















	FINISH TYPE	BEST USE	RECOMMENDED NUMBER OF COATS	DRY TO TOUCH (1)	RECOAT TIME (1)	PREPARATION BEFORE APPLICATION	PREPARATION BETWEEN APPLICATIONS	RECOMMENDED APPLICATION METHOD	MINIMUM APPLICATION TEMPERATURE	SCRATCH/WEAR RESISTANCE (4)	WATER RESISTANCE (4)	SOLVENT RESISTANCE (4)	EASE OF REPAIR (5)	CLEANUP	COST (6)	COMMENTS
PENETRATING	 BOILED LINSEED OIL	Furniture and other interior projects where protection against water and wear isn't a concern. As an additive to other finishes (see comments).	5 coats	6 hours	12 hours	sand through 220-grit	saturated sanding ²	rag	40°F	P	F	P	E	mineral spirits	\$	Low sheen. Often mixed with varnish and mineral spirits for a custom wipe-on finish or as the first coat to film-forming finishes. Easy to apply, but periodic maintenance is recommended. Excels in accenting grain on highly figured pieces.
	 TEAK OIL	Exterior wood projects except decks.	4 coats	4 hours	6 hours	sand through 220-grit	saturated sanding ²	brush or rag	50°F	P	E	G	E	mineral spirits	\$\$	Formulated for oily, dark woods including teak, rosewood, and mahogany. Used in many marine (boat) applications above the waterline. Low sheen. Requires periodic maintenance. May contain UV and mildewcide inhibitors.
	 OIL/VARNISH BLEND	Furniture and other interior projects where protection against water and wear isn't a concern.	3-4 coats	4 hours	6 hours	sand through 220-grit	saturated sanding ²	brush or rag	50°F	P	G	G	E	mineral spirits	\$	Also known as Danish oil. Easy to apply. Satin sheen. Also available in colors. With additional coats, finish can be built up. Imparts a natural look and feel to wood surfaces.
FILM-FORMING	 WIPE-ON POLYURETHANE	All interior wood, including tabletops and cabinets.	4-5 coats	3 hours	4 hours	sand through 220-grit	saturated sanding ²	rag	40°F	F	G	E	G	mineral spirits	\$\$	Available in gloss and satin sheens. Thinned-down version of polyurethane. Offers better protection than penetrating finishes, but not as much as standard polyurethane. Easy to apply in thin coats that won't run or sag.
	 SOLVENT-BASED POLYURETHANE	All interior wood, including tabletops and cabinets.	3 coats	3 hours	8 hours	sand through 150-grit	220-grit	brush or spray	50°F	E	E	E	F	mineral spirits	\$\$\$	Available in three sheens (gloss, semigloss, and satin). Adds a warm, amber tone to wood. Because of high protection qualities, this is one of the most popular indoor finishes. Exterior grade also available.
	 WATER-BASED POLYURETHANE	All interior wood, including tabletops and cabinets.	3-4 coats	1 hour	2 hours	sand through 150-grit	220-grit	brush or spray	65°F	E	G	F	G	water	\$\$\$\$	Available in three sheens (gloss, semigloss, satin). Final appearance is crystal clear; will not yellow over time. You can complete a project in one day. To avoid water raising grain, wipe bare wood with a damp rag, then sand off fuzz. Don't prepare projects with steel wool; water in finish will rust steel fibers left on surface.
