TECHNICAL BULLETIN

TARGET MARKET ROOFING

Sarnafil

BUILDING TRUST



14-05

Subject: IECC Air Barrier Requirements – 2012

The IBC enacted a significant change from the 2009 to the 2012 International Energy Conservation Code (IECC) requiring that the building envelope be designed to limit air leakage through the building's thermal envelope. The intent of the IECC code change is to make commercial (non-residential) buildings more energy efficient by minimizing hot air from infiltrating into the building during the cooling seasons and cold air during the heating season. To meet this mandatory code requirement, the thermal envelope of the building shall comply with code Sections C402.4.1 through C402.4.8, which basically states there will be a continuous air barrier provided throughout the building thermal envelope. The exception to the mandatory continuous air barrier requirement is those buildings located in climate zones 1, 2, and 3.

The IECC has set parameters for the maximum allowable air leakage for buildings and allows three methods to determine compliance with stated maximum air permeability or leakage of the air barrier.

Materials (Section C402.4.1.2.1) - air permeability no greater than 0.004 cfm/ft² (0.02L/s m²) when tested to ASTM E2178.

The code recognizes fifteen materials as meeting the code requirements, as long as all joints are sealed, and the materials are installed as air barriers in accordance with the manufacturer's instructions. This pre-approved list includes materials such as built-up roofs, modified bituminous roof membrane and fully adhered single ply roof membrane. Mechanically attached roof systems are not included on the pre-approved material list.

Assemblies (Section C402.4.1.2.2) - assemblies of materials and components with an average air leakage not to exceed 0.014 cfm/ft² (0.2 L/s m²) as tested to ASTM E 2357, ASTM E 1677 or ASTM E 283. At this time these assembly tests are only for wall constructions.

Building Test (Section C402.4.1.2.3) – the completed building shall be tested with the air leakage of the building envelope not exceeding 0.4 cfm/ft² (2.0 L/s m²), tested to ASTM E779, which is a full building pressure test.

As the 2012 IECC is written, our adhered single ply systems meet the air barrier requirement based on the preapproved list noted in the code

To validate all of our membranes as well as our barrier sheets, we did third party independent material testing with our Sarnafil G410, Sarnafil S327, Sikaplan, Sarnavap - 10 and Sarnavap SA in accordance with ASTM E2178 to prove these materials all meet or exceed the air barrier requirements of Section C402.4.1.2.1 of IECC 2012. With the testing of the roof membranes, we used the thinnest offering for each so as to represent what may be considered the "most critical" version of the product for this test procedure. The values in the following table show all these materials are all well below the requirements for an air barrier material as required by the code.

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Material	Flow Rate		Air Permeance
	cfm / ft ²	L /s m ²	L / (Pa m² s)
Sarnafil G410	<0.00006	<0.0003	<0.00012
Sarnafil S327	<0.00010	<0.0005	<0.00020
Sikaplan	<0.00004	<0.0002	<0.00008
Sarnavap - 10	<0.00004	<0.0002	<0.00008
Sarnavap SA	<0.00006	<0.0003	<0.00012

Based on the test data, these materials meet the requirement of Section C402.4.1.2.1 that allows for air infiltration to be ≤ 0.004 cfm/ft² (0.02L/s m²) when tested to ASTM E2178 as long as all the seams or joints of our materials are sealed, these materials meet the IECC building code requirements for air barriers.

We believe the listed materials in the above table meet the requirements of the 2012 IECC, as the test report provided by an ICC certified laboratory states, it is still the local building code official that makes the ultimate and final decision for code compliance.

The 2012 IECC is slowly being reviewed and adopted by state and/or local code jurisdictions. The following chart will provide a general understanding of adoption of the IECC as well as other ICC codes as of July 2014. The link to stay current regarding state code adoption is: <u>www.iccsafe.org/gr/Documents/stateadoptions.pdf</u>

As stated above, the 2012 IECC requires a continuous air barrier for the entire building envelope. The transitions to dissimilar products, such as a roof to wall air barrier tie-in will be critical. Not only must the tie-in be sealed, as required by the code, there is the issue of compatibility between the various products. Please review our Technical Bulletins dated 3/28/2014 for Sika Wall Air Barrier to Roof Tie-in Details and Bulletin 02-12, dated 5/23/2012, which addresses Sarnafil membranes in contact with self-adhered barrier sheets.

With a re-roof or recover application, it may be impossible to meet the IECC code requirements, as there most likely will not be a wall air barrier in place. There are a few states that have recognized this issue, such as IL, NC, and SC, and do not require compliance with the 2012 air barrier requirements. Other states are realizing the potential issues of providing a continuous building envelope air barrier with recover or reroof applications and are considering similar exemptions. It is believed that the 2015 IECC will exempt reroof and recover applications from the air barrier requirements.

The following websites may be useful to keep current with each state's adoption of the entire IECC or portions of the code.

http://www.energycodes.gov/adoption/states

http://www.nrca.net/roofing/Energy-codes-256