

Reducing environmental impact in leather production with enzymes

About Novozymes

With over 700 products used in more than 130 countries, Novozymes' bioinnovations improve industrial performance and reduce raw material consumption by offering sustainable solutions to several industries. Novozymes' business is industrial enzymes, microorganisms and biopharmaceutical ingredients.

In industrial applications, enzymes can replace chemicals and optimize production processes. Enzymes can assist companies in improving their raw material efficiency, save energy and/or generate less waste. Novozymes has for more than 50 years been rethinking leather manufacturing processes to make them more economically viable and more environmentally friendly.

Reducing chemicals in leather production

Leather is produced from animal hides and skins in a long series of processes. Some of the first processes are soaking and unhairing which have traditionally been conducted with large amounts of chemicals. Small amounts of enzymes can, however, help the process running more smoothly and with substantial savings on chemicals. Less than 3 kg enzyme products per kg can replace 50 kg of chemicals. The reduced use of chemicals significantly reduces the toxic load of the wastewater and costs for sludge handling, which is a difficult and expensive process.

Global impact of using enzymes in leather production

As energy is used in production of chemicals, chemical saving in the leather industry means reduced contribution to climate change. Today, less than 10% of bovine hides are soaked and unhaired in enzyme-assisted processes. Assuming that the environmental improvements are applicable worldwide, the global potential savings from using enzymes is in the order of 0.7 million tons of CO₂ per year.

Learn more:

Novozymes uses Life Cycle Assessments (LCA) to document the environmental impact of enzymatic solutions compared to conventional methods. The data referred to here is based on figures from a major Chinese tannery that used both chemical and enzyme-assisted methods. Learn more about the optimization possibilities of enzymes and find the LCA study here:

- [Novozymes' enzymatic solutions](#)
- [LCA study based on Chinese tannery](#)
- [Other published LCA studies by Novozymes for several industries](#)