

Finishing Brushes

A top-quality finish starts with the right brush

by Jeff Jewitt

Applying finish with a brush seems easy enough. Dip the brush into the finish, spread the finish on the wood and then wait for it to dry. That's the theory, anyway, but many woodworkers are disappointed with the brush marks, streaks and bubbles that can mar a finish. Maybe, they may wonder, there's some secret technique. Or maybe the finish itself is to blame. Quite often, though, the problem is neither the technique nor the finish. It starts with the selection and use of the brush. Using the wrong brush or a second-rate brush makes it difficult to get first-rate results.

A brush is more than some bristles attached to a handle. Brush-making is an art. Manufacturers mix bristles of different lengths and stiffnesses for different types of brushes. In a top-quality brush, the bristles are selected and arranged by hand (for a list of my favorite types of brushes, see the story on p. 56). For a closer look at the parts of a brush, see the photos and drawings on these two pages.

Manufacturers of cheap brushes economize on the content and configuration of the bristles. They may use an oversized divider to give the brush an illusion of fullness (see the photo at right). Bristle tips on a good-quality brush have natural splits, or flags, that help hold and spread the finish. Brushes that are cut to shape after they are formed are cheaper to make, but they will be missing flags at the bristle tips. That's a good indication the brush won't perform very well.

The most important, and the most expensive, brush component is the bristle. The type of bristle determines the suitability of a brush for a particular finish as well as how it works in general. Bristles can be divided into two broad categories: natural animal-hair and synthetic-filament bristles.



