

# Sustainable Development in Leather Industry by use of Membrane Technology

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## ABSTRACT

The leather industry in India is a fast growing industry and occupies an important place in Indian economy. The industry has existed in traditional form from very ancient times. Production of the leather industry has been positioned, from a historical point of view at the top of the market, seeking to improve the quality and to launch innovative offers on the market. All the efforts of the tanneries along the years have resulted in improving the sustainability of their production. But in the other hand every leather industry produces a large quantity of wastewater having enormous amount of pollutants which have a deleterious effect on the environment drastically if it is discharged without appropriate treatment. The tanning processes are responsible for the discharge of uncontrolled COD, BOD, TDS, Cr (III), chlorides, sulphates, and other heavy metals.

It is clear from the study of some other papers that chemical or biological treatment followed by membrane separation has the potential capability to remove the harmful contaminants from tannery wastewater. A number of research works on tannery effluent treatment using different technologies, such as flotation, electrochemical treatment, sedimentation, coagulation, filtration, and ultra-filtration and reverse osmosis process have been reported.

It is proposed to clarification study of sectional stream and composite effluent from beam house operation of tannery industry was carried out using tubular alumina-clay based low cost ceramic membrane following cross-flow membrane filtration (CMF) technique. Sectional stream, composite effluent and pretreated supernatants were analyzed before and after membrane filtration study. Zirconia and alumina coated membrane over low-cost clay-alumina based membrane support were used. Physical properties of the elements were also determined. Membrane flux varied from 25 to 350 l/m<sup>2</sup>/h depending on the feed turbidity and membrane type at 1.2 bar, and permeate turbidity down to 1 NTU was achieved with 99% removal. So by using ceramic membrane we will proceed towards a sustainable development without harming the environment, and creating a pollution free surrounding for the present scenario and future generation.

**Keywords:** COD, BOD, TDS, cross-flow membrane filtration.

