure, size, and properties no longer require the use of the isopropyl alcohol contained in the penetrating agents. The use of this alcohol causes adverse effects on the health of workers that are exposed to emanations of isopropanol vapors (irritant to eyes, respiratory tract, and skin) in the work environment. Effects from prolonged exposition and inhalation may lead to headaches, dizziness, drowsiness, nausea and, ultimately, to unconsciousness.

By using the new polymers developed in this work, the negative environmental effects of the finishing process can be minimized. At the same time, the use of these highly carboxylate resins avoid the exposure to isopropyl alcohol, which is harmful to the health. In addition, the volatile organic compounds (VOC) are reduced without compromising the appearance, performance and fashion requirements that are expected in the final product.

Keywords: Carboxylate resin; impregnation; isopropyl alcohol; leather finishing

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