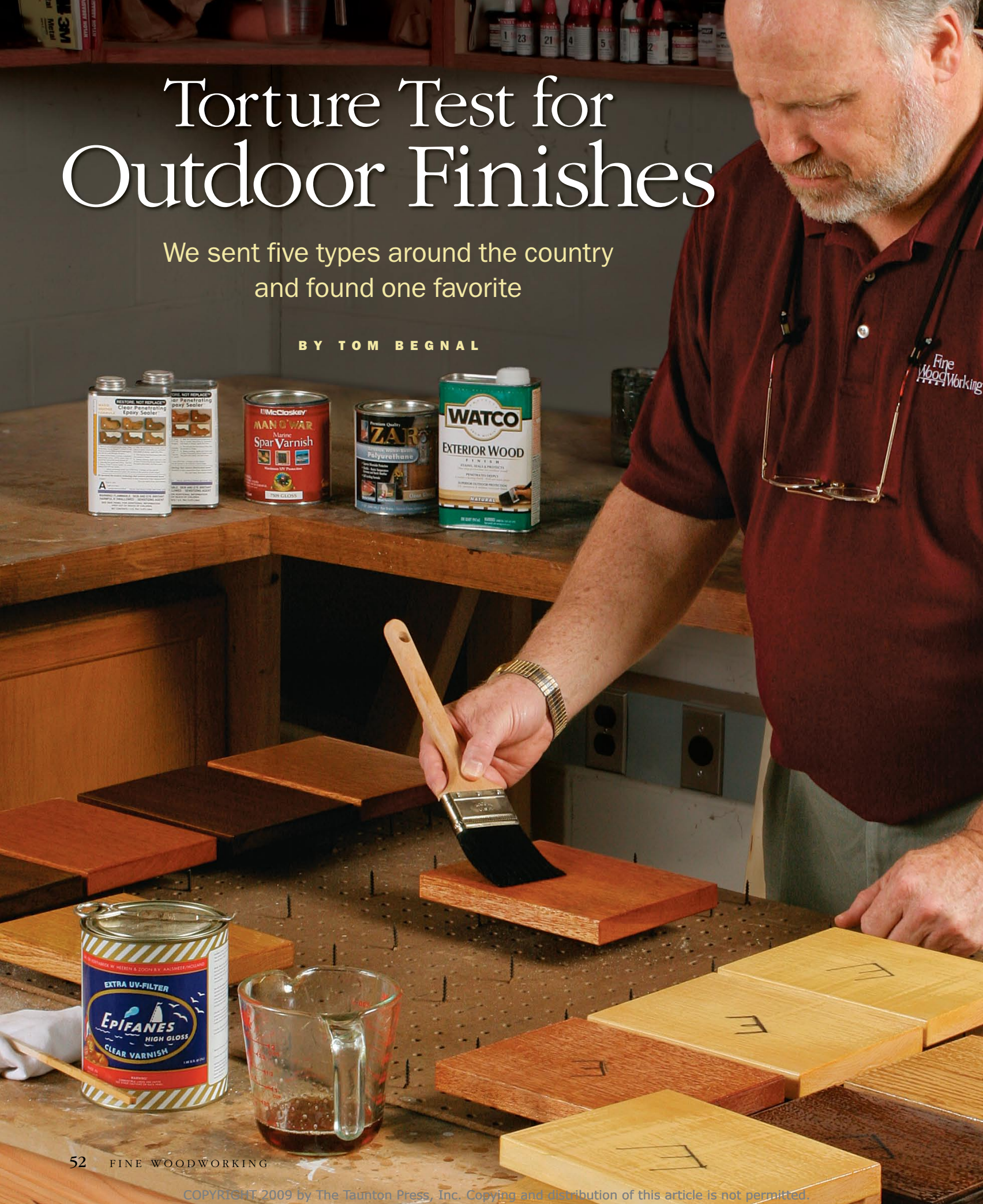
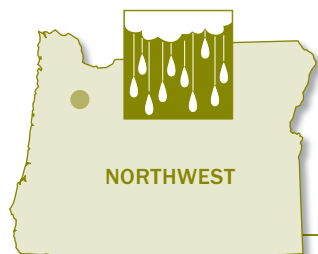


Torture Test for Outdoor Finishes

We sent five types around the country and found one favorite

BY TOM BEGNAL





NORTHWEST

Salem, Ore.

Lots of cool temperatures and high humidity. On average, only one day in five is sunny.

Seasonal temperatures (°F)
(high/low)

Winter: 48/34
Summer: 79/50

Relative humidity
(AM/PM)

Winter: 74%/87%
Summer: 43%/85%

Sunny days: 77

Rainfall: 39 in.

