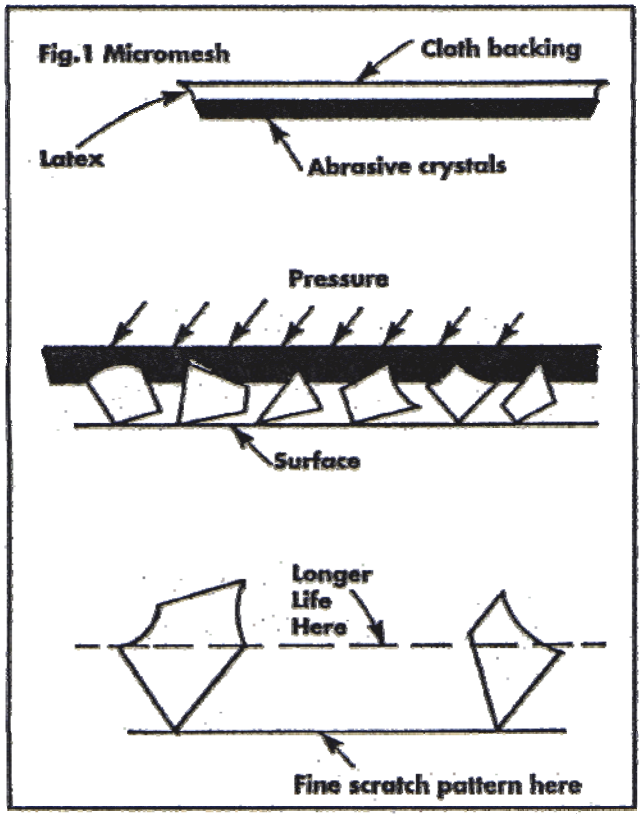
WELL OILED WITH ADAMSON

Winner of the Henry Flack award for the best finish in the last Woodworker Show, *Stewart Adamson* has made a special study of oil finishing.



So you have completed your pet woodwork project and are ready to apply the finish. 'Hands-up' anyone who is fearful of totally spoiling their beautiful piece of woodworking due to difficulties in the finishing process! Well fear no more because the method described in this article is simple, foolproof and produces consistently excellent results! Although the article will describe the method applied to finishing musical instruments, and briefly describe the results when applied to wood turned articles, the procedure can be readily adapted to any woodworking project

I make classical guitars, lutes and balalaikas and I am aware that the problems experienced by many woodworkers in wood finishing are accentuated in finishing such instruments, particularly the classical guitar. This is due to the complex shape of the guitar and especially in finishing the soundboard which should have as thin a coat as possible so as not to deaden the tone of the instrument.

Over the years, I have avoided the traditional finish - french polish - since I have neither the time nor the inclination to finish such an awkward shape using this method. 1 have tended to spray finish my guitars, initially with acid catalysed lacquer then, more recently, nitro-cellulose lacquer; I have also tried water based lacquer. Spraying presents some major problems and constraints for the 'amateur' finisher, most significant of which being the provision of warm, well-ventilated, dust-free conditions. Most woodworkers would find all these pre-requisites for a good finish very difficult to achieve; I endeavoured to meet them by hanging plastic sheeting around a work area arranged in half of my double garage and spraying with the door open on a still, warm summer day. This is not only a difficult combination of conditions in the UK (!!) but is also highly restrictive since it means I must always build my instruments during the cold, damp winter months in order to meet the summer spraying "weather window".

The problems do not end there! Spraying involves, inter alia: filling the wood grain; sealing the wood to prevent colour leaching between woods; spraying; cutting back; repeated spraying and cutting back. This process can be very time consuming, messy and problematic on a guitar since in trying to minimise the thickness of lacquer, it is so easy to cut through the finish. If you are using acid catalysed lacquer, you really do have a problem since, once cured, you cannot satisfactorily spray over as the process is not reversible and the second coat cannot adhere to the surface of the initial coat. Even if you can spray before final curing occurs, it is likely that cut-through areas will re-appear as unsightly 'tidemarks'. Nitro-cellulose and water-based lacquers are reversible and do not therefore suffer from this problem although 1 have found them to be softer than acid catalysed finishes and thereby more difficult to cut-back and burnish.

All in all, there have been occasions when I have despaired of achieving a super-finish on my guitars without all of the hassle 1 have experienced with spray-finishes. After considerable research I have found the ideal solution • oil finishing. The immediate advantage to me is that the process of oil finishing is not weather dependant as it can be applied indoors without too much displeasure being caused in the household since the aroma is not unpleasant, and little different to the smells created in polishing/oiling household furniture. Also, oil finishes tend not to highlight surface defects and are very easy to repair.

