



Oak bark for quality tanning

CREDIT: RENDENBACH

Oak bark soles

For thousands of years leather was produced using plant extracts and other natural materials. Over time, some were shown to produce better results than others. The bark from certain types of tree, particularly the oak, seemed best and bark tanning became the norm for almost all leather up until the discovery of chrome tannage in the late 19th century. It is now very restricted where footwear is concerned but still used to produce the very best quality leather soles.

The expression tanning comes from tannin, the name given to the extracts used and its roots lie in the old High German word *tanna* meaning oak or fir tree. Tannin is an astringent molecule that bonds readily with proteins and is present to varying degrees in almost all plant forms. Trees have good levels concentrated in the bark layer where it forms a barrier against micro-

organisms such as fungi and bacteria. It is this molecule that lies at the heart of the bark tanning process.

TYPES OF TANNIN

There are two types of tannin: catechol and pyrogallol. Catechol is more astringent, tans more quickly and makes pink, red or dark brown leather. Mimosa, birch, quebracho, alder and fir all contain it. Pyrogallol deposits an acidic sediment called 'bloom' which helps to produce a solid leather with the good wearing and water resistance properties required for soling. Colouring varies from creamy or yellowish to light brown. Sumac, chestnut, oak galls and oak-wood all contain it.

Oak bark has both and is the principal source of tannin used for bark tanning although some spruce, valonia and mimosa are also employed. Bark is collected in the spring when the sap begins to rise and the leaves come out as this is when it will peel most easily.

Tannin is concentrated in its inner or cambium layer and at the lower part of the tree. Once collected, it is thoroughly dried after which it can be stored indefinitely, ready to be ground as needed for use in the tanning process.

OAK BARK LEATHER

Oak bark leather is extremely durable and oak bark tanned soles will outwear all other vegetable tanned soles by a considerable margin. It also produces a flexible, lightweight and water resistant sole due to the slow and gentle nature of the tanning process that ensures the fibres in the leather retain their original weave. Furthermore, due to the fact that the tannin protects the tree against fungi and bacteria, it does the same in footwear so that shoes with oak bark tanned soles and insoles provide a healthy environment for the foot.

It is also easy to work once wetted back and allowed to mellow. It then

becomes easy to mould to shape, channel and stitch in the welted process of manufacture and, if allowed to dry out naturally, will hold its shape permanently. Lighter weight shoulders and bellies are used to produce insoles, toe puffs and counters in hand made and the very best machine welted shoes for this very reason. The fact that the hides used are also selected to be free of blemish means that oak bark soles need very little scouring at the finishing stage which again helps to prolong wear.

PROCESSING

The actual tanning process is carried out in a series of oak lined pits about three metres in depth with no drum work involved at any stage. The concentrations of tannin used are quite low so it is also a lengthy process in order for the leather fibres to be thoroughly tanned. It is this combination that gives bark tanned leather its special properties.

It is also a time consuming and costly process due to the sheer number of hides in progress during the twelve months it takes to complete it, so shoes with oak bark soles are inevitably expensive. They are however looked upon by those who buy them as a long term investment and, properly looked after and repaired, they can have a very long life indeed. While there is naturally some variation between tanners, the procedure for tanning oak bark soling leather is broadly as follows.

PREPARATION

First grade hides of 36kg and above are carefully selected for overall quality and lack of blemishes or imperfections. These will come to the tannery salted for preservation, so they must first be thoroughly slaked to remove the salt. Hides of this sort of weight are large, heavy and difficult to handle especially when wet, so they are often cut up into the standard sections of double or single butt, shoulders and bellies at this stage although they can be left uncut until the end of preparation if preferred.

The resulting hides or sections are further soaked to rehydrate them and restore flexibility, fleshed and then limed in a solution of around 2% hydrated lime in water. This is stirred



Oak lined pits are used for the tanning process.

CREDIT: RENDENBACH

daily and the hides or sections moved through a series of pits over a two week period after which they are ready for dehairing. This process is very important to the finished leather as no sodium sulphide or mechanical action is used which would damage the natural fibre structure. After dehairing, they are fleshed (if not already), delimed and sectioned (again if not already done) ready for tanning.

