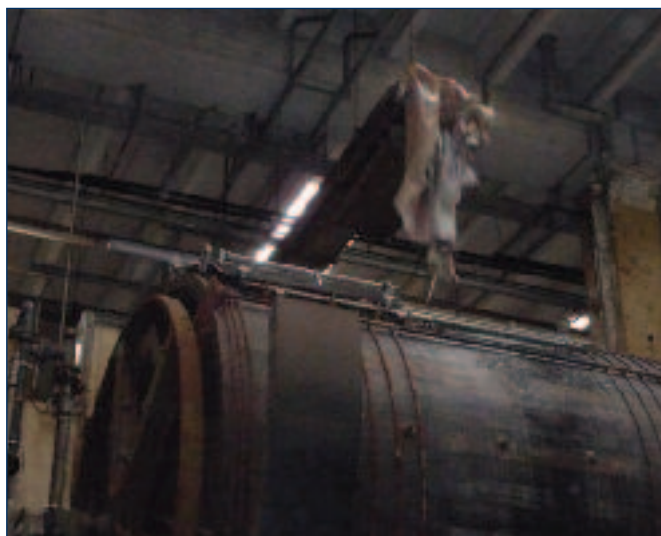




ProSoak, one of the products in the Proviera Biotech range, can be used to rehydrate hides and skins at any stage of the leather making process.



Replacing some traditional leather-making chemicals with products in the Proviera Biotech range can result in a reduction in load on effluent treatment.

A cultural revolution

Life sciences company SCD Probiotics has long encouraged companies using its technology platform to be creative. One customer in India decided to try the products, which are based on the actions of beneficial microbes, in tanning processes to great effect. The result is Proviera Biotech, a whole new spin-off that is now targeting the technology at tanneries around the world.

A spin-off from SCD Probiotics, a life sciences company that founder, Matt Wood, set up while still in college, Proviera Biotech has begun to offer a series of products that it says can help tanners around the world improve the quality of their leather.

Mr Wood founded SCD Probiotics while he was a student at the University of Missouri. He says he had become fascinated by the way microorganisms can affect human health. Part of his motivation was to try to understand a little better the loss of his mother a few years earlier. She died of leukemia, the cause of which was unknown, her medical team said at the time. Her son has come to the conclusion that a number of factors probably combined to cause the disease, including volatile organic compounds in paints (his mother was an artist) and the presence in her environment in Missouri (which has more farms than any other state in the US other than Texas) of the insecticide DDT, so widely used in the 1950s and 1960s. "I got into biology, agriculture, health, because of what happened to my mother," Matt Wood says.

Like other divisions of SCD Probiotics, Proviera Biotech is based on what he refers to as "good bugs", describing them as "Nature's building blocks for vitamins, antioxidants, amino acids", while bad bugs produce compounds that are toxic to health. His business model has always been to license the technology platform he has built, encouraging innovation

among the user organisations. It was an early adopter in India, Proklean Technologies, a partnership between a biochemist and a tanner, that first led to SCD Probiotics products being used in leather production. Now a range of products is available for tanners to use in soaking, degreasing, wetting back, dyeing and finishing, with tanners claiming to have made considerable savings in the amount of water and chemicals they need to use, and to have reduced chemical oxygen demand (COD) and biological oxygen demand (BOD) in their wastewater treatment plants; some are even reporting improvements in the quality of their finished leather.

Its products are 100% natural and biodegradable and, Proviera Biotech believes, present an effective and affordable alternative to solvent-based products that many companies in the tanning industry employ at the moment. "Our technology is not a silver bullet," Matt Wood says. "It's not magic and it's not one-size-fits-all. Also, we learned early on in talking to tanners that a combination of performance and affordability is what is key in this industry. But it can be used at all stages in the tanning process and can help make a difference."

Technology review

The Proviera range of auxiliaries is the end-product from the controlled fermentation of selected raw ingredients using selected bio-cultures. In leather making, the resultant products that are



ProSpread can improve dye penetration, with the elimination of ammonia.

produced from this fermentation can be viewed as a non-enzyme technology. In practice some of the traditional leather making chemicals can be replaced with these products, with a reduction in load on effluent treatment. This is due to the replacement of traditional chemicals, that can be difficult to degrade, but possibly a greater breakdown of components released from the skin structure during the processing stage.

There are three products in the range at the moment (the company intends to expand this), and these can be used alone or in combination:

ProSoak: This product can be used as a wetting agent to rehydrate hides and skins at any stage of the leather making process. It allows a wetting back of the structure where water may have been lost during curing or transport. It eliminates the need for bactericides in soaking for up to 24 hours, it may help improve the performance of unhairing and liming auxiliaries, and appears to reduce the levels of draw and growth marks. The percentages required are similar to those required with traditional products:

Pre-soak: 0.1 – 0.5%
Main soak: 0.3 – 1.0%

It also improves the wetting back of both wet blue and crust leathers without a need for surfactants or other products. In this situation a 0.5% offer on the shaved weight is the guideline requirement for both wet blue and wet white leathers.

ProDegreaze: This product is a low foaming degreasing agent, and can be used in beamhouse processing to help the release and dispersion of natural fats. It can also be used in the retanning/dyeing/fatliquoring processes to help achieve more uniform uptake of these products. The percentages required are:

Main soak: 0.1 – 0.3% on fresh or salted hides.
Delime/bating: 0.3 – 0.5% on fleshed weight.
Washing wet blue and wet white: 0.5% on shaved weight.
Wetting back crust leathers: 1.0-3.0% on dry weight.
Degreasing sheepskins: 1.0-5.0% on pickled weight.

ProSpread: This product is a natural dispersing agent and can be used in the beamhouse to help remove unstructured proteins from within the structure, blood and dirt. It can also be used in the retanning/dyeing/fatliquoring process, and can improve dye penetration, where 100% penetration has been achieved with the elimination of ammonia as previously employed. The guideline percentages required are:

Pre-soak: 0.1 – 0.5% on raw hides/skin weight.
Washing wet blue or wet white: 0.5% on shaved weight.
Wetting back crust: 1.0-0.3% on shaved weight.

These products have been applied in tanneries in many countries and have provided the following advantages.

In demonstrations in Brazil, a pre-soaking stage was eliminated, and the main soaking time reduced from 2.5 hours to 1.5 hours. In Colombia, the main soaking time was reduced by more than 10 hours. Significant reductions in the BOD, COD and nitrogen were also found in these and other trials in Germany and China. In addition, there were savings in water in demonstrations in India, China and Colombia where the number of washes was reduced.

In dyeing processes, complete dye penetration has been achieved using ProSpread. This has completely replaced ammonia, with the advantages of retaining a tighter grain structure, and eliminating the use of a difficult product.

SCD Probiotics offers products that can also be used in combinations within the activated sludge treatment stage when treating tannery effluent. In this situation they can be drip-fed into this process and help prevent the development of odour.

In leather processing, the precise way that these products work is not clear. These are new products, being the outcome of controlled fermentation and do not compare directly to traditional chemicals such as wetting agents, bactericides, enzymes and penetrators. Because the fermentation is based on natural products and selected cultures, these products remain non-hazardous and do not need special equipment for handling. ☺