The principal aesthetic differences between the oil finish and the lacquers I previously used are:

• I no longer fill the grain on open-pored woods. The open-pore appearance is natural and highly attractive.

• I produce a satin sheen finish and not a high gloss; this also is very attractive and closer to the appearance of natural wood than high gloss finishes (for those who like a gloss finish, a gloss tung oil is now available in USA).

Surface preparation

Before describing the types of oil available and their application, the preparation of wood must be addressed. Although it is important to produce a smooth, scratch free wood surface, before applying any type of finish, if a little more care is taken before applying oil, the results produced will be superior to anything you believed possible. Unlike spray finishes, oil does not build up layers on the wood, thereby concealing surface roughness to a degree, but tends to be absorbed into the wood. In the case of guitars, this action is controlled so that the resonant characteristics of the soundboard are not altered.

Key to the attainment of an excellent finish is the use of a high technology abrasive, called 'Micromesh', which was developed for the aerospace industry to remove abrasions from aircraft/spacecraft windshields. Micromesh is a cloth backed, cushioned abrasive with a resilient layer of material between the back and the abrasive. When pressure is applied during 'sanding' operations, the abrasive particles recede into the resilient layer; the particles also rotate slightly so that they create an even, sharp cutting action (not abrasive) to the wood surface (Figure 1). Summarising, Micromesh gives;

• A smooth shaving action with an ultra-fine scratch pattern

• Very low loading and retains its fine cutting abilities up to 15 times longer than ordinary abrasives.

• Very low clogging on most wood surfaces. Should 'Micromesh' become clogged, its performance can be restored simply by washing in tap water.
• A surface finish free of scratches; by working through the available grades of Micromesh, the wood surface becomes very smooth and polished.
Micromesh is available in grades: 1500,1800,2400,3600,4000. 6000. 8000 and 12000.
It is important that oil finishes are never applied until the wood surface is as flawless as possible. In order to achieve this, the recommended sequence of surface preparation is:
• Stage 1: Normal sanding operations.
• Stage 2: Wood polishing with 'Micromesh'.

Stage 1

Normal sanding operations can start with a grade 240 garnet paper if you have previously scraped the wood surface. However, since many amateur woodworkers Qnd fine scraping difficult, especially on softwoods, sanding should start with grade 150 garnet or lubrisil. It must be kept in mind that the purpose of sanding is not to remove a lot of wood but merely to eliminate any marks and other surface defects. After using the 150 grade, grades 180,240,280 and 320 should be used in sequence. Grades finer than 320 afford diminishing returns as they have a tendency to clog, especially on exotic woods.
Sanding is a delicate operation and great care should be taken. I have found that the best type of sanding block is in fact a Staedler draughting eraser which is about 22mm wide x 51 mm long; cutting your garnet/lubrisil up into 51mm squares and folding them over the eraser will give an excellent sanding block which also facilitates more efficient use of your abrasive paper. Sanding technique is also very important and great care should be taken to ensure that the abrasives are applied evenly over the wood surface, wherever practicable in long separate strokes, starting at one end of the wood and ending over the edge of the wood at the other - NOT the rough and random 'back-and-forth' sanding pattern into which it is so easy to lapse. Key points to note when sanding include:
• Only sharp abrasive paper should be used.
• The wood surface should be thoroughly cleaned between grades to remove 'coarse grit' from the previous grade.
• Check for defects before proceeding to finer grades; shining a pastel green lamp (Anglepoise) over the wood surface will help to highlight any remaining defects.

Stage 2

Although oil finishes have traditionally been applied after finish sanding (Stage 1), I have found that on softwoods, such as spruce, western red cedar and sequoia, blotches have occurred where the oil has penetrated more deeply into areas of the wood surface where it tends to be more porous. This can be totally avoided, and the final finish enhanced beyond all recognition, by following Stage 2 in which the wood surface becomes polished to such an extent that it gives the appearance of having a finish already on it
After finish sanding with grade 320 garnet or lubrisil in Stage 1, the above grades of Micromesh can be used in sequence to polish the wood.
Although it is possible to jump a grade and perhaps, to stop at, say, grade 6000,1 have found that:
• A very highly polished finish can be produced with relative ease if no grade is omitted.
• By using up to grade 12000, the wood surface, especially oily hardwoods, effectively become sealed, making the subsequent application of oil very simple indeed.
I use Micromesh in 75mm squares folded over an excellent hard foam or soft eraser sanding pad. Polishing technique is basically similar to that described in Stage 1 although 1 have found that with the woods such as spruce, polishing across the grain can accentuate the beautiful medullary rays in the wood; as Micromesh actually cuts the wood, a scratch free finish is achieved even when 'sanding' in this manner!