TANNING

The first stage uses a series of up to a dozen pits containing tanning liquor ranging from a maximum 30% bark down to 10-12% at the end. The high strength liquor uses the tannin directly extracted by soaking ground bark and is fed into the first or 'top' pit from which it is successively pumped down a pit per week until reaching the last or 'bottom' pit where the sections start their tanning.

Sectioning the hides is essential before this point so that each can be suspended in the liquor in order that the tan is evenly absorbed. Each week they are moved on to the next pit until finally reaching the final top pit where

they are layered on top of each other with ground oak bark scattered between each layer and fresh liquor added. Each pit takes about 80 butts and they remain there for between nine and ten months. During this time they will be pulled out once for a further dusting with ground oak bark to top up the strength of the liquor. The total tanning process therefore takes approximately one year from start to finish.

FINISHING

The sections are thoroughly washed once more, excess moisture removed, the flesh side smoothed and the grain side oiled to fix the tanning agents, lubricate the fibre structure and give the leather a supple feel. They are then air-dried for up to a week until the moisture content is down to about 14%, then dampened, piled to mellow, rolled and hung up to dry for the last time. As remarked earlier, it is a laborious, time consuming and expensive process, but one that produces without exception the best leather soles that money can buy.

As already indicated the process of

bark tanning stretches back into the mists of time, yet there are very few such tanneries remaining. In Europe there are now only two: one in Germany and one in the UK. While both are long established, one of them has a particularly long history as a tannery site.

JOH. RENDENBACH, JR.

Rendenbach has practised the time honoured craft of bark tanning in Germany's oldest city Trier for 141 years and, from around 80 such tanneries a century ago, the company is now the only one to have survived. Established in 1871 by Johann Rendenbach, Jr., the company has remained in the same family ever since and is now led by the founder's great-grandson Hanns Rendenbach, Jr.

During its existence, the company has experienced two World Wars, the second of which saw it totally destroyed by bombing. The tanning pits however survived and since re-opening in 1948, the tannery has gone from strength to strength. Nature still provides the main raw materials employed, however, just as it did at the beginning. The agents it uses for this intensive but gentle form of tanning are mainly oak but with some additional spruce and mimosa bark and valonia (oak tree galls), to produce very high quality leather indeed.

Rendenbach concentrates on supplying the very best shoemakers, orthopaedic suppliers and repairers under its internationally recognised JR brand. Its finished products include bends for soles and insoles, orthopaedic necks and bellies and specially treated perspiration necks and bellies also for orthopaedic applications. A separate part of the tannery converts some of tanning output into cut components such as soles, insoles, toepuffs, counters and welts. It also produces top pieces with rubber tips, special soles with vulcanised rubber treads as well as complete heels and sole units to individual customer's requirements. By a continued allegiance to its traditional tanning process and of making no concessions in the

pursuit of quality in its finished products, the company has gained an enviable list of high profile customers across the world.

J & FJ BAKER & CO. LTD.

Even older is J & FJ Baker, situated Colyton in the south west of the UK. Its origins go back to the time of the Roman occupation two thousand years ago if not further. The site was ideal for tanning as there was oak for tannin, limestone to produce lime for dehairing and abundant water from the local river. It has been in the Baker family since 1862 and Andrew Parr, the current managing director, is the great-great-grandson of FJ Baker. He says: "One reason why oak bark tanneries tended to stay in the same family is that the process is one that has always been handed down from generation to generation and, as each tannery had its own peculiarities, it was not knowledge that anyone could readily acquire from books."

Baker uses nothing but oak bark tanning agents and sells 50% of its finished leather either as butts, shoulders and bellies or pre-cut components to the best Goodyear welted and hand sewn shoemakers in the UK. The top end of the footwear market has remained busy despite the current economic downturn as, while volumes are not large, a demand is still there for shoes reflecting the very best in terms of quality and exclusivity.

Oak bark tanners were traditionally also curriers producing leathers for saddlery and harness makers; Baker still does and this accounts for the other 50% of the tannery's output. After tanning, butts are shaved to a level substance and retanned in sumac to soften the leather and give it a paler colour. It is then dressed or 'curried' with fish oils and mutton tallow using traditional hand tools for setting, whitening and staining. This feeds the fibres and makes the leather softer and more supple, as well as stronger and more water resistant. The demand for top grade equine equipment also remains strong internationally and the majority of this output goes for export. 📌



Airing loft. CREDIT: RENDENBACH



Rolling oak bark leather. CREDIT: J & FJ BAKER