Outdoor Tile Counter

Q. *I'm building an outdoor patio, and the plans call for a ceramic tile counter near the grill. What types of vitreous tile are suitable for outdoor use?*

A. *Tile consultant Michael Byrne responds:* The most important factor to consider when choosing a tile for outdoor use is how often the tile will freeze, which depends upon the climate. In southern California or Florida, where an exterior tile installation might only freeze once in its lifetime, almost any tile will do. In a climate that has a frost once or twice a year, a vitreous tile should be fine. If your area gets a frost more than once or twice yearly, however, you need to use an impervious tile. Impervious tiles do not absorb any appreciable moisture that might expand when the tile freezes. Using substandard materials or methods can result in the loss of the tile after only one freeze/thaw cycle.

The tiles should be installed with latex-content thinset mortar and premium-quality latex grout. I recommend installing a sloping subsurface, a drainage layer to allow for runoff, and a crack isolation membrane to absorb differential movement between the tiles and the setting bed.

The correct placement of expansion joints is essential to the performance of the drainage and crack isolation membranes. Without them, an otherwise solid installation will eventually fail. On most tile installations, an expansion joint filled with caulk (instead of grout) is required wherever tiles change direction or meet other materials. In the case of your counter, you will need an expansion joint of at least 1/8 inch between the grill and the tiles. Since high heat may cause toxic fumes to be emitted from the caulk, this joint slot should *not* be filled. Your grill's housing may overhang the tiles, hiding the open joint. If not, make certain the tile installer keeps the joint slot open, with tile edges neatly aligned. Resist the urge to butt the tiles right up against the grill. If you leave no room for expansion, when the grill heats up and expands, it could shear the tiles right off the surface.

Using Dry Sand in a Radiant Floor

Q. *How do you go about using sand instead of concrete for thermal mass in a radiant floor, as mentioned in the Sept. '98 article "Hardwood Flooring Over Radiant Heat"?*

A. *Author Doug Mossbrook, president of Eagle Mountain HVAC, responds:* Avoid using sand that is too wet. A pile of sand stored outdoors can be quite wet in the middle. I recommend buying play sand (sand sold for use in children's sandboxes), which comes in a sealed bag. Play sand has a dependable, reasonable moisture content.

To prevent the sand from escaping through the subfloor, you need to be able to seal the cavity well. Either install polyethylene over the subfloor, or (if the plywood has tongue-and-groove joints) you can caulk the edges of the plywood. Install the sleepers over the floor, and then lay in the sand and screed it level with the tops of the sleepers. To make the sand easier to work with, you may want to mix a small amount of Portland cement with the sand — just enough cement to firm it up. Next, turn on the heat to let the sand dry. Once the sand is dry, install a second layer of polyethylene to keep the sand in place. You can install hardwood flooring directly on top of the polyethylene, or you can install plywood underlayment. Remember that plywood is an insulator, and will reduce heat transfer somewhat.

Patching Icynene Insulation

Q. *What is the best material to use to patch Icynene spray foam insulation? Sometimes it's necessary to remove a substantial amount of the stuff after it has been installed.*

A. *David Ballantyne, project engineer at Icynene, Inc., responds:* The best way to patch a hole in Icynene insulation will depend on the size of the repair. For small and medium-sized patches, a can of spray urethane foam (one-component foam from the lumberyard or hardware store) works very well. There is no compatibility problem with using other foam insulation products directly against Icynene.

However, a large patch would require many cans of one-component foam, so it would be better repaired by installing more Icynene, or another two-component foam product applied by a professional applicator.

Fiberglass batt insulation would be an option of last resort, since it will not be as resistant to air leakage as Icynene.

Bleaching Old Cedar Paneling

Q. *I want to lighten the color of 15-year-old cedar paneling that has darkened with age. The wall paneling consists of 3/8x6-inch tongue-and-groove clear cedar installed over 1/2-inch drywall. I took a sample of the interior cedar and experimented with a bleaching method I often use outdoors. I applied a solution of diluted household bleach to the cedar, followed by flushing with ample amounts of water. The results were quite satisfactory, but the procedure obviously won't work indoors.*

A. *Corresponding Editor Paul Fisette responds:* I think that if your normal bleaching procedure accomplished what you want, then you should try to use a modified version of the same procedure

indoors. First, wet-sponge the bleach solution (50/50 household bleach and warm water) onto the boards, and wait for the boards to lighten up. Then go over the boards lightly with a sponge that has been dampened with clean rinse water, instead of hosing the wall down. It would be a good idea to test this procedure in an inconspicuous corner of the room to be sure the result is satisfactory.

Choosing and Finishing Porch Boards

Q. *I am planning to replace the porch floor on a 120-year-old Victorian home. Since cedar and redwood seem too soft for a porch floor, I am choosing between tongue-and-groove yellow pine, vertical-grain fir, and mahogany. Can you explain the advantages and disadvantages of these species when used for a porch floor?*

As for the finish, I'm considering a transparent oil stain, because deck paint is slippery to walk on, and the stain will allow the wood grain to show through. It's also an advantage that a stain will not peel. What is your advice?

A. *Wood finishes expert Bill Feist responds:* The National Park Service often specifies vertical-grained Douglas fir for its decks and porches. This wood has a good combination of hardness, moderate rot resistance, dimensional stability (resistance to warping), and cost. This may be a special order item at your lumberyard.

A true mahogany would be the optimum choice for a deck because of its marked durability, its rot resistance, its hardness and wear properties, and its very good dimensional stability. The only major drawbacks are its high cost and limited availability.

