

Should I Seal Exterior Wood?

Q. *How much benefit is there to applying a water sealer and wood preservative to clapboard siding before priming and painting?*

A. *Bill Feist, an expert on wood finishes, responds:* There are many advantages to using a paintable water-repellent preservative (WRP) on unpainted clapboard siding before priming and painting. The treatment reduces raised grain, checking, warping, and splitting, and also improves paint adhesion. A WRP inhibits mildew growth on both painted and unpainted wood, and will retard decay in above-ground applications. A paintable preservative will help improve paint performance on the more difficult-to-paint woods, like flat-grain southern yellow pine and other flat-grain wood species.

Use WRPs only on dry, bare wood. The treatment must be done when the temperature is above 50°F. You can apply the treatment by brush or by dipping. When brushing, allow two days of warm, favorable drying weather before painting. When dipping, a full week of favorable drying weather may be necessary before painting. If you don't allow enough time for most of the solvent to dry from the wood and for the wax in the preservative to be absorbed, the paint may not cure or bond properly.

If you want to apply a WRP to previously painted wood, remove all loose paint, then brush the preservative into joints and unpainted areas only. Remove excess WRP from the painted surfaces with a rag. Again, allow two days of favorable warm drying weather before repainting.

Commercially available WRPs include Clear Wood Preservative (in the Cuprinol Group) from Sherwin-Williams and DAP's Woodlife Classic II Wood Preservative. When shopping for a WRP, the key word to look for is "paintable." There are many WRPs that are meant to

be used as wood deck treatments and natural finishes, but these are generally not paintable.

Circular Saw Question

Q. *I have a Skil 559 7¹/₄-inch saw, which I have a tough time making accurate cuts with. The saw was given to me, and I suspect it's a lower-end product. I realize that it's a poor workman who blames his tools, and I figured I'd get the hang of it after a while, but straight cuts right along the line have been pretty elusive. Could I eliminate these problems with a higher end saw?*

A. *Tool editor Dave Crosby responds:* I have no firsthand experience with the particular model of saw you refer to, but I have certainly seen the problem you describe. While your reluctance to blame the tool is commendable, your assessment of "lower-end products" is well-founded. Not long ago, I had an apprentice show up on the site with a new Skil that he paid about \$45 for at the local lumberyard. After a day of the same difficulty you describe, he finally came to me and asked what he was doing wrong. After noting that the overall construction of the saw was probably not the best I'd ever seen, I checked the end-play on the arbor shaft, which was way too much to be accurate, and advised him to take the saw back, get his money back, and buy a pro-duty saw. He showed up the next day with a professional quality saw, and has been happily doing good work ever since. For more information on sidewinder and worm-drive saws, take a look at the April '99 and June '99 issues of JLC.

Why Does a 2x12 Have Less Design Bending Strength Than a 2x6?

Q. *Recently I needed structural design values (E, Fb, Fv) for treated southern yellow*

pine. So I referred to a publication from the Southern Pine Council, which indicated that while E (modulus of elasticity) and Fv (allowable shear stress) remain constant, Fb (bending strength) values grow smaller as the lumber dimension grows larger. The values for Number 2 SYP are listed in the chart, below. Why does the Fb change with the lumber size? Also, does treating lumber with a preservative (such as CCA) change the design values?

A. *Frank Woeste, P.E., a professor of wood construction engineering at Virginia Tech, responds:* It is true that the allowable Fb value decreases as the depth increases. This phenomenon has been proven by extensive testing. The current span tables — not only for Southern Pine, but for all lumber species — reflect that testing.

As to "why" this is so, there is no conclusive answer, but several theories have been offered over the past three decades. My own theory is based on probability — the probability that, under ASTM test protocols, more knots and other imperfections are likely to occur in wider pieces of lumber.

In the ASTM test for determining allowable Fb, a wood joist is subjected to stress until it breaks. The test standard requires a span-to-joist ratio of 17. For a 2x6, the test joist is 93.5 inches long (5.5 in. x 17), while a sample 2x12 would be 191.25 inches long (11.25 in. x 17). In the test, only the center third of the span is subjected to the full stress level. For a 2x6, this would be 31.2 inches long; for a 2x12, the middle third is 63.75 inches long.

Knots and other natural characteristics control the strength of lumber; for each grade, there is a maximum allowable knot size. If you look at a piece of pine lumber, you'll notice that the knots are usually clustered a couple of feet

apart. Based on some typical frequency of knots along the length of the lumber, it's likely that there will be more knots in a 63.75-inch section than in a 31.2-inch section, and more likely that the maximum allowable knot will occur in the longer section. So in the test, a 2x12 is more likely to fail at a relatively lower stress level than a 2x6.

Regarding the effect of preservative pressure treating on design properties, according to the *1997 National Design Specification for Wood Construction*, the strength values for dead, live, snow, and wind loads are not affected except that most CCA-treated lumber is not re-dried

Design Values for No. 2 Southern Pine				
Size	Fb Single	Repetitive	Fv	E
2x4	1,500	1,720	90	1,600,000
2x6	1,250	1,440	90	1,600,000
2x8	1,200	1,380	90	1,600,000
2x10	1,050	1,210	90	1,600,000
2x12	975	1,120	90	1,600,000

after treatment. After treatment, the lumber typically has a moisture content greater than 19%, so various reductions in strength and connection values (for nails, bolts, and truss plates) may apply.

GOT A QUESTION? Send it to On the House, JLC, 932 West Main St., Richmond, VT 05477; or e-mail to jlc@bginet.com.

