

# Abrasives for pen making

Carrying on with this series, **Walter Hall** looks at and evaluates the wide range of abrasive products available for finishing your pens

## WALTER HALL



Walter Hall is a woodturner who has specialised in making pens and pencils for more than 20 years. Based on the beautiful Northumberland coast in the UK, Walter sells his bespoke pens and pencils through local craft centres and via his website.

walter@walterspens.co.uk  
www.walterspens.co.uk

In this article, I will explain the different types of abrasives used in pen making, ranging from the comparatively coarse-backed abrasives used for preparing blanks for finishing through to the finest burnishing creams, polishes and abrasive-loaded waxes used for final polishing.

## Why do we use abrasives?

First, however, are some general comments about all abrasives and how and why we use them. All abrasives work on the same principle. They scratch the surface of the material and bring it to a finish as fine as the particles of abrasive. The finer the abrasive, the finer the scratches and the finer the finish, but even the finest polishes work by scratching the surface and when viewed through a lens or microscope, the polished surface will exhibit tiny scratches that are invisible to the naked eye.

Our aim as pen makers is to produce an attractive surface on the finished product: we may want a high gloss, a satin finish or even a matt finish that mimics the appearance of unfinished wood, but whatever finish we require, it will be accomplished with some form of abrasive.

## Using abrasives



PHOTOGRAPHS BY WALTER HALL

Micromesh is available in pads or sheets in grits up to 12,000. Used wet or dry, it can produce a glass-like finish

The basic rule is to work through the abrasives from the coarsest required to produce an even finish through to the finest needed to achieve the finished result, usually as a two-stage process: first creating a smooth surface to which the finish is applied and

then polishing the finish itself to the level of gloss required. Throughout this process, it is important not to miss out any stages. 240 grit abrasive will not remove the scratches created by 80 grit, so it is necessary to use both 120 grit and 180 grit or, as a compromise, 150 grit between the two, otherwise the coarser scratches will remain visible and no amount of further processing with finer abrasives will remove them and may in fact accentuate them.

#### Working through the grits

Do also be careful not to go backwards, especially in the final stages of polishing. It may, for example, be tempting to apply a polish or burnishing cream after finishing with say 12,000 grit Micromesh but there is a risk that the liquid abrasive may be coarser than the Micromesh and thus dull, rather than enhance, the shine. There is no effective way of measuring the comparative fineness of backed and liquid abrasives other than using expensive equipment to measure the reflectivity of a finished surface and I do not know of any studies that provide comparative data for woodturning products, so it is perhaps wisest to try the products you intend to use on a test piece to see which produces the result that is most pleasing to your eye.

#### Working with the material

In addition to proper progression through the grits, there are some other tricks you can use to deceive the eye into not seeing the scratches or maximising the gloss.

The first of these is to vary the direction of the scratches. If all the scratches are annular or are parallel to the axis of the blank, then they will be much more visible than if they run in random directions, as the light reflected will be diffused by the random scratch direction and thus give the impression of a smoother surface. This is, of course, the same principle that is used by random orbital sanders in flat woodworking or by rotary sanders used with the lathe running in bowl turning. Another tip for wooden blanks is to sand along the grain and then the visibility of the scratches is reduced as they are disguised by the figure of the timber. However, be careful with burrs and highly figured timbers where the grain direction is not consistent and random scratches would produce a better result. Another approach to randomising the direction of scratches is to use a powered sanding disc with the work revolving on the lathe. This requires a light touch but can with care produce good results.

Before I go on to discuss various types of abrasive, I will add one further caveat: if you are a follower of internet forums and social media, you will encounter lots of people giving advice that this, that or the other new abrasive is the only thing to use, often countered by others asserting that they have used something else for years and the new stuff is rubbish. For the most part, this is nothing more than opinion and can be safely ignored. There is no one 'best' abrasive for any given situation and although some work better than others in certain circumstances, as I shall explain, the

only thing that really matters is whether the abrasive you are using produces the results you require. While I am not suggesting that you use them in pen making, kitchen scouring powder and toothpaste are abrasives and will produce exactly the same results as the most expensive formulations of an equivalent grit grade. What follows is restricted to fact: I do not recommend any one type of abrasive over another but suggest that you try the various types for yourself and decide which one you prefer.



Sanding with the lathe running should be followed by hand sanding along the grain



Cleaning away sanding dust between grits prevents scratching from any remaining coarser grit particles

## Abrasives for surface preparation

Aluminium oxide abrasives on a flexible cloth backing have long been the first choice for woodturners but hook-and-loop and other padded backing materials are now available and offer advantages in terms of flexibility and the conduction of heat. Additionally, some modern products have additives that help to resist clogging and extend the life of the product.

