In a high tech world, manufacturers and designers occasionally need to be reminded that the man-made and synthetic are not necessarily the only materials to be considered, nor that they are automatically superior to the natural product they were designed to replace. The right material may still grow on trees.

Barking up the right tree



English is a strange language - the commonly used expression is 'barking up the wrong tree', usually used when one is about to make a mistake or following a false lead. In this instance, however, it should be 'barking up the right tree' when it comes to finding an astonishingly versatile material that has far more uses than simply to be removed from a bottle of wine with a handy cork-screw. We are talking cork - the reason for inventing the cork-screw. Holidaying in the Algarve area of Portugal one cannot fail to notice the thousands of cork oak trees, the *Quercus Suber* - from which the cork is harvested.

Cork is surely a superb example of sustainable development. Portugal is the world's leading producer of the material, with plantations covering some 725,000 hectares. The country generates on average 185,000 tons of cork bark a year out of a world production of about 340,000 tons. The largest cork company, the giant Amorim group, accounts for more than half the country's cork production and is the major player in the world's supply chain, investing heavily in research and development. The other principal cork producing countries are Spain, Algeria, Italy and some North African countries bordering the Mediterranean. Interestingly, worldwide, the geographical spread of the vine coincides with the location of the cork oak!

Besides the use of cork as bottle stoppers, other major users include the building and construction industries, from sealants and flooring to acoustic wall coverings.

Careful cropping

The government controls all of Portugal's cork forests and there is strict legislation covering forestry management and cropping (which takes

place between June and August). Trees are 25 years old before the bark is harvested for the first time and nine years will elapse before the bark is cropped again from the same tree. A tree yields some 60 kg of cork each time it is cut off and the life expectancy of a cork oak is generally about 170 years.

The use of cork to seal wine containers goes back to Ancient Roman times but it took the bottling of champagne in France towards the end of the XVIIth Century for its use to become wide-scale. Its use in sporting activities is probably more recent although its use in footwear goes back many centuries.

Comfort on the foot

Foot comfort is just one of the many uses for cork. Besides cork soled shoes and sandals (which also go back to Roman times), Vega Industries in France, for instance, produces a range of insoles which are 98.9% cork agglomerated with 1.1% latex. It provides excellent insulation, absorbs moisture, is anti-bacterial, anti-allergenic, anti-microbial, recyclable and washable at 40°C. These are all properties which have required large investments in chemistry and science in other sectors. Cork also provides excellent shock absorption and cushioning. Another Italian company, Pidigi of Verona, has even developed a light cork fabric for footwear which can be printed, dyed, embroidered, embossed, washed and ironed.

But there are many other properties which make cork a desirable component - its lightness, its ability to regain shape after compression as well as its good shock absorbency and wear resistance. (Air accounts for half the volume of cork.) Besides insoles, cork is also used in heels and midsoles.

From angling to skiing

The fact that cork floats has been a well used feature, especially in angling, a sport which probably attracts more active adherents than any other. Used since ancient times for helping fishermen keep track of their nets, cork also supplies the material for the grips on rods. Manufacturers can shape the cork grips to their designs.

Wherever grip is required, cork tapes and ribbons will probably supply the answer. For instance, Cinelli handlebar tape, made in Italy, is seen as a desirable blend of durable polyurethanes and 100% natural cork. Not only does it feel comfortable, the tape maximises shock absorption. The company invented cork tape over twenty years ago and its Cork Ribbon is considered the most popular handlebar covering in use. Cinelli takes 1mm bits of cork and disperses them through an EVA enhanced, shock absorbing polymer compound. For the team minded or fashion-conscious cyclist, the ribbons and tapes come in a variety of colours.

Badminton players also enjoy the benefits provided by cork, being used as the principal component along with the essential 16 feathers, as manufactured by Postsky, one of the major producers. The sharp end on the stem is punched into the cork using semi-automatic machines while the careful glueing process ensures that the cork and the feathers work and fly together. Indicentally, on top quality shuttlecocks, all the feathers must come from the same wing of a Chinese-bred white goose.



After stripping the cork is piled in the forest

In the high-tech world of golf clubs, where metallurgy is playing an ever increasing role, it is encouraging to find that one manufacturer claiming extra performance acknowledges cork as being the secret ingredient. Wood Bros. focuses on its Kool Cat club, described as the 'original cork-filled bat of golf'. Senior players claim that the club gets the ball up and out while low handicappers reckon that the corked woods are longer off the fairway than metal woods (this is not a contradiction in terms, merely an acknowledgment by the game that a wood club was historically made of wood, such as persimmon or maple). It is claimed that the cork-powered performance adds distance and accuracy. The cork-filling is said to give the Kool Cat spring-loaded power, while replacing the heavy wood with lightweight cork. Given the compressibility and recover properties of cork, it is a claim that can be easily understood.



The cork granulate allows multiple applications

Main photo and above: courtesy Corticeira Amorim, Portugal

Most rubber grips on clubs are made by adding granulated cork to the liquid rubber. Besides cork making the grip lighter, the rubber/cork blend is checked to ensure the proper viscosity required. Softballs also use cork for their centre. The Optic Yellow Fast Pitch softball from Wilson is just one. In fact, it is quite astonishing just where cork pops up in the world of sport, albeit that its use in sporting activities is small by comparison with its major uses. Even in the unlikely world of skiing, when it comes to grip waxes (and glide skis), it is a case of simply rubbing wax on and using a cork block to smooth it.

Next time you have a gripping problem, perhaps the solution will be growing on trees.

David Buirski