



December 13, 2017

Mr. Vincent Garofalo
Madison Building Official
8 Campus Drive
Madison, CT 06443-2562

Dear Mr. Garofalo:

In your request dated December 5, 2017, you ask for a formal interpretation regarding acceptable air barriers behind showers, tubs and duct chases on exterior walls.

Section N1102.4.1.1 of the 2012 IRC (IECC R402.4.1.1) provides requirements for installation of components of the building thermal envelope and refers to Table N1102.4.1.1 which identifies specific areas and criteria to address those areas. One of these is shower/tubs on exterior walls.

Question #1

After the exterior wall has been insulated and inspected, should a solid surface air barrier be installed that also helps act as a thermal barrier.

Answer:

Yes, on an exterior wall, a tub or tub/shower unit is required to have air barrier installed behind it. Otherwise this area would become a large void in the interior membrane portion of the thermal envelope (i.e. the sheetrock wall). Providing an air barrier behind the tub that is sealed to the adjacent framing and sheetrock (or durarock) completes this interior membrane in a similar fashion as providing gaskets or air sealed boxes for electrical devices. While the code is not specific on the type of air barrier, many sources, such as EPA Energy Star, do recommend ridged air barrier (see attached Energy Star page).



Question #2

When using 6mil poly or house wrap, should the barrier be attached with furring strips on all edges to provide a permanent attachment and sealing surface with caulking?

Answer:

N1102.4.1.1 requires that *"The components of the building thermal envelope as listed in Table N1102.4.1.1 shall be installed in accordance with the manufacturer's instruction and the criteria listed in Table N1102.4.1.1, as applicable to the method of construction."* Most manufacturer's information we reviewed included requirements for caulk sealing and mechanical fastening, generally with fasteners having large heads. Furring strips would appear to meet the manufacturers' intent for the mechanical fastening to be tear resistant.

Sincerely,

Joseph V. Cassidy, P.E.
State Building Inspector
DAS CONSTRUCTION SERVICES
Office of the State Building Inspector



THERMAL ENCLOSURE SYSTEM RATER CHECKLIST

3 FULLY-ALIGNED AIR BARRIERS
1 WALLS

DETAIL 3.1.1 ^{6,7,*}

Walls behind showers and tubs

- A. Install insulation without misalignments, compressions, gaps, or voids in all exterior wall cavities behind all tubs and showers.
- B. Back with a rigid air barrier or other supporting material to prevent insulation from sagging and create a continuous thermal barrier.*
- C. Seal all seams, gaps, and holes of the air barrier with caulk or foam before tub/shower installation.

* EPA recommends using a rigid air barrier, but it is not a requirement.

FOOTNOTES

6. For purposes of this checklist, an air barrier is defined as any durable solid material that blocks air flow between conditioned space and unconditioned space, including necessary sealing to block excessive air flow at edges and seams and adequate support to resist positive and negative pressures without displacement or damage. EPA recommends, but does not require, rigid air barriers. Open-cell or closed-cell foam shall have a finished thickness $\geq 5.5"$ or $1.5"$, respectively, to qualify as an air barrier unless the manufacturer indicates otherwise. If flexible air barriers such as house wrap are used, they shall be fully sealed at all seams and edges and supported using fasteners with caps or heads $\geq 1"$ diameter unless otherwise indicated by the manufacturer. Flexible air barriers shall not be made of kraft paper, paper-based products, or other materials that are easily torn. If polyethylene is used, its thickness shall be ≥ 6 mil.

7. Band joists are currently exempt from interior air barrier requirement in Climate Zones 4 through 8, but highly encouraged by EPA as a best practice.

8. Up to 10% of the total exterior wall surface area is exempted from the reduced thermal bridging requirements to accommodate thermal fins, wing walls, masonry fireplaces, or similar architectural details.