Some options to consider are J-Flex – a traditional flexible cloth-backed aluminium oxide abrasive and Rhyno-grip – a modern hook-and-loop backed aluminium oxide with anti-clog lubrication.

Silicone carbide abrasives, more normally



Rhyno-grip abrasives have a flexible hook-and-loop backing and come in grits from 80-1,200

used in the vehicle re-finishing trades, are also suitable for use with acrylic and man-made materials, especially if wet sanding techniques are used but because of the dark colour they can cause staining, especially of lighter timbers, so are not generally recommended for use with wood.

Mesh abrasives such as Abranet were designed to facilitate the fast removal of waste using power sanders equipped with vacuum extraction but have become popular with many pen makers because they are long lasting, easily cleaned if clogging occurs and sufficiently flexible to cope with the small workpiece diameters experienced in pen making.



Silicone carbide abrasives are useful for wet sanding man-made materials



The open weave of Abranet is designed for use with vacuum sanding systems but many turners find it is a flexible, long lasting abrasive that is easily cleaned for re-use



Strips of cloth-backed, aluminium oxide paper are a popular choice but remember to write the grit grade on the backing to avoid confusion

## Abrasives for polishing



Proprietary burnishing creams are good for fine finishing of acrylics and hard finishes



Compounds for buffing wheels come in a variety of grades from coarse to very fine. A separate buffing wheel should be used for each grade

The following types of abrasives and polishes are suitable for finishing either man-made materials or hard finishes. Not all finishes require polishing with abrasives. Wax finishes and friction polishes, for example, require no further processing once applied.

#### Backed abrasives

The finer grades of silicone carbide abrasives as described under surface preparation are also suitable for fine finishing, but the most popular form of backed abrasive currently used by pen makers is Micromesh.

Micromesh abrasives are made from very evenly sized abrasive crystals that are flexibly bonded to a backing material. They produce a very fine scratch pattern and are available in 1,500-12,000 grit. They come as either flexible sheets or on a padded backing and like silicone carbide abrasives, they can be used wet or dry.

#### Liquids and creams

There is a wide variety of liquid or cream polishes that may be used. Burnishing creams such as those by Chestnut or Mylands are specifically designed for use by turners, but



Products designed for car bodywork finishing and repair can be good alternatives to burnishing creams



Buffing can produce a high gloss finish on acrylics, hard finishes and stabilised wood

products designed for the fibreglass and auto-finishing trades can be equally effective.

Products designed for metal polishing or removing scratches from car bodywork may also be used – examples include T-cut, Autosol and Brasso. DIY car polishes – as opposed to waxes – can also produce good results. Plastic polishes such as Xerapol, designed for removing scratches from motorcycle visors and aircraft screens, are another option.

#### Polishing compounds

Polishing compounds, used with a polishing mop system, such as the Beall or Chestnut systems, are an alternative to finishing on the lathe and can work well if a good system is established working through a range of compounds from coarse to fine.

#### Abrasive loaded waxes

Wax with an added abrasive may be used to give a final polish and a protective coating. Dr Kirk's 'Micro Magic' Micro Polishing Wax comes in three different grades and can be used to polish a timber blank or hard finish from about 600 grit to a high gloss.

## A final word on technique

It can be tempting to assume that high speeds and high pressure will produce better or quicker results, but this is not necessarily the case. Excessive speed and pressure will generate heat, which can damage the bond between abrasive and backing or cause damage to the finish or surface. With timber blanks it can even produce cracking or checking of the wood. Whether sanding or polishing, a better result will be achieved by using moderate speeds and a light touch. ●

### MINI TEST

## Dr. Kirk's 'Micro Magic' Micro Polishing Wax



Dr. Kirk's Micro Magic is a micro crystalline wax and fine abrasive based sanding system designed for use on turned acrylic, polyester and stabilised woods. The manufacturer claims that it eliminates the need for wet sanding and will outperform micro abrasive sheet system and back their claim with a money back guarantee. I tested the product on a stabilised boxelder (*Acer negundo*) burr blank and an acrylic blank. Initially, I sanded to 600 grit before using the three grades of abrasive wax in order and while this produced a satisfactory finish, it was not of as high a gloss as I could have achieved using Micromesh or a buffing system.

A second attempt, this time sanding to 1,500 grit before using the wax, produced a much better result comparable with that produced with Micromesh, but I was still able to improve upon it with a final buffing on a buffing wheel with fine compound.

In conclusion, while the manufacturer's claims for the product may be a little ambitious, when used in conjunction with other finishing products, it can be a useful addition to the pen maker's workshop.



The finish achieved on an acrylic blank

#### DETAILS

Price: £8.46

Contact: Craft Supplies USA

Tel: (001) 800 551 8876

Web: www.woodturnerscatalog.com