



Wet-Green Leather: the ultimate green tannage

Thomas Strebost, Chief Executive and Frank Fiedler, Managing Director
Heller-Leder GmbH & Co.KG, Germany



A new tanning system has moved from concept, through the development stages and now into manufacture on production scale. Based on initial development work by Lederinstitut Gerberschule Reutlingen (LGR) in conjunction with N-Zyme BioTec GmbH, this new tannage has been turned into a practical reality by Heller-Leder.

Until now, the leaves as residue from olive oil production in the Mediterranean area have been deposited or simply burned as waste. But now, tannins are being extracted on a commercial scale by N-Zyme BioTec GmbH, to form a new patent-protected tanning agent.

Industrial development began in 2010, when Heller-Leder took the opportunity to advance these initial investigations into a commercially viable process. After a period of almost 18 months of adjustments and refinement within Heller-Leder, these new leathers are now available in three different textures as finished leathers for footwear, automotive and furniture leathers.

The technology can be summarised as follows:

- The process operations from raw hides to the delimed and bated state are standard practice within the company. The raw hides are mainly in the green condition, are processed using a hair saving process, are tenside-free, and employ carbon dioxide deliming systems. These processes are long established within Heller-Leder to minimise the environmental load from pre-tanning operations.
- The tanning concept then shifts towards true green technology, as the cumbersome pickle stage is completely side-stepped, totally eliminating the use of sulfuric acid and salt as conventionally required within the tanning process. This is a major contribution to green technology: if green hides are used then the use of common salt – the most difficult component to address in waste management within the leather industry – is completely eliminated.
- In the event that hides are processed from the wet salted condition, then it has been calculated that by the elimination of the pickle stage, and neutral salts associated with chrome tanning agents, then the salinity is reduced to 56% of the conventional load.

- Tannage commences at a pH between 6.5 and 8.0, and can be completed within the time frame associated with the conventional chrome tanning process.
- The new tannage produces a stable, green coloured leather with a shrinkage temperature of 76°C so that some comparisons might be made with wet white. However, this leather is based on truly natural products, and even has a fresh environmental odour in the wet and crust state that is similar to olive leaves.
- As with other leathers, individual characteristics are developed in the retanning and fatliquoring processes, and these are fully compatible with this new tannage. Standard vegetable extracts, syntans, polymers and fatliquors can be used, with no need for any chrome, aluminium or other metal-based products. A full range of dyeing is also possible.
- Wet-Green is easy to handle: it does not cause problems if splitting is needed, and within shaving operations.
- Among the huge environmental advantages is the fact that the inevitable solid wastes produced – such as leather shavings and trimmings – are completely biodegradable. They can be composted with other waste products, used directly as fertiliser, and there is the scope for new uses within innovative outlets where complete bio-degradation is the objective at the end of a products life.
- Within effluent treatment, the waste-water from tanning is totally bio-degradeable.
- The inhibiting effects from salinity within effluent treatment systems are avoided.
- Of longer term significance, the leathers themselves at the end of a useful life cycle can be bio-degraded, or simply incinerated with other waste offering the potential for energy recovery.

In conclusion, this Wet-Green Leather makes no new demands upon precious natural resources. For the first time, olive leaves as a waste material from 15 million tonnes of olives that are gathered each year are used in an innovative tanning agent. The environmental load created by depositing and burning this waste is avoided: there is scope for the olive growers to earn money for this remnant, so there is economic support generated for the olive growing regions. ☺

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