	 SHELLAC	Furniture and other interior projects. Because of fast drying time, shellac is a traditional favorite of woodturners.	4-5 coats	20 minutes	30 minutes	sand through 220-grit	320-grit	rag, brush, or spray	60°F	F	F	P	E	alcohol	\$	Pre-mixed (about 14 percent solid material) has 6-month shelf life. Also available as flakes so you can blend your own consistency. Dewaxed shellac used as a sealer or first coat for film-forming finishes. Two color choices: orange and natural.
	 BRUSH-ON LACQUER	Furniture and other interior projects.	3-4 coats	20 minutes	30 minutes	sand through 220-grit	320-grit	brush or spray	60°F	F	G	G	E	lacquer thinner	\$	Available in three sheens (gloss, semigloss, and satin). Also protects metals. Apply in a well-ventilated area. Cures rapidly so you can complete a project in one day. Multiple coats create the appearance of a deep finish.
	 AEROSOL LACQUER	Small interior projects and touch-up for brush-on lacquer.	4-5 coats	15 minutes	20 minutes	sand through 220-grit	320-grit	spray	60°F	F	F	G	E+	lacquer thinner	\$\$	Available in three sheens (gloss, semigloss, and satin). Also protects metals. Apply in a well-ventilated area. A fast-drying, convenient-to-use finish. Good for touchup projects. During application, finish is sensitive to humidity.
	 BAR FINISH/ 2-PART EPOXY	Countertops and other flat surfaces requiring a high degree of water and chemical protection.	2-3 coats	8 hours	10 hours	sand through 150-grit	none	pour	65°F	E+	E+	E+	P	xylene	\$\$\$\$\$	Only available in high gloss. Must apply on level surface. Thickest of all the finishes.
	 SOLVENT-BASED FLOOR FINISH	All wood floors.	2-3 coats	3 hours	4 hours	sand through 80-grit	80-grit	appl. pad ³ or brush	65°F	E+	E+	E+	F	mineral spirits	\$\$\$\$	Available in three sheens (gloss, semigloss, and satin). Imparts a warm, amber appearance to wood surfaces. Not appropriate for vertical surfaces.
	 WATER-BASED FLOOR FINISH	All wood floors.	3-4 coats	1 hour	2 hours	sand through 80-grit	80-grit	appl. pad ³ or brush	65°F	E+	E	G	F	water	\$\$\$\$\$	Available in three sheens (gloss, semigloss, and satin). Dries crystal-clear. Fast dry time allows you to finish a floor in one day. Not appropriate for vertical surfaces.
	 SOLVENT-BASED SPAR VARNISH	Exterior wood projects except decks.	2-3 coats	4 hours	6 hours	sand through 100-grit	150-grit	brush or spray	60°F	G	E+	E	G	mineral spirits	\$\$\$\$\$	Available in three sheens (gloss, semigloss, and satin). Not designed for interior use. Some contain UV and mildewcide inhibitors. Formulated to remain flexible in a range of temperatures. Requires periodic maintenance.
 WATER-BASED SPAR VARNISH	Exterior wood projects except decks.	3 coats	1 hour	2-3 hours	sand through 100-grit	150-grit	brush or spray	60°F	E	E	G	F	water	\$\$\$\$\$	Available in three sheens (gloss, semigloss, and satin). Not designed for interior use. Dries crystal-clear. Easier cleanup than solvent spar varnish. Some contain UV and mildewcide inhibitors. Formulated to remain flexible in a range of temperatures. To avoid water raising grain, wipe bare wood with a damp rag, then sand off fuzz.	

