Safer Treated Wood

Q. *Clients have been asking us about ACQ, a new pressure-treated wood that is supposed to be "nontoxic." Does this product pose fewer hazards than CCA lumber? How does the new product perform?*

A. *John Wagner responds:* In addition to copper, conventional CCA preservative contains chromium and arsenate, which the Environmental Protection Agency (EPA) has labeled "hazardous." Though these two toxins bind almost entirely with the wood, CCA's manufacturing process creates several hazards. First, it's dangerous to touch CCA residue (chemicals that have not become "fixed" in the wood during the treating process). It's also dangerous to touch or breathe the sawdust. Many homeowners rightly wonder if CCA is safe for decks, playgrounds, and picnic tables, especially where children will have direct contact with the wood.

These fears and dangers inspired Chemical Specialties Inc. (CSI, One Woodlawn Green, Suite 250, Charlotte, NC 28217; 704/522-0825) to develop ACQ Preserve, a new product that has several preservative qualities identical to CCA, but that has a much lower toxicity, both during its manufacture and with its subsequent handling. ACQ uses a water-borne preservative that contains ammonia, copper, and "quat" — quaternary ammonia, a disinfecting detergent — as an insecticide and fungicide treatment. It doesn't use any chemical compounds listed by the EPA as hazardous, and it comes with a "green" label from Scientific Certification Systems (a commercial environmental labeling group).

Performance. Wood performance isn't affected by preservative chemicals, whether you are using ACQ or CCA, *except* when the water used in the preservative-impregnating process dries unevenly during storage or shipping. This causes or accelerates splitting and checking. However, wood performance and finishing characteristics *are* greatly affected by the wood species, or — more specifically — the wood's grain patterns. The species typically used in pressure-treating with CCA and ACQ — southern yellow pine, fir, and hemlock — are fast-growing flat-grained woods with wide grain bands that readily soak up the water-borne preservative. On the downside, the grain patterns in these species are unstable, so weathered decks built with pressure-treated woods commonly suffer from cupping, splintering, splitting, cracking, warping, twisting, and nail pull-out.

There are two ways to help ensure a more stable wood, whether it's treated with ACQ or CCA. First, use pressure-treated wood that's factory-treated with a water repellent. The alternative is to immediately apply a penetrating finish, such as a water repellent (often listed as WR on the label), water repellent preservatives (WRP) with a mildewcide additive, or a semi-transparent stain (an oil-based, pigmented WRP). None of these penetrating finishes flake, crack, or peel. (Film-forming finishes, such as paint and solid-color stains, are not recommended.)

Regardless of whether you choose CCA or ACQ, and whether you use factory-sealed material or apply a sealant soon after installation, make sure you inform your clients that the wood must be refinished every year with a penetrating stain or water repellent — *not* every other year as some manufacturers claim.

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Roof Venting Basics

Q. Here in the West, we often build with exposed rafter tails. For attic roof vents, we typically drill three 1 1/2-inch holes through every other soffit block, and install ridge vents. Is this enough ventilation?

A. *Clayton DeKorne responds:* Most codes rely on the old FHA Minimum Property Standards, which call for enough *net free* ventilation to equal 1/300 of the attic floor area. If the ceiling does not have a vapor barrier, you need enough ventilation to equal 1/150 of the attic floor. Ridge and soffit vents should be balanced (equal openings along soffit and ridge).

Net free area means the unobstructed openings of a vent. If you cover the holes in the soffit blocks with 8x8 screen (64 openings per inch), the vent area is reduced by 25%. This means your three 1 1/2-inch holes in each rafter bay equal about 4 square inches of net free vent area.

Let's take an example. For a 24x30-foot attic, you need about 346 square inches of net free vent area to satisfy the code requirement. A low-profile ridge vent will supply 360 to 510 square inches (based on manufacturer estimates of 12 to 17 inches per linear foot of net free vent area). But your soffit vents will only give you about 88 square inches — hardly enough to balance the ridge vent. You'd be better off drilling three holes in every bay. This would equal about 176 square inches of vent area — a solid half of the required vent area, and a suitable balance to the ridge vent.

This answers the question from the code point of view. But codes are simply minimums: What about good building practice? Current research by Bill Rose at the University of Illinois indicates that ventilation probably plays a less important role in controlling moisture in roof cavities than the air tightness of the ceiling and the pressure difference across the ceiling. This doesn't mean you can get around the code. But it does suggest that in addition to providing roof ventilation, you should also do everything you can to control indoor humidity levels and install an airtight ceiling. This should include sealing around vent stacks and chimney chases that pass through attics, avoiding can lights and other penetrations in the ceiling, and, of course, exhausting the dryer outside, not into the attic. ■

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