Snowfall: 7 in.

How we tested

We treated five wood species with five outdoor finishes. To find out how the samples would hold up over the course of the year to the weather in different regions of the country, we sent a rack of sample boards to Oregon, New Mexico, and Louisiana, while one stayed in Connecticut. Each region subjected the samples to a unique set of climate conditions. The data represent average numbers.



NORTHEAST

Bridgeport, Conn.

In winter, freezing and thawing cycles aren't kind to wood.

Seasonal temperatures (°F)
(high/low)

Winter: 38/24
Summer: 80/63

Relative humidity (AM/PM):

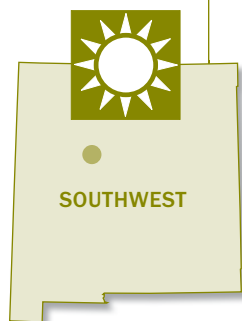
Winter: 58%/71%
Summer: 61%/78%

Sunny days: 99

Rainfall: 42 in.

Snowfall: 26 in.

CT



SOUTHWEST

Albuquerque, N.M.

Plenty of sunshine, not much rain, and low humidity make for a wood-friendly environment.

Seasonal temperatures (°F)
(high/low)

Winter: 49/24
Summer: 91/62

Relative humidity (AM/PM)

Winter: 38%/67%
Summer: 25%/57%

Sunny days: 167

Rainfall: 9 in.

Snowfall: 10 in.

Seasonal temperatures (°F)
(high/low)

Winter: 63/44
Summer: 90/72

Relative humidity (AM/PM)

Winter: 66%/85%
Summer: 65%/91%

Sunny days: 101

Rainfall: 62 in.

Snowfall: ¼ in.



SOUTHEAST

New Orleans, La.

Hot and humid summers. Plenty of rain. Freezing and thawing cycles are as rare in Louisiana as snowy owls.

The great outdoors isn't great for wood. No matter if it's a fallen maple tree in the back woods or an Adirondack chair in the backyard, nature wants to convert all dead wood into compost.

Sunlight and moisture do a lot to start the process. Sunlight, particularly the ultraviolet (UV) wavelength, causes a chemical degradation in wood. Moisture absorbed by the wood fibers causes them to expand and contract, and that produces surface checks. Then, too, the freezing and thawing cycles common in northern

climates can exacerbate the weathering process. Left unfinished, a new piece of furniture can start to look old in a few weeks. In a year, it can look ancient.

So to help outdoor furniture withstand the elements, a protective finish is a must. And if you want to see and enjoy the wood, you're going to want a clear finish rather than paint.

There are several types of clear finish made for outdoor use. But, as we discovered in a yearlong test, they don't all deliver. Some offered almost no long-term protection. Others did considerably



WATCO EXTERIOR WOOD FINISH

	START	CT	OR	LA	NM
WHITE OAK					
IPÉ					

Source:
www.rustoleum.com

Price: \$14/qt.

Application: Two coats, each applied liberally

Results: The outdoor penetrating oil finish was the easiest to apply, but at the end of the yearlong test, all the samples, except for those in New Mexico, had weathered to various shades of gray. All the samples had rough surfaces. Shallow cracks and checks were common. Some pine samples had full-thickness checks on the end.

Rating: Unacceptable

better. But our test did more than help us find a couple of good outdoor finishes. It also showed us how several different wood species hold up to the weather. And, it gave us new insight into the effect of climate on both finish and wood.

Testing tells the tale

The test evaluated the four types of finish used most often outdoors: penetrating oil, water-based polyurethane, marine spar varnish, and marine extra-UV-filter varnish, plus a combo that one finisher touted in an earlier issue ("A Durable Exterior Finish," *FWW* #179), epoxy and marine extra-UV-filter varnish. Also, to see if the wood species made a difference, we applied each finish to five different woods: cedar, ipé, mahogany, pine, and white oak.

All, except for pine, are known to hold up to the outdoors better than most. Finally, to see how geography factors in, we ran the test in four regions of the United States with distinctly different climates: the Northeast (Connecticut), Northwest (Oregon), Southwest (New Mexico), and Southeast (Louisiana).

Each wood sample was $\frac{3}{4}$ in. thick by 6 in. wide by 8 in. long. For consistency, all the samples of each wood came from the same board. And every coat of finish was applied equally to both sides and all edges. Each finish was applied according to the manufacturer's recommendations shown on the label.

