3M™ Air and Vapor Barrier 3015
Building Envelope Solutions
Mock Wall Performance

Technical Bulletin 3015-0006 **May 2014**

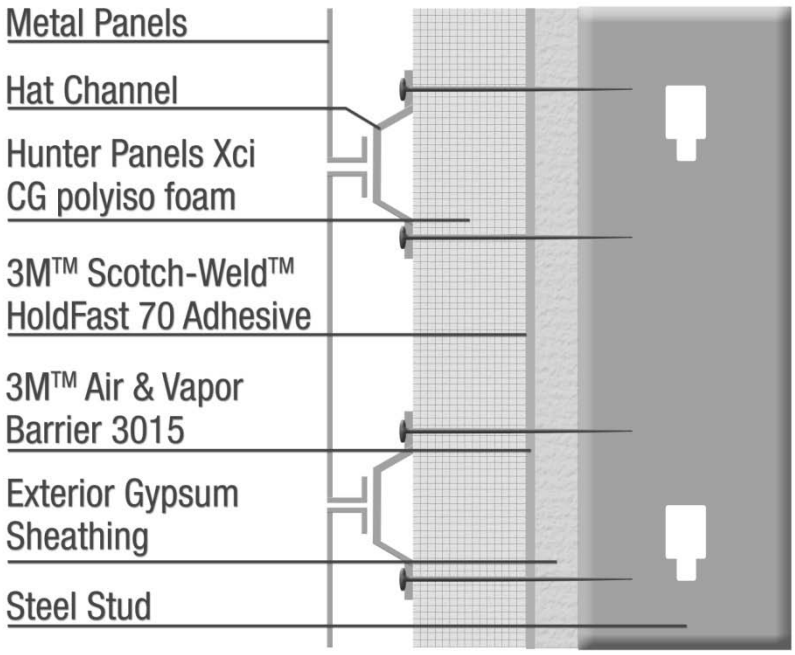
3M™ Air and Vapor Barrier 3015 has a unique multilayer elastomeric film backing that provides many advantages like translucency that allows installers to see stud lines for installation of masonry ties, furring or framing, and verification of substrate preparation for inspectors or consultants. The film is also receptive to sealing with difficult bonding materials like silicone sealants.

This product also features high elongation and aggressive adhesion which make it a great exterior building wrap because it allows the structure its natural movement while retaining an airtight seal. To show this we subjected a test wall (building mock up) to ASTM E283 Air Leakage at 6.24 psf (300 Pa) pressure differential, both before and after a series of water penetration, vertical interstory movement, and thermal cycle conditioning.

The testing was done in conjunction with the construction of a mock wall for the 3M Center Laboratory Building 280. A mock up of the design including both glass curtain wall and 3M's NFPA 285 approved metal panel finish wall was built at Architectural Testing Inc., in West Palm Beach, FL.

3M™ Air and Vapor Barrier 3015 was installed in an assembly consisting of steel stud framing (no interior insulation), 5/8" thick Type X exterior gypsum sheathing, 3M 3015, 3M™ Scotch-Weld™ HoldFast 70 spray adhesive, Hunter Panels Xci CG polyisocyanurate foam board insulation (3" thick), and metal panels attached to hat channels installed on top of the insulation, as seen in Figure 1 below. The assembly conforms to 3M's NFPA 285 passing system, as outlined in 3M Technical Bulletin 3015-0005. This wall was connected to a curtain wall system designed and built by Harmon, Inc.

Figure 1 – Cross section diagram of test wall



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The entire assembly was subjected to the following test procedure:

Step	Condition	Method	Specification	Result
1	Preload	ASTM E330 positive differential (inward acting) of 9.0 psf (431 Pa) [50% design load] for 10 s.	No visible signs of failure	Pass
2	Static Air Infiltration	ASTM E283 – positive static pressure differential of 6.24 psf (300 Pa)	0.06 cfm/ft² (0.3 L/s·m²) leakage maximum	0.02 cfm/ft² (0.1 L/s·m²)
3	Static Water Penetration	ASTM E331 – 5 gal/hr/ft² at a pressure differential of 12.0 psf (575 Pa) for 15 minutes	No uncontrolled water leakage	Pass
4	Dynamic Water Penetration	AAMA 501.1 – 5 gal/hr/ft² at a dynamic air stream equivalent to static pressure of 12.0 psf (575 Pa) for 15 minutes	No uncontrolled water leakage	Pass
5	Uniform Structural Design Load	ASTM E330 – 10s at each pressure differential: +9.0 psf (431 Pa) [50% of Positive Design Load] +18.0 psf (863 Pa) [100% of Positive Design Load] -16.5 psf (-791 Pa) [50% of Negative Design Load] -33.0 psf (-1581 Pa) [100% of Negative Design Load]	Deflection normal to Wall Plane: L/175 for spans up to 162" L/240 + 1/4" for spans greater than 162"	Pass
6	Repeat Tests 1, 2, 3, and 4 above			
7	Interstory Differential Vertical Movement	AAMA 501.7 – 5/8" down, then back to zero, then 5/8" up then back to zero (one cycle). Three complete cycles.	No failure or gross permanent distortion	Pass
8	Repeat Tests 1, 2, 3, and 4 above			
9	Thermal Cycles	AAMA 501.5 – wall interior temperature maintained at 75 ± 5°F (23.8 ± 2.7°C). Down to -14°F (-25.5°C) for 2 hrs after establishing equilibrium, followed by up to +180°F (+82°C) for 2 hrs after establishing equilibrium (one cycle). Three cycles.	All components withstand thermal movements without failure	Pass
10	Condensation Evaluation	Conditions of -14°F exterior temperature, 70°F (21°C) & 35% relative humidity interior temperature, held for 2 hours after reaching equilibrium.	No thermocouples measure lower than 41°F (dew point) on interior wall	Pass
11	Repeat Tests 1, 2, 3, and 4 above			
12	Uniform Structural Over Load Test	ASTM E330 – 10s at each pressure differential: +13.5 psf (647 Pa) [75% of Positive Design Load] +27.0 psf (1294 Pa) [150% of Positive Design Load] -24.8 psf (-1188 Pa) [75% of Negative Design Load] -49.5 psf (-2372 Pa) [150% of Negative Design Load]	Net permanent set shall not exceed 1/16"	Pass
13	Static Air Infiltration	ASTM E283 – positive static pressure differential of 6.24 psf (300 Pa)	0.06 cfm/ft² (0.3 L/s·m²) leakage maximum	0.03 cfm/ft² (0.15 L/s·m²)

3M™ Air and Vapor Barrier 3015 withstands the rigors expected for the building performance, maintaining its airtight and watertight seal throughout all of the tested conditions.

For additional information, please contact your local 3M representative.

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