

## Q. Best Pipe for Gas Lines?

*In my area, only black iron pipe is allowed for gas lines. Is there a problem with galvanized pipe?*

**A.** *Mike Casey, a licensed plumber in Connecticut and California and co-author of Code Check Plumbing, responds:* Although black iron pipe is a bit less expensive, galvanized pipe offers better corrosion resistance. In my experience, both types of piping work fine, and the IRC and the National Fuel Gas Code allow both — along with corrugated stainless steel tubing (CSST) and copper tubing (with some limitations) — to be used for natural gas distribution piping.

But you're right: Some municipalities, particularly in the Northeast, still allow only black iron for natural gas piping. This is probably because the quality of natural gas once varied more widely than it does now, and local contaminants like hydrogen sulfide could cause problems with certain types of piping.

For example, natural gas with a significant amount of

hydrogen sulfide and moisture in it can react with copper tubing, leading to black flaking within the system. Or, sulfur in the gas can react with the zinc coating in galvanized pipe, causing it to flake off. Because these flakes can clog the small openings in gas-burning appliances, some model codes have prohibited the use of galvanized and copper gas lines.

But natural gas is much cleaner than it was 40 years ago, and nearly all fuel gas goes through a sulfur recovery unit before it enters the distribution system these days. Also, fuel-gas piping installations now require that drip legs or sediment traps be installed at the horizontal connection to the appliance to collect any moisture or debris flakes flowing with the fuel gas.

Still, even though fuel gas has been cleaned up, some states haven't changed their codes to permit galvanized pipe or copper tubing. I recommend that you contact the people at your local building and safety department and use the piping they specify for your specific fuel-gas installation.

## Q. Pancake Boxes and Ceiling Fixtures

*To retrofit light fixtures for old plaster ceilings that will be covered with new drywall, I plan to screw 1/2-inch-deep metal pancake boxes into the lathe of the existing ceilings and hang the new drywall around the boxes. But my electrician wants to cut into the ceiling and install deeper ceiling boxes, which will require additional blocking and more labor. He says that 3 1/2-inch-diameter by 1/2-inch-deep pancake boxes don't have sufficient fill capacity to make the electrical connection; is he right?*

**A.** *Harlan Madsen of South Side Electric, an electrical contractor in Bloomington, Minn., responds:* A single 14/2 NM feed with three conductors (hot, neutral, and ground) would require a box with a 6-cubic-inch capacity (2 cubic inches for each conductor), while a 3 1/2-inch

pancake box has only a 3.9-cubic-inch volume allowance (2008 NEC 314.16).

A 4-inch-diameter pancake box has a 6-cubic-inch volume allowance, enough for a single light fixture but not enough if you're using a 12/2 feed or making a splice — and not enough if the fixture has a mounting device that occupies space in the box. The NEC does allow the canopy of the fixture to add to the cubic inch capacity of the box, but the volume must be indicated on the canopy.

Because of these limitations, we install 3 1/2-inch pan boxes only if the fixture specifically requires it, or in cases where there will be transition to wire mold and an extension can be added to the box; I don't recommend them under any other circumstances.

A final complication is that the National Electrical Code now requires ceiling boxes to be rated to carry 50 pounds (2008 NEC 314.27[A]) — and I doubt that screwing the box to the lathe will meet that requirement. Your electrician is right in calling for additional blocking, and you might as well use bigger boxes, too.

### GOT A QUESTION?

Send it to Q&A, *JLC*, 186 Allen Brook Lane, Williston, VT 05495; or e-mail to [jlc-editorial@hanleywood.com](mailto:jlc-editorial@hanleywood.com).



## Q. Cupped Hardwood Flooring

*Can moisture condense on the back of a prefinished hardwood floor above an uninsulated crawlspace and cause cupping? The flooring was installed over 15-pound asphalt felt and an OSB subfloor; poly covers the ground underneath the dry and ventilated crawlspace of the 2-year-old home.*

**A.** *Tandy Reeves, a certified flooring inspector and CEO of Flooring Inspection Training Services in Tulsa, Okla., responds:* While there are several possible causes for the cupped flooring, condensation due to a lack of insulation probably isn't one of them. Cupping is always caused by a moisture imbalance from the bottom up, either at the time of installation or over the life of the flooring. Because the cupping seems to be evenly distributed over the entire house, the most likely cause is that the moisture content in the subfloor was elevated before installation and the flooring wasn't properly acclimated. To prevent such problems, the moisture content of the subfloor and the new wood flooring must be within 2 percent to 4 percent of each other prior to installation.

Another possible cause is that the plastic covering the dirt in the crawlspace isn't sealed to the walls or doesn't cover the ground completely, elevating the relative humidity underneath the floor. Inadequate cross-ventilation in the crawlspace would compound the problem; typically the area of the vents should equal 1.5 percent of the total square footage of the house.

It's also possible that the floor was mopped at some point with an excessive amount of water; this too could lead to cupping.

Once the source of moisture is found and corrected, the floor should be allowed to dry for at least a year to see if further action is needed. Unfortunately, if the planks have cupped enough that there is edge crush on most of them, they will not go back to normal, and the floor will have to be refinished or replaced (prefinished flooring with an aluminum oxide finish can be very difficult to sand). It might be that your only option is to tear out the old floor and install a new one per the flooring manufacturer's instructions.