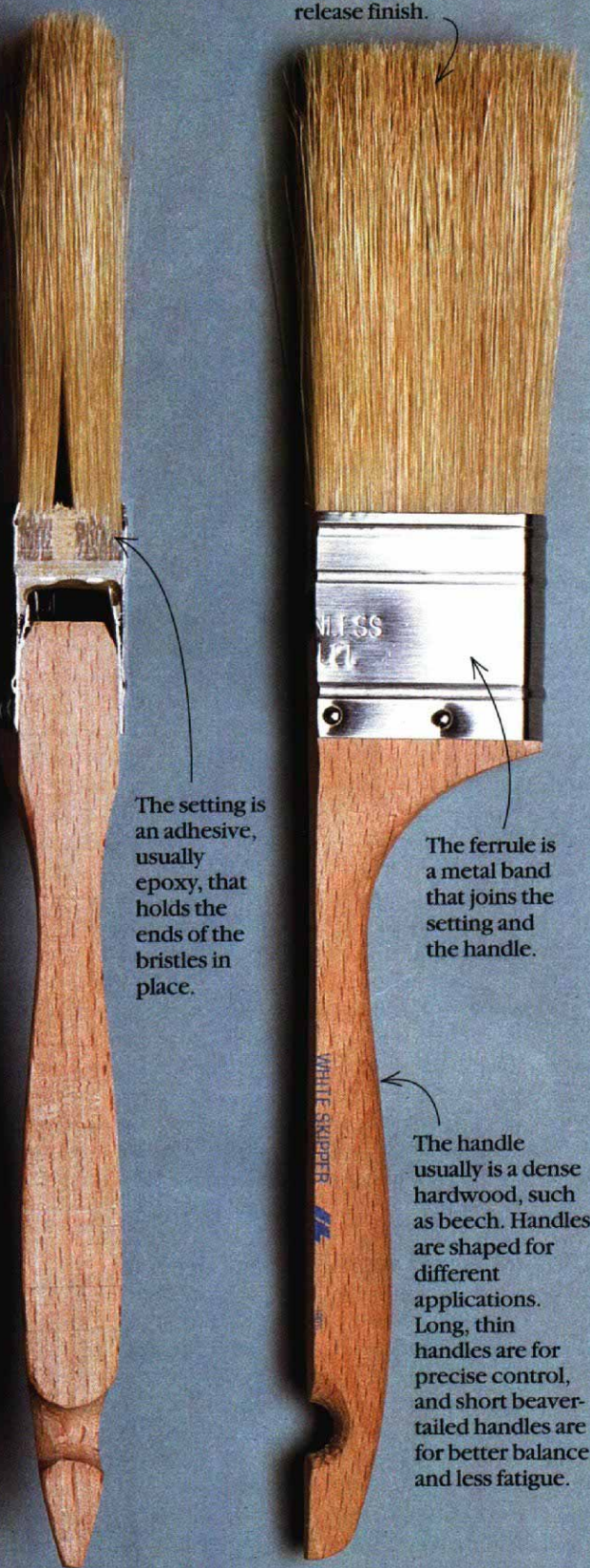
Reservoir

The divider is a wooden cleat that creates a reservoir and gives shape to the brush. Artist's brushes don't have dividers.

The difference is inside

These two rectangular, chisel-edge brushes are made from similar parts, but the one on the right is of better quality. A thick wooden divider at the center of the brush on the left gives it an appearance of fullness, but a heavier divider means fewer bristles. The brush on the right has a smaller divider and more bristles, so it will hold and release finish more evenly.

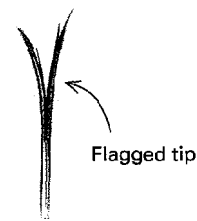
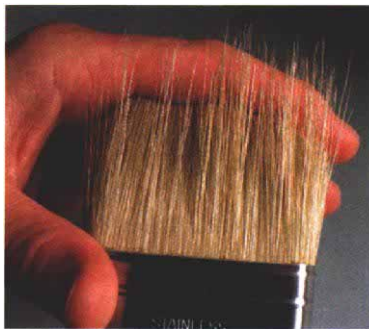
Bristles take up, hold and release finish.



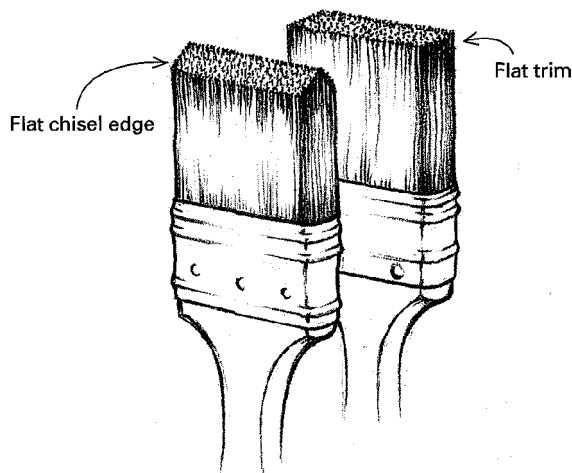
The setting is an adhesive, usually epoxy, that holds the ends of the bristles in place.

The ferrule is a metal band that joins the setting and the handle.

The handle usually is a dense hardwood, such as beech. Handles are shaped for different applications. Long, thin handles are for precise control, and short beaver-tailed handles are for better balance and less fatigue.



Bristles are the most important part. Look for flagged tips, which help hold and spread the finish.



Animal hair is best for solvent-based finishes

Natural-hair brushes are expensive and don't perform well with water-based finishes. But for top-quality results using oil-based varnish or paint, natural hair is unsurpassed.

Natural hair is divided into two categories: stiff bristle and soft fur. Hog bristle is used in most painting and finishing brushes. Soft fur, such as sable, camel, ox, skunk or badger, is used for varnish and artist's brushes. Two or more types of hair are often combined for specific performance characteristics.

Hog bristle is for paint and varnish. Chinese hog bristle (also called China bristle) is the best. The natural split ends on these stiff bristles allow the brush to carry a good deal more finish than bristles with smooth tips. The natural taper toward the tip gives hog bristle its strength and resiliency, or spring, which is especially important when applying paints and varnishes. The paint or varnish can be worked into the pores of the wood with the tip of the brush.

Sable is for detail work. Sable is the best natural hair for artist's brushes. Sable forms a fine, strong point when wet, making it ideal for touch-ups. Kolinsky sable is the best and most expensive; hairs from other red weasels are cheaper. All are known as red sable.