1 Variables include temperature and humidity.

2 After first coat dries, apply finish generously. Then wet-sand with 4/0 steel wool, 320-grit wet-dry sandpaper, or an abrasive pad such as Scotchbrite. Wipe off the slurry with a rag.

3 8" - to 12"-wide application pad. Lamb's-wool pad recommended for solvent-based floor coating; synthetic material recommended for water-based coating.

4 (E+) **Excellent plus** - Toughest protection against damage.

(E) **Excellent** - High degree of resistance to damage.

(G) **Good** - Acceptable protection against damage.

(F) **Fair** - Little protection against damage.

(P) **Poor** - Damaged easily.

5 (E+) **Excellent Plus** - Least effort to repair. Blemishes may be spot-finished. Sand top coat and apply new finish.

(E) **Excellent** - Spot repairs a challenge, but overall effort doesn't require removal of existing finish.

(G) **Good** - Sand and refinish.

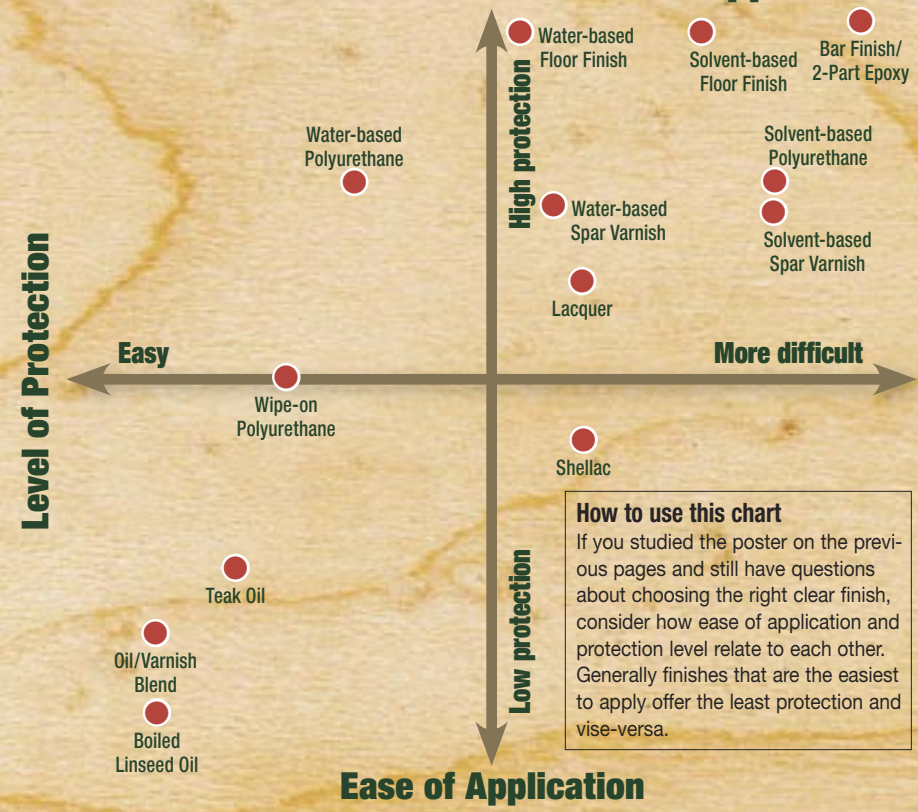
(F) **Fair** - May require sanding or stripping of existing finish.

(P) **Poor** - Damaged finish difficult to remove.

6 Relative cost per ounce. One dollar sign (\$) represents least expensive; \$\$\$\$\$ is the most expensive per ounce.

Rag disposal The rags you use to apply or remove oil and oil/varnish blend finishes are a serious fire hazard because they will spontaneously combust (catch fire) under certain circumstances. The reason they ignite is because they heat up as they cure during the drying process. The recommended disposal method is to put all used rags into a water-filled metal container, seal the lid, and dispose of the container properly. It is important to remember that all of these products are perfectly safe when applied and disposed of properly.

Finish choices: Protection vs. Ease of Application



How to use this chart
If you studied the poster on the previous pages and still have questions about choosing the right clear finish, consider how ease of application and protection level relate to each other. Generally finishes that are the easiest to apply offer the least protection and vice-versa.

Wood conditioners: your ally when staining

- Some woods acquire an uneven look—described as splotchy—when stained. This is especially true of pine, maple, cherry, alder, fir, and birch. Some areas of the wood will appear darker because those areas absorb more stain.
- Conditioners are essentially thin, clear stains that you apply to bare wood to even out the stain absorption. After applying conditioner and stain, your project will still require one of the protective finishes listed in the poster.
- To determine if your project requires a wood conditioner, always test your chosen stain on a sanded scrap of wood used in your project.
- End grain absorbs more pigmented stain than the rest of the board. To compensate, sand end grain with one grit finer paper than you used on other surfaces. Then, coat the end grain with a conditioner.
- To achieve the most effective application, continue applying the conditioner to the wood until it remains wet. Then, wipe of the excess conditioner and apply your stain reasonably quickly—within 15 to 30 minutes.



choosing and applying clear finishes

More tips to improve your finish

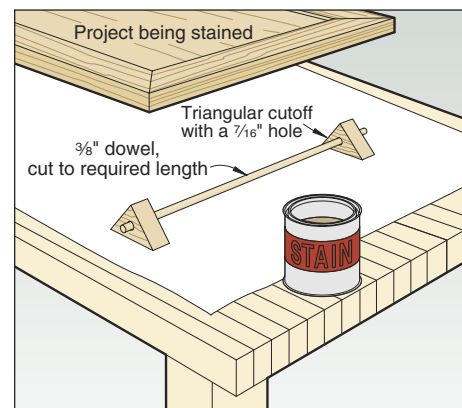
Now that you've settled on the ideal finish for your project, here's a trio of pointers to streamline your staining and finishing tasks.

TRIANGULAR CUTOFFS MAKE HANDY FINISHING STANDS

After I stained one side of a paneled door, I was looking for a way to hold it so I could stain the other side. Because I had mitered the corners of the door frame, I had some triangular cutoffs in my scrap bin that were just what I needed.

