

MECHANICAL CODE DISCUSSION

Foil-Faced Bubble Wrap “Insulation”

As I continue to see ‘foil bubble insulation’ used incorrectly as duct insulation, it’s time to **separate the facts from the fiction**. The

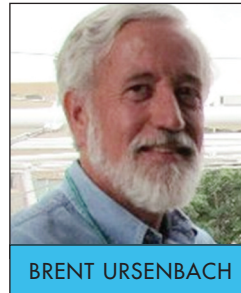
International Mechanical Code (IMC) and the International Residential Code (IRC) reference the International Energy Conservation Code (IECC), for the R-value requirements for duct insulation. The requirements for both residential and commercial duct work is R-8 for duct outside or in ventilated attic spaces, R-6 for other un-conditioned spaces. For more than 15 years, manufacturers of foil bubble type materials have made claims that are far from truthful, claiming R-values significantly higher than actual values.

The FACTS:

- A layer of 1/4" to 3/8" foil bubble insulation has a maximum R-value of 1.1, **not** 4 or 5.
- Two layers of 1/4" foil bubble insulation, the second directly on top of the first produce an R-2.2, nothing near R-6 or R-8
- Claims of “effective R-value” based on the *reflective* nature of the product are immaterial, as the code requires actual R-value.
- Any increased R-value due to air spaces, requires an air space on the reflective side of the material. Bubble foil under a slab obviously has no air space on the shiny/bottom side—consider the R-value of the product only when under slab.
- Many manufacturers and distributors have published exaggerated claims deliberately blurring the line between product

R-values and assembly R-values.

- Fortunately, most manufacturers have removed the blatant lies from their web-sites; however they have replaced false statements with vague claims of “higher R-values” or “resists the transfer of heat”.
- Claims of R-4, R-6 and R-8 when used as a duct wrap all require providing air spaces between layers of the product with very specific spacers. Spacers as specified by the manufacturer must be used to create required airspaces. All seams must be taped and sealed, using required materials insuring the airspaces are tightly enclosed.
- Several manufacturers claim R-4 if a single layer is loosely wrapped around the duct; however there is absolutely no technical testing or engineering calculations supporting this claim.
- Only two products have submitted their products to the ICC and received an *ICC-ES Evaluation Report*: **EcoFoil/rFoil** and **Reflectix**. Both products may be used as duct insulation **ONLY** when installed with spacers, exactly as specified in the reports and the manufacturer’s installation instructions. The attached diagrams are taken directly off an ICC-ES Evaluation report. Foil bubble insulation that is **NOT** installed in accordance with report requirement is not code compliant and should not be approved.



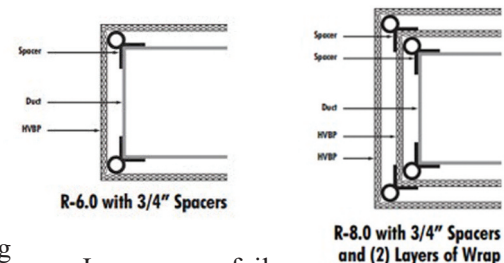
BRENT URSENBACH

BRENT URSENBACH

SALT LAKE COUNTY PLANNING AND DEVELOPMENT

bursenbach@slco.org
385-468-6694

- Manufacturers are now producing 2 layer foil bubble insulation product with spacers and an airspace within a sheet of the product. Please be aware that even with these products, a second airspace must be created between the duct and the foil bubble material. Again, refer to the Evaluation report and the installation instructions.



In summary, foil bubble insulation materials have been extensively installed incorrectly over the past 15-20 years, resulting in low R-values, increased duct losses, high energy consumption and poor HVAC system operation. Manufacturers, distributors, contractors and building inspectors are not serving the best interest of building owners and occupants when these products are improperly installed. If you chose to use these products, evaluation reports and installation instructions should be submitted at the time of permit application, followed by an installation in compliance with all specifications and installation requirements.

Feel free to contact me if you have comments or question on this or any other code issues. I appreciate your mechanical code discussion suggestions.

Best Regards, Brent ■