



Air Leakage and Water Resistance

ASTM E2357 and ASTM E331

Scope Statement

The Owens Corning® Enclosure Solutions Wall System for CMU wall has the option to use FOAMULAR® CW15 Air and Water Barrier for Foam Sealed Joints, CW25 Air and Water Barrier for Foam Sealed Joints or High R CW Plus Air and Water Barrier for Foam Sealed Joints as the air and water resistive barrier system.

Testing

ASTM E2357:

Intertek Building & Construction

130 Derry Court, York, PA 17406-8405

Report # H7940.03-109-44, May 18, 2018

Test Methods

- ASTM E2357-05 Standard Test Method for Determining Air Leakage of Air Barrier Assemblies
- ASTM E331-00(2016) Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference

Specimen Description

E2357 and ASTM E331:

- Test Specimen Size: 96" x 96" (64 ft², 5.946 m²)

Test Results Summary and Codes/Standards Compliance

Air Barrier (ASTM E2357)

Both ASHRAE 90.1-2016 (commercial building energy standard, Section 5.4.3.1.3 c), and The Air Barrier Association of America (ABAA), define an air barrier assembly as having an average air leakage not to exceed 0.04 cfm/ft² at a pressure of 75 pa (1.57 psf).

The Owens Corning® FOAMULAR® Air & Water Barrier System with Foam Sealed Joints for CMU Walls, was tested per ASTM E2357 and successfully qualified as an air barrier assembly. After thousands of pressure loading cycles as specified in ASTM E2357 (see Table 1), the system described had the air leakage rates shown in Table 2 measured at 75 pa (1.57 psf).

Weather Resistive Barrier (ASTM E331)

The International Building Code, Section 1402.2, requires that buildings be provided with a weather-resistant exterior wall envelope. To demonstrate compliance specimens are commonly tested in accordance with ASTM E331. Passing requires that the specimen show no visible water penetration for 15 minutes at an air pressure differential across the specimen of 2.86 psf (137 Pa). The Owens Corning FOAMULAR® Air & Water Barrier System with Foam Sealed Joints for CMU Walls passed the prescribed criteria.

Opaque Wall (ASTM E2357)

The opaque wall was constructed from 16" long by 8" wide by 8" thick concrete masonry units (CMU) with 1/2" mortar joints. Hook & ladder horizontal joint reinforcement with wire tie eyes was installed every two courses of block spaced vertically with eye wires spaced 16" on center horizontally. FOAMULAR® XPS was installed onto the test wall using friction fit between brick ties of the CMU wall. Owens Corning® ProPink® All Season Foam Sealant was applied behind the FOAMULAR® and inside all joints to establish a seal.

Penetrated Wall (ASTM E2357)

The penetrated wall was constructed the same as the opaque wall described above except with wall penetrations prescribed in ASTM E2357.

Penetrations included:

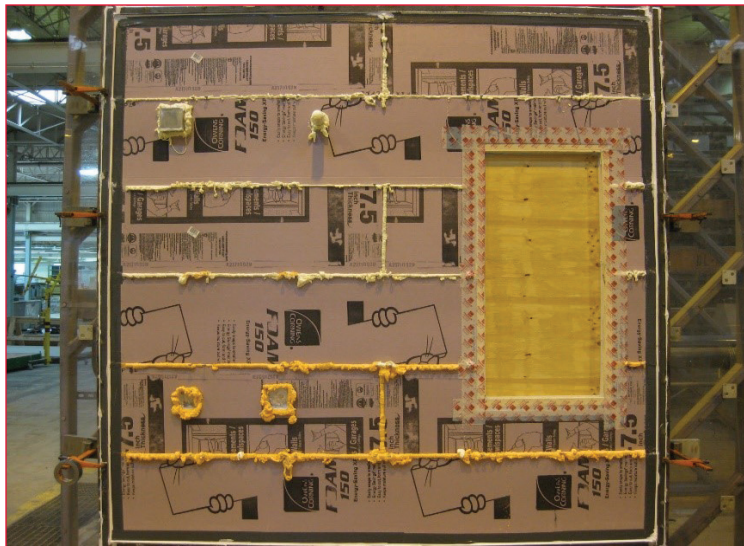
- 24" x 36" window opening with a 23" x 35" mock window insert (wood 2 x 4 frame, plywood, sealed with FlashSealR® flashing tape).
- 4" x 4" HVAC duct sealed with Owens Corning® ProPink® All Season Foam Sealant
- 4" x 4" square junction box sealed with Owens Corning® ProPink® All Season Foam Sealant
- 4" x 4" octagonal junction box sealed with Owens Corning® ProPink® All Season Foam Sealant
- 1-1/2" diameter PVC pipe sealed with Owens Corning® ProPink® All Season Foam Sealant



ENCLOSURE SOLUTIONS

Owens Corning® FOAMULAR® Air and Water Barrier System with Foam Sealed Joints for CMU Walls

Technical Bulletin CM-02A



Deformation Loading Sequence

Table 1

Test	# Cycles/Period	Pressure	Result
Deformation	1/10 seconds	+/- 100 Pa (+/- 2.09 psf)	No Damage
Deformation	1/10 seconds	+/- 200 Pa (+/- 4.18 psf)	No Damage
Deformation	1/10 seconds	+/- 300 Pa (+/- 6.27 psf)	No Damage
Deformation	1/10 seconds	+/- 400 Pa (+/- 8.36 psf)	No Damage
Deformation	1/10 seconds	+/- 500 Pa (+/- 10.45 psf)	No Damage
Deformation	1/60 minutes	+600 Pa (+12.54 psf)	No Damage
Deformation	1/60 minutes	-600 Pa (-12.54 psf)	No Damage
Cyclic Loading	2000/5 seconds (1000 each, infiltration & exfiltration)	+/- 800 Pa (+/- 16.72 psf)	No Damage
Gust Loading	2/3 seconds (1 each, infiltration & exfiltration)	+/- 1200 Pa (+/- 25.06 psf)	No Damage

ASTM E2357, Air Leakage Rate After Loading Sequence (cfm/ft²)

Table 2

Tested at 75 pa (1.57 psf)	Air Infiltration	Air Exfiltration	ASHRAE 90.1 and ABAA Air Barrier Criteria	Qualifies as an Air Barrier Assembly
Opaque Wall	0.0003*	0.0005	0.04 maximum	Yes
Penetrated Wall	0.005	0.0002	0.04 maximum	Yes

* Air Leakage reported for this assembly is 0.0003 cfm/ft² (0.0015 L/sm²)

ASTM E331, Water Exposure for Penetrated Wall

Table 3

(hr:min:sec)	00:15:00	Pass per ASTM E331
Tested at 137Pa (2.86 psf)	No Leakage	Yes No Visible Water penetration at 15 minutes

The Owens Corning Enclosure Solutions Concrete Masonry Unit (CMU) Wall System excludes the masonry veneer and concrete masonry units. A detailed list of components is available at OwensCorning.com/Enclosure



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