We built four test racks, each designed to hold 25 samples. One rack went up on the flat roof of our Connecticut office building (a perfect out-of-the-way location, we thought, until summer arrived



ZAR EXTERIOR WATER-BASED POLYURETHANE

	START	CT	OR	LA	NM
WHITE OAK					
IPÉ					

Source:
www.ugl.com

Price: \$22/qt.

Application: Three coats

Results: On average, about 20% of the finish had deteriorated, resulting in areas of weathered gray. Where the finish remained, much of it showed areas of flaking and chipping. The mix of grayed wood and remaining finish produced an unsightly mottled look.

Rating: Unacceptable



McCLOSKEY MAN O'WAR MARINE SPAR VARNISH

Source:
www.mccloskey
finishes.com

Price: \$20/qt.

Application: Four
coats

Results: The finish generally held up well on the mahogany, ipé, and pine. Same with the cedar samples, except for the one that visited New Mexico—that one showed some finish deterioration. The white oak samples had the toughest time, with about 40% of the finish deteriorating.

Rating: Fair to good



and a colony of hornets built a nest at the trapdoor leading to the roof); the other three went to our regional testers. All the racks were positioned to face south, ensuring maximum exposure to the sun, with the samples tilted at 45° to prevent standing water.

What we learned

After 12 months outdoors, all the samples came home to the *FWW* shop. The results are shown on these pages. For space reasons, we only included photos of the white oak (a light-colored, open-grained wood) and ipé (a dark-colored, close-grained wood).

One thing was immediately obvious: The samples finished with oil suffered the most. All five wood species in all four regions had roughened surfaces. With the exception of those from New

Mexico, all the bright surface colors had been replaced by various shades of gray. Also, all the samples showed end-grain checks and surface cracks, most of them minor. The pine samples, however, showed several end-grain checks that extended the full thickness of the wood.

In fact, the oiled wood didn't look any better than unfinished wood exposed to the same conditions. So unless you want to reapply the oil every couple of months, don't bother with it.

Although faring better than penetrating oil, both the exterior water-based polyurethane and the spar varnish were disappointments. All the water-based poly samples showed deterioration, some minor but most closer to major. Spar varnish held up slightly better, with a 50/50 split between major and minor levels of



EPIFANES HIGH GLOSS MARINE VARNISH

Source:
www.epifanes.com

Price: \$45/qt.

Application: Seven
coats, thinned per
instructions

Results: No sign of finish deterioration, no sign of flaking or chipping. Samples showed only the slightest change in color. Mind you, it takes a while to apply the seven required coats.

Rating: Very good





SMITH & CO. PENETRATING EPOXY SEALER UNDER EPIFANES MARINE VARNISH

Source:

www.smithandcompany.org

Price: \$42/qt. plus \$45/qt.

Application: Three coats epoxy plus five coats Epifanes (unthinned)

Results: No sign of finish deterioration, no sign of flaking or chipping. Only the slightest change in color.

Rating: Very good

	START	CT	OR	LA	NM
WHITE OAK					
IPÉ					

deterioration. The spar-varnish pine sample from New Mexico was an exception, as it held up pretty well.

Without question, the marine extra-UV-filter varnish and the epoxy plus marine varnish looked the best. The colors maintained much of their brightness. Surface cracks, checks, or defects were almost nonexistent. The only reason I rated them “very good” rather than “excellent” was because the colors changed slightly during the yearlong test: The ipé lightened. The white oak lightened, but only a bit. The cedar and pine darkened. The mahogany darkened, except in New Mexico, where it lightened slightly.

Interestingly, the samples from New Mexico suffered the least. Oregon samples did better than those from Connecticut and Louisiana. The Connecticut samples looked the worst for wear. So,

according to our test, moisture causes more weathering than UV light. When moisture combines with freezing and thawing cycles, as is common in northern states, the wood weathers even more.

As far as wood species go, the cedar and ipé samples held up a bit better than the others. Mahogany and white oak showed slightly more weathering. The pine boards had the toughest time.

Choosing a favorite

The Epifanes finish and epoxy-plus-Epifanes held up equally and the work to apply them was about the same. Forced to pick a favorite, I'd take the Epifanes, because it is one product, not two.

Tom Begnal is an associate editor.

Which finish is right for you?

A PROTECTIVE FILM FINISH

Keep wood looking new. After about a year outdoors, this project finished with Epifanes looks almost as good as it did after its first day.



THE WEATHERED LOOK

No finish at all. If you like the rustic look of weathered wood, don't bother to add a finish. Oil finish (Watco) didn't have a visible effect after a year. But ipé, cedar, and mahogany weathered the best, in that order.