Tongue-and-groove yellow pine would probably be the last choice. This wood tends to be less dimensionally stable than Douglas fir or mahogany, and it can be difficult to nail. Untreated yellow pine would have a high potential for rot problems. However, several commercial wood treaters offer 5/4 radial-edged yellow pine decking with dual treatment, using a water-repellent followed by treatment with CCA (chromated copper arsenate). This lumber is marketed under brand names such as Ultrawood, Wolman Extra, MELCO, and Weathershield. These brands use a better grade of wood, with fewer knots or other defects, than is usually used for standard pressure-treated wood. The wood tends to have few warping problems, and is highly rot resistant.

I agree that paint is not a recommended finish for a deck or porch. Because the horizontal surfaces are exposed to the sun and collect moisture, and because the finish is subject to abrasive wear, a paint or a solid-color stain would be likely to crack, flake and peel. These film-forming finishes also tend to trap water, leading to a greater possibility of rot problems.

A penetrating water-repellent preservative or a semitransparent penetrating oil or alkyd-based stain may provide the best finishing solution. Special formulations specifically made for decks are available. These penetrating deck finishes are easily renewed and enhance the appearance and service life of both naturally rot-resistant wood species and pressure-treated wood.

Pressure-Temperature Relief Valve Keeps Tripping

Q. *After reading the article "Using Water Heaters for Radiant Heat" (11/98), I decided to replace my boiler with a 75-gallon propane water heater. In general, this is working great, except that about every three weeks the pressure-temperature relief valve, which is rated at 210°F, keeps tripping. I live in the cold climate of Michigan, and I need to keep the water heater temperature set on "High," which is about 180-190°F. When the relief valve trips, I notice that the water temperature is about 195°F. What's going on?*

A. *Heating contractor and JLC author Bill Clinton responds:* Although most residential water heaters have a maximum setting of 160°F, there are some heaters that are factory-equipped with 180°F thermostats. I have used a number of these, without having the problem you describe.

When the burner on a water heater turns off and there is no circulation happening, hotter water can stratify at the top of the tank, resulting in higher temperatures than the thermostat setting. Perhaps this is the cause of your readings. If you are sure that your temperature reading is accurate, I would turn down the setting a bit and try installing a new relief valve. Under no circumstances attempt to operate a water heater without a proper relief valve.

What is likely is that you have a pressure problem and not a temperature problem. Thermal expansion may be forcing the relief valve open. Do you have an expansion tank installed? If so, is it big enough? Was its air charge adjusted to equal the household pressure before installing it? A pressure gauge attached to the drain of the water heater will help you determine if your problem is really excess pressure.

Finally, remember that temperatures this high can be dangerous. Unless you are well-trained and quite competent, don't risk working with that water heater when it's hot.

Protecting Eyes from Lead and Asbestos Dust

Q. *I do a lot of renovation work in old homes, and the work includes a lot of demolition. I am very concerned about health hazards from lead-based paint and asbestos. I make it a practice of wearing the best respirator I can find. Unfortunately, every type of eye goggles I have tried fogs up when used with a respirator, to the point where I can't see what I'm doing. Once the goggles fog up, I end up taking them off. My question is, can you get lead or asbestos poisoning through your eyes?*

A. *Karen Garbarino, Children's Environmental Health Chief at the Vermont Dept. of Health, responds:* Inorganic lead, the kind found in old paint, is not absorbed through the skin or mucous membranes. Asbestos exposure occurs through inhalation. While wearing proper eye protection is a good idea to prevent injury to the eyes, it will not have any effect on reducing potential lead or asbestos exposure.

When performing renovation work in older homes, the risk of exposure to

lead is high. Many homes built before 1978, and almost all homes built before 1940, contain lead paint. When this paint is disturbed during renovation projects, lead dust can be created and inhaled by workers. This lead-contaminated dust can also be ingested later by young children if the work area is not thoroughly cleaned after the work is complete. It is critical that safe work practices and proper equipment be used while working, and that a thorough cleanup be performed afterward to reduce the likelihood of lead exposure.

If the work is performed by a company with employees (rather than by a sole proprietor), the OSHA *Lead in Construction* standard applies. Contact your local OSHA office for more information on this standard.

When handling materials with friable asbestos, proper respiratory protection is essential. Asbestos fibers that are inhaled into the lungs can increase the risk of certain types of lung cancer.

Installing a Metal Fireplace

Q. *When installing a zero-clearance metal fireplace, are there any requirements for fire stops or draft stops? Does the inside of the chase need to be drywalled?*

A. *Stephen Bushway, mason and venting system specialist, responds:* If there is one situation where you need to follow the manufacturer's installation instructions, it is with metal fireplaces. They are sold as a system, with brand-specific chimneys. The components required will vary from manufacturer to manufacturer.

When the chimney is enclosed in a chase, some manufacturers require that the chase be equipped with two vents, one at the floor level and one near the ceiling, to help dissipate heat inside the chase. You need to install firestops at floor penetrations, where specified. Because the outside diameters of metal chimneys vary, the firestops are manufactured components specific to the type of fireplace you are installing.

Although each system varies, in many cases the installation instructions will specify requirements for wall bands to support the chimney and attic insulation shields, where applicable. Instructions should include a chart for calculating lateral distances when installing offsets and offset supports in the chimney.

Get a copy of the installation instructions before you start. This will give you the required clearances for the system, as well as information on what accessory components to order.

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