Camel is soft. A camel brush is good for lettering. The fur is not really from camels but usually from the tails of Russian and Siberian squirrels. Other kinds of squirrel hair are too coarse. Cheaper grades of camel brushes are made with ox, goat or pony hair.

Badger is best for oil-based finishes. This very soft and resilient hair is regarded as the best for flowing on oil-based finish-

The author's choice

Here's a selection of brushes that I've found to be most useful in my finishing business.

Taklon synthetic bristle brush has a tapered filament without natural splits at the ends of the bristles. This brush is made without a divider, so it has a very narrow chisel edge. I use it on small projects where exceptional control is needed. It can be used with all types of finishes. I recommend a $\frac{3}{4}$ in., 1 in. or $1\frac{1}{2}$ in. brush.



Red sable is great for touch-up work. I recommend at least two sizes, a #1 and a #4.



Combination badger/skunk brush is first rate for all flowing finishes, particularly oil-based varnish and polyurethane. A 2-in. brush will cover most tasks. An expensive brush, but it's well worth it.



Chinex synthetic bristle is a good all-purpose brush. It's my favorite for water-based finishes. A 2-in. brush will cover most applications. It's an excellent tool for applying water-based dyes and stains and also can be used for solvent lacquer and oil-based varnishes.



China bristle brush is less expensive than fitch and excellent for all oil-based finishes. I use 1 in. and $1\frac{1}{2}$ in. for detail work and $2\frac{1}{2}$ in. and 3 in. for large surfaces. I particularly like oval-shaped brushes because they hold a lot of finish. Large oval brushes are called varnish brushes; smaller ones, 1 in. or less, are called oval sash. They also work well for effects like glazing, dry brushing and highlighting.



es. It does not have the body of hog bristle, so it's usually combined with a coarse hair, like skunk or black bristle. Pure badger-hair brushes are used for blending and highlighting in glazing and wood graining.

Ox is for lettering. Ox hair is taken from behind the ears of oxen and is silky and durable. It resembles sable but cannot form as fine a tip. It's used in lettering and sign painting.

Fitch is a combination of hair and bristle. Fitch is a confusing term because it applies to both a hair and a type of brush. American fitch is skunk hair. European fitch comes from a gray or black weasel. Fitch brushes usually are a combination of hairs—skunk on the outside for softness and bristle on the inside for stiffness. Fitch brushes are excellent for flowing finishes, such as oil-based varnish.

Synthetic bristles best for water-based finish

Synthetic bristle is a good choice for all types of finishes. It hasn't eclipsed natural bristle for the ultimate varnish brush, but synthetic bristle is constantly improving. The search for synthetic filaments to replace natural hair has been ongoing since the beginning of this century.

The first synthetic filaments were blunt tipped, similar to tooth-brushes. Nowadays, manufacturers use several filaments that are tapered like natural bristle. Du Pont's Tynex and Chinex are manufactured specifically for brush-making. Taklon (a generic name) is a dyed white nylon filament with a tapered shaft and a smooth, unflagged tip. It is used extensively in artist's brushes.

Chinex is the most recent synthetic filament and is good for oil-based finishes and excellent for water-based finishes (see the photo at right). Taklon artist's brushes are exceptional for applying all finishes and usually are available in sizes up to $1\frac{1}{2}$ in.

The chief advantage of synthetic filament over natural hair is that synthetic filaments absorb only 7% of their weight in water. Hog bristle and natural hair may absorb as much as 100% of their weight in water, causing the brush to become soft and floppy in water-based finishes.

Modern manufacturing can now duplicate the natural flags of bristle. These flags are made by wire wheels that create a microscopic score along the entire length of the filament so that the tip will continue to split as it wears. Synthetic filaments also are less expensive and much easier to clean because they don't have microscopic pores of natural hair that trap finish.