Which oil to use

Any wood finish would benefit from the above preparatory Stages. However, unlike other finishes, with an oil finish virtually all of the difficult work has been done!! In my opinion, therefore, an oil finish is the simplest and most enjoyable finish to apply and will yield excellent results if the basic Stages, described above, are rigidly adhered to. Most requirements of finishing any wood product can readily be met with an oil finish; viz
• Enhancement of the beauty of natural wood.
• Protection of the wood against wear, discolouration and dampness.
Oil finishes based on boiled linseed oil have been used for centuries and are increasing in popularity today with many good products becoming available; these include:
1. Danish/Scandinavian Oil - Various brands
2. Pure Tung Oil - Various brands (satin or gloss finish, the latter available in USA only)
3. Antique Oil with Tung Oil - Colron
4. Teak Oil - Various brands
5. 'Tru-Oil' Birchwood Casey
For most woods, oils 1,2 and 3 can give good results; I do, however, have a preference for antique oil with which I have produced some very good finishes on guitars. Pure tung oil can be rather wasteful in that once the container is opened there is a tendency for the oil to gel in the container. Therefore, theoretically, only sufficient for the job in-hand should be purchased. Unfortunately the smallest size available often precludes this!
The very best finish I have achieved (and also by Kevin Aram - maker of Julian Breams' latest concert guitar) has been with Tru-Oil'. This is an American product which is supplied in small 75ml bottles (hence little waste) and sold as a speciality "Gun Stock Finish". This is sold in the USA by the larger sports goods stores which sell firearms; it can be obtained from some gunsmiths in the UK, albeit at a price_. Tru-Oil is a "bodied" oil finish and consists of an oil/resin mixture which seems to produce build-up, drying and moisture resistant properties superior to other oils. However, if you cannot obtain Tru-Oil, try any of the above oils; you should not be disappointed!
As stated above, the listed oils can be used on most woods; there are, however, some exceptions. Brazilian rosewood, cocobolo, Thai rosewood and other very oily woods of similar species prevent the oil from drying and can create an appalling gooey mess. Not included in this category is Indian rosewood on which excellent oil finishes can be achieved. Therefore, it is necessary to first check on a sample of the wood to ensure that the oil will dry. However, in the case of such 'difficult' woods all is not lost as a good oil finish can be produced by using Teak oil; this produces a slightly more lustrous finish than oil finishes, but is nevertheless still highly attractive.

Applying the oil finish

With the wood finally polished with 12000 grade Micromesh, all particles of dust and abrasive should be carefully removed with a tack rag, or vacuum cleaner. The first coat of oil can now be applied directly from the container on to a soft cotton cloth (an old cotton shirt), without thinning. It is advantageous if cotton gloves are worn while oiling to eliminate the risk of leaving surface fingermarks. Apply the oil to an area of no more than a square foot at a time, immediately removing excess oil with a clean cotton cloth. The use of nylon/polyester materials should be avoided as these will scratch any softwood surfaces.
The remaining areas should be oiled again one square foot at a time, and the oil wiped off immediately after each application. The reason why the oil should be wiped after each application is two-fold: to prevent the oil from soaking into softwoods and to achieve an attractive open-pored finish on hardwoods. The wood article being oiled should then be left for 24 hours to dry after which it should be 'gently' rubbed down, preferably with "Scotchbrite" ultra-fine grade, Type S (Grey) or alternatively grade 0000 steel woo). On no account should pressure be applied as this can easily damage the beautiful finish being produced by the oil. The surface should then be thoroughly cleaned (with tack rag or vacuum) and further coats of oil applied in the same manner as previous coats.
In order to achieve an attractive surface lustre, about six coats should be applied to non-porous woods and up to about eight coats on porous softwoods. Irrespective of the number of coats applied it is essential that each coat is wiped off immediately after application.
A day or two after the final coat, the article could be used, if absolutely necessary. However, the longer the surface is left the easier it will be to apply the final polishing of the oiled finish; I would recommend at least seven/eight days.

