

Compressing Fiberglass Batts

Q. What happens to the R-value when you stuff R-19 insulation into a 2x4 stud cavity?

A. Mike Lacher, Technical Services Manager in the Insulation Group at Certainteed Corp., responds: What happens is that as you compress fiberglass batt insulation, the R-value per inch goes up, but the overall R-value goes

and the metal frames of appliances.

Obviously this is against code and dangerous. The ground wire is not supposed to carry current except in the case of a ground fault — and then only for the fraction of a second it takes for the overcurrent device to trip.

When you go to a foreign country that uses 240 as a source voltage, you

limitations and problems, so when operating electronic appliances overseas, I would stick with the same transformer that you use for your power tools.

The fact that European power is delivered at 50 cycles per second (Hertz) rather than 60 cycles, as in the U.S., will not damage the tool. For instance, according to Milwaukee Electric Tool's technical support, Milwaukee tools designed to run on 120 volts at 60 cycles will operate on anything from 30 to 65 cycles. Other types of appliances may be cycle sensitive, so you should always verify this first.

Compressed R-Values for Certainteed Building Insulation

Nominal Lumber Size	Depth of Cavity	R-15 3 1/2"	R-19 6 1/4"	R-21 5 1/2"	R-22 6 1/2"	R-25 8"	R-30 8 1/4"	R-30 10"	R-38 10"	R-38 12"
2x4	3 1/2"	15	14	15	15					
2x6	5 1/2"		18	21	20	20	22	21		
2x8	7 1/4"		19		22	24	27	26	30	28
2x10	9 1/4"					25	30	29	36	33
2x12	11 1/4"							30	38	37

down. For every x% that you compress the material, you lose approximately 1/2x% of R-value. Refer to the chart below to see how this affects common sizes of insulation. This chart refers specifically to Certainteed products, but can be used for other similar fiberglass batt insulation products.

Running Power Tools Overseas

Q. Can I run my American-made tools in Europe by using just one leg of the 220-volt service that's predominant there (just like I would do it in the U.S. off a 220 plug)?

A. Master electrician Rex Cauldwell responds: Sorry, you're not allowed to do that anywhere — neither here in the U.S. nor overseas. Assuming you even have a ground on the 240-volt line (many times you don't), if you draw 120 volts off it in reference to ground, you now have return current flowing through the ground leg. This means you also have current flowing through everything that is connected to ground — such as metal beams, water pipes,

need to take along a couple of things. First, you should pick up a variety of plug-in adapters, available at Radio Shack or on the Internet. Some adapter plugs have two round prongs, some have two sideways flat prongs, others look like American unpolarized plugs. Try to be country specific if at all possible. Some Internet companies specialize in country-specific adapters (for example, www.travelsupplies.com/electricity/electricity_info.shtml).

Next, you'll need a good-quality transformer rated for the load your power tools will draw. Keep in mind that an electrical transformer can only provide 80% of its rated capacity. So a typical 1500-watt transformer can handle a 10-amp tool ($1500 \text{ watts} \div 120 \text{ volts} = 12.5 \text{ amps} \times 80\% = 10 \text{ amps}$). A good-quality transformer will cost around \$150, and should also be available at the Web site mentioned above. There are also less-expensive electronic converters available, designed to step down power to operate electronic appliances. But these have significant

Exterior Spray Foam?

Q. The specs for spray-applied urethane foam insulation say that it does not absorb water (hydrophobic). So why is it never used on the outside of foundations?

A. Insulation contractor Patrick Dundon, of Windsor, N.Y., responds: Spray-applied polyurethane foam is in fact frequently used as an exterior foundation insulation. Foam Enterprises of Minneapolis, Minn. (800/888-3342), has been supplying insulation contractors with this system for several years.

Urethane will not absorb water, but if there is sufficient force (a high water table, for example, or improperly directed runoff), water will penetrate the foam. In addition, urethanes do not stand up to sunlight well, which means a protective coating is necessary to prevent UV degradation. An exterior foam insulation job requires coating the below-grade portions with a cold-applied asphalt and those portions above grade with an acrylic roof coating or a cementitious EIFS-style parging.

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