Brush and bristle variations

Brushes for painting and varnishing are available in flat trim, rectangular chisel, oval chisel and touch-up. Flat-trim brushes (see the drawing on p. 55) are used for exterior painting; the blunt edge works the paint into the pores and crevices of the wood. I use these brushes for applying paste wood filler. The chisel edge on rectangular and oval brushes is used where precise control is needed, such as on moldings and edges. An oval profile has more bristles so it carries more finish (see the top photo on the facing page). This is desirable for oil varnishes because the finish should flow on to minimize bubbles.

Touch-up brushes are assembled so that the tip ends in a round, fine point. These are the best brushes for detail work and painting fine grain lines in restoration work.

Buying a brush

Staining and general painting don't demand a great brush. But for applying finishes like varnish, which must be flowed on smooth-



Same width, more bristles. The oval chisel-edge brush (right) will hold more finish than the flat chisel-edge brush. This allows varnish to be applied in long, smooth strokes.



Synthetic bristles rival nature. Chinex bristle brushes (front) look, feel and work like the natural hog-bristle brush.

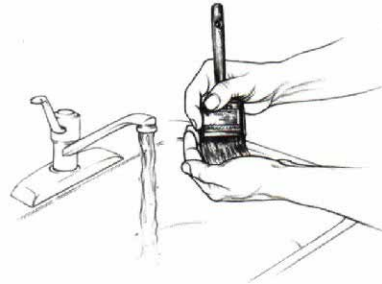
ly, a poorly made brush just can't do a good job. Be prepared to spend around \$25 to \$35 for a 1½-in. to 2½-in. China bristle brush of good quality.

When shopping for a brush, unwrap it. The bristles should feel soft at the tips and have spring in the overall length of the bundle. Examine the tips to make sure they have natural flags. Then pinch the whole thickness of bristles a little below the ferrule to see whether the fullness is the result of a lot of bristles (good) or a large divider (bad). Finally, fan back the brush with your hand. If the bristles come loose, don't buy the brush. And the color? The color of the bristles has no effect on performance. □

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Cleaning a brush

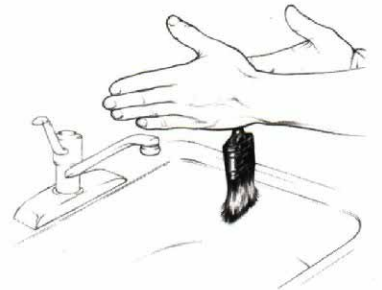
Start by wiping off the excess finish on newspaper. Then dip the brush into the appropriate cleanup solvent, and squeeze out the excess. Pour a liberal amount of dish-washing detergent on the brush (I like Dawn), and follow the steps below.



Cup your hand, and lather up the bristles with water. Swirl the bristles around vigorously.



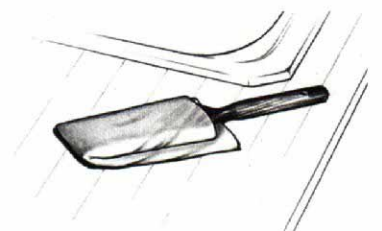
Rinse out the soap under warm water. Bend the bristles back to force out the finish at the base of the brush, near the ferrule. Repeat this until the bristles no longer feel slimy.



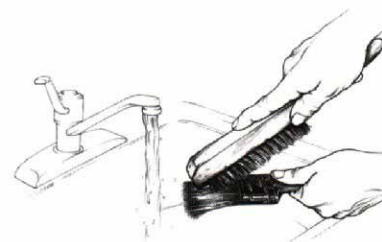
Run the bristles under cold water. Spin out excess water by holding the handle between your palms and twirling it briskly.



Straighten the bristles with a brush comb.



Wrap the bristles with paper (do not use newsprint; the ink will stain the bristles), and fold as shown. Lay the brush on a flat surface to dry. Don't store brushes in solvent for extended periods (more than four hours). The bristles will soften and lose resiliency.



Hardened finish
Soak the brush for four to six hours in a NMP (N-Methyl-Pyrrolidone) stripper such as Citristrip. Clean it as described above. Then, using a stiff wire brush, scrub the base of the bristles near the ferrule to remove the softened finish.