Final Polishing

Final polishing of the oiled surface is straightforward, especially if the surface has been given time to harden. Polishing is achieved by very gently burnishing the finish with Scotchbrite polishing type T (white) or even more' gently with grade 0000 steel wool. Any protruding specks of oil must be gently scraped with a razor blade; on no account should steel wool be used ns the applied pressure could damage the surface. The finish can then be gently buffed with a soft cotton cloth. Although not strictly essential, I "go the extra mile" to produce an immaculate finish; I finally polish by progressively using Micromesh grades 6000.8000 and 12000, cleaning the surface between grades. A coat of lemon oil finish is then applied with a clean cotton cloth and left to dry; this prevents surface marking caused by hand and fingerprints.

To look after the finish, simply apply lemon oil annually; routine cleaning should be by wiping with a damp cloth and then drying the surface immediately.

Surface preparation of turning

The procedure described above specifically addresses oil finishing 'flat' surfaces but is, nevertheless, generally applicable to other wood articles, including those produced by turning. Therefore, no further description is necessary for finishing any other wooden article. However, in a recent issue of "American Woodturner", an article by Dick Gerard describes a comparison of the finishes he normally achieved using 'regular' abrasives with those obtained using Micromesh on four goblets he turned out of Cocobolo. A particular requirement was that the finishing had to be non-toxic and also alcohol and water resistant. On his first goblet he followed his usual practice using a variety of hand and power sanding with 'regular' wet/dry abrasive grades 220, 320, 400, 600, 900, 1200 and finishing with 1500. obtained from motor car suppliers. Finishing was achieved with carnuba wax (oil could be used) applied to the goblet while in the lathe and buffed to a high gloss with Lambs wool. For the second goblet, 'regular' abrasives were used up to grade 320 and, thereafter. Micromesh grades 1500 through to 12000 were used using water ns a lubricant; Carnuba wax was again used as a finish. For the third goblet, a combination of hand and power sanding with Micromesh with water lubrication was used. 'Regular1 abrasives up to grade 600 were used for the fourth goblet, followed by Micromesh through to grade 12000 but with mineral spirits used as the lubricant.

The finished first goblet pleased Dick Gerard immensely, and was the best he had produced up till that time. However, compared with the three goblets for which Micromesh was used, "the first goblet looked flat and dull". No difference could be detected between the three goblets finished with Micromesh.

Conclusion

The application of oil to woodwork previously prepared and 'polished' using 'Micromesh' has brought the production of excellent quality finishes within easy reach of every woodworker.

This is achieved without the need for any special facilities, such as required for spray finishing, and can be undertaken at any time of the year, indoors, without the creation of unpleasant odours or other side effects. I can confidently recommend the method described in this article.

Micromesh is available in kits of nine, 3"x3" pieces of grades 1500 through to 12000. For details and price contact the author via Woodworker Fellowship.

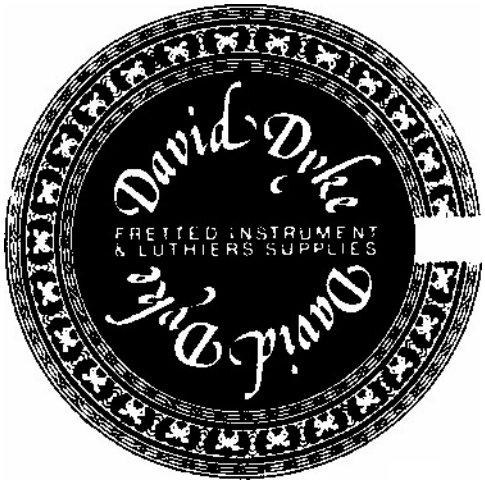
Stop press

Since writing this article on oil finishing, I have carried out several tests on Tru-oil' and have found it to be generally superior to most other oil finishes. In particular, test performed on offcuts of Brazilian Rosewood (both dark-old wood and the newer light coloured varieties),Thai Rosewood and Cocobolo proved that, unlike other oils, Tru-oil' can produce an excellent finish on these difficult woods. This is also a vast improvement over teak-oil which I had previously used on such woods.

Tru -oil' produces an attractive semi-gloss finish on all woods.

A low gloss, satin finish on non-oily woods may be obtained by using Antique Oil.

Tru-Oil, Micromesh, Lemon Oil, Garnet Paper, Lubrasil Paper, 0000 Steel Wool and Tack Rags are available from:



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