

Enzyme Based Method to Remove Hair from Leather for Application Purpose

Pollution is the main problem in the process for extracting leather. Animal hair is not completely removed and whatever is removed causes pollution and generates approximately 300,000 tonnes of solid wastes per year.

Though leather is a foreign exchange earner, the process of extracting leather is highly polluting and involves several steps to remove hair. Because of this, many tanneries have closed down.

Earlier chemical technologies were used to remove hair. This generated solid wastes due to loss of hair and poor quality of leather. The hair was not completely removed from the roots.

Researchers from CSIR-NCL are finding out the possibility of licensing the technology and discussions for the same are in progress. Two US patents No 6777219 and No 7186546 were granted for production and application of protease. In addition two more functional enzymes for de-hairing have been developed at CSIR-NCL. Complete evaluations in the tanneries upto the pilot scale have been carried out.

Microbial enzymes derived from bacteria have gained commercial interest because they are easily produced by submerged cultivation having properties such as high yield of enzyme, short, duration for production, and easy recovery of the enzyme.

Different methods such as the paint, paste, dip etc. are used for different applications of leather extraction. Penetration of enzyme is difficult depending upon the skin texture. The enzyme is applied and allowed to penetrate the hair. This is then kept in room temperature for about 12 to 14 hours and at the end of the application the hair is removed manually with minimum effort.

The enzyme has been scaled up at pilot level and trials have been carried out in commercial tanneries. The method used is totally synthetic. There are no chemicals added in the dehairing process.

References:

1. A. Amudeswari, P. Saravanan, J. Raghava Rao and T. Ramasami, (2009) 'Leather Bioprocessing: A Greener Finish', Biotech News, 4:7, February, page 4.
2. Two US patents No 6777219 and No 7186546 were granted for production and application of protease.
3. www.ncl-india.org

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