The triangular scraps support the piece being stained only on their "peaks." Drilling holes in the cutoffs and inserting a dowel helps keep the blocks from tipping over. You can adjust this simple jig for a project of any width by sliding the blocks along the dowel.

—Norman Crowfoot, Tucson, Ariz.

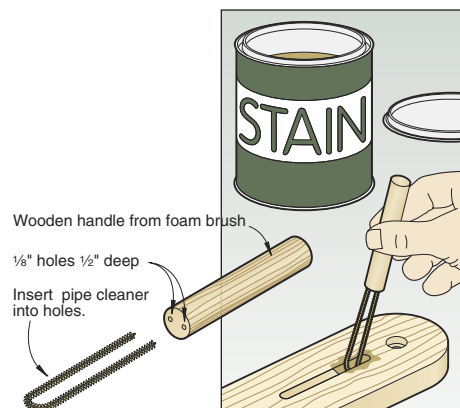


FOR STAINING DETAILS, TRY PIPE CLEANERS

It's hard to get stain or paint into narrow spaces. But I solved the problem with nothing more than a wooden handle and a pipe cleaner. As shown below, I drilled two small holes in one end of the handle of an old foam brush, bent the pipe cleaner in half, and stuck one end in each hole.

I dip the pipe cleaner into my finish and work it into just about any tight spot. When I'm done, I just pull out the pipe cleaner and throw it away. I then pop in a new one, and I'm ready for my next finishing project.

—Bill Allmon, Fort Worth, Texas



USE RUBBING COMPOUNDS FOR A SILKY-SMOOTH FINISH

For centuries, woodworkers have smoothed out finishes and fine-tuned the sheen with rubbing compounds. Instead of blending mineral oil with abrasive powders, we prefer the convenience of automotive compounds, such as 3M's Finesse-it II. On wood, apply automotive products by hand or with a buffing pad on a random-orbit sander.

Remember two principles: First, your finish must be thick enough to stand up to the abrasive action. Second, don't begin rubbing out until your finish is thoroughly cured—up to a month in some cases.

—WOOD® magazine staff



9 "wants" that drive finish choices

If choosing a can of clear finish looks nearly as challenging as the choices among breakfast cereals, don't despair. Below are some of the most common "wants" we hear from woodworkers, but be assured that there's no perfect finish. To help navigate through the many options, we've charted the category choices with a poster that begins on the next page.

Still undecided? You'll find plenty of online resources, including Varathane's woodanswers.com Web site. Or, post your finishing question online at woodmagazine.com/finishing. There, you'll likely find helpful, experienced woodworkers to point you in the right direction. Just be sure you don't rush through these final steps of your project.

"I want to feel the wood." Penetrating finishes (linseed oil, teak oil, and oil/varnish blends) soak into the top layer of wood. You can barely detect the finish. The downside: Little protection against scratches, water, and solvents. Penetrating finishes look dull on open-grained hardwoods such as oak.

"I want something tough." On furniture projects, three or four coats of polyurethane offer the best protection against scratches, wear, water, and solvents.

"I want surface protection, but don't need to see my brush strokes." The slower the finish dries, the more chance the finish has to level, which makes brush strokes less evident. During application, make sure your bristles remain soft and free of clumps.

"I want to be done today." If time is the driving factor, lacquer and water-based finishes dry the fastest. An added bonus: Quick drying times mean there are fewer opportunities for dust to stick to the surface.

"I want my wood grain to pop." If you want to draw attention to the wood's character, try this route the pros use: a coat of dewaxed shellac followed by two or three coats of solvent-based polyurethane.

"I want to avoid brushes and cleaning brushes." If you have a phobia for brushes, the three penetrating finishes and wipe-on polyurethane are all designed for rag application. More good news: You can apply shellac, polyurethanes, and lacquers with spray equipment, too.

"I want to see my reflection." That's an easy one. Choose a finish available in a gloss sheen. Want more depth? After the finish cures, you can increase the sheen by rubbing out the finish with 3M's Finesse-it II applied with a buffing pad on a random-orbit sander.

"I want the warm, antique look." If you like warm, amber tones, stick with oil-based finishes, which yellow with age. (The most dramatic is orange shellac.) If clarity is the goal, water-based finishes dry crystal-clear.

"I want an odor-free application." Water-based polyurethane and floor finishes have minimal air-polluting, toxic, and flammable solvents. Some air-pollution regulations ban solvent-based lacquers, which have the highest amount of toxins.