

BRICK INDUSTRY ASSOCIATION LETTER OF RESULTS

SCOPE OF WORK

ASTM E119 TESTING OF THE EXTERIOR SURFACE ON A NON-LOAD-BEARING WALL ASSEMBLY CONTAINING TREMCO® EXOAIR® 230 FLUID-APPLIED, 4 IN. THICK KINGSPAN® GREENGUARD® TYPE IV 25 PSI EXTRUDED POLYSTYRENE (XPS) INSULATION BOARD, 10MM KEENE BUILDING PRODUCTS DRIWALL™ RAINSCREEN, 1/2 IN. THICK PERMABASE® CEMENT BOARD, LATICRETE® MVIS THIN BRICK MORTAR AND 1/2 IN. THICK GLEN-GERY THIN VENEER BRICK WITH GLEN-GERY COLOR MORTAR BLEND BETWEEN BRICK

REFERENCE PROJECT NUMBER

I8509.02-121-24-R3

TEST DATE(S)

12/12/18 – 12/12/18

LETTER OF RESULTS ISSUE DATE

01/30/20

RECORD RETENTION END DATE

12/12/22

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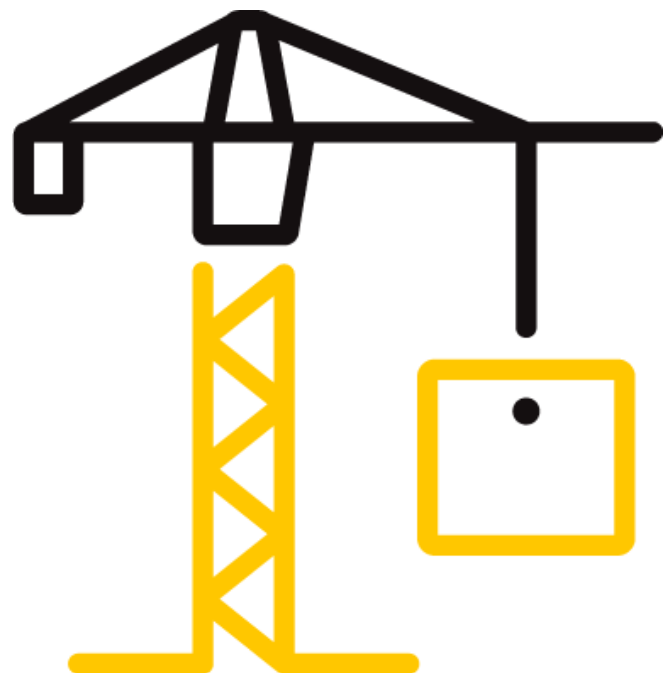
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LETTER OF RESULTS FOR BRICK INDUSTRY ASSOCIATION

Issue Date: 01/30/20

Reference Project No.: I8509.02-121-24-R3

LETTER OF RESULTS ISSUED TO

Brick Industry Association

12007 Sunrise Valley Drive

Suite 430

Reston, Virginia 20191

SECTION 1

SCOPE

Intertek Building & Construction (B&C) was contracted by Brick Industry Association, 12007 Sunrise Valley Drive Suite 430 Reston, Virginia 20191 to evaluate the fire-resistance of an exterior, non-load-bearing wall assembly containing Tremco® ExoAir® 230 fluid-applied, synthetic air & vapor permeable membrane, 4 in. thick Kingspan® GreenGuard® Type IV 25 psi Extruded Polystyrene (XPS) Insulation Board, 10mm Keene Building Products Driwall™ Rainscreen, 1/2 in. thick PermaBase® cement board, Laticrete® MVIS Thin Brick Mortar polymer modified mortar, 1/2 in. thick Glen-Gery Thin Veneer Brick with Glen-Gery Color Mortar Blend between brick. Testing was conducted at the Intertek B&C test facility in York, Pennsylvania. Results obtained are tested values and were secured by using the designated test method(s). A comprehensive summary of test construction is within this document. This report does not constitute a complete test report, certification of this product, nor an opinion or endorsement by this laboratory. For full details of the project, reference Intertek-ATI test report number I8509.02-121-24-R3.

SECTION 2

SUMMARY OF TEST RESULTS

ASTM E119 Test Results: The assembly described and tested in this report **did** meet the Conditions of Acceptance of ASTM E119 when exposed to a fire-resistance rating of **60 minutes**. Construction summary of the assembly is located in Section 5 of this test report.

For INTERTEK B&C:

COMPLETED BY:	Scott Gingrich	REVIEWED BY:	Ethan Grove
TITLE:	Technician Team Lead – Fire Testing	TITLE:	Manager – Fire Testing
SIGNATURE:		SIGNATURE:	
DATE:	01/30/20	DATE:	01/30/20

SDG:ddr

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SECTION 3

TEST METHOD

The assembly was evaluated in accordance with the following:

ASTM E119-16a, *Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components*

ASTM E2226-15b, *Standard Practice for Application of Hose Stream*

SECTION 4

TEST PROCEDURE

For complete test procedure, conditions, and calibration values, reference Intertek-ATI Test Report #I8509.02-121-24-R3.

SECTION 5

TEST ASSEMBLY DESCRIPTION

Unexposed Interior Cladding

The full unexposed surface of the wall assembly was clad with one (1) layer of 5/8 in. thick National Gypsum Gold Bond® Fire-Shield® gypsum board meeting the requirements of ASTM C1396. The gypsum board was fastened to the wall framing with #6 x 1-1/4 in. long, bugle head, self-drilling screws with a nominal spacing of 8 in. around the board perimeter and 12 in. in the field. Drywall orientation consisted of three pieces fastened to the wall framing, with the run edge running parallel with the framing and the cut edge perpendicular to the framing. All joints were taped with USG Sheetrock® Brand paper joint tape and spackled with USG Sheetrock® Brand joint compound. All fastener heads were spackled with USG Sheetrock® Brand joint compound.

Framing

The core wall consisted of 10 ft. long, 3-5/8 in. deep, 18 gauge galvanized steel studs (33 ksi) fastened to 10 ft. length, 3-5/8 in. deep, 18 gauge galvanized steel track every 24 inches on center with one #6 x 1/2 in. long self-drilling, pan head fastener per stud flange.

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Reference Project No.: I8509.02-121-24-R3

SECTION 5 (Continued)

TEST ASSEMBLY DESCRIPTION

Framing Insulation

Johns-Manville R11 unfaced fiberglass batt insulation meeting the requirements of ASTM C665 Type I was friction fit into the stud cavity prior to the interior gypsum installation.

Exposed Sheathing

One (1) layer of 1/2 in. thick National Gypsum Gold Bond® eXP® Extended Exposure exterior gypsum sheathing with glass mat facing, meeting the requirements of ASTM C1177, was placed vertically across the full exterior surface of the assembly. The gypsum sheathing was fastened to the wall framing with #6 x 1-1/4 in. long, bugle head, self-drilling screws with a nominal spacing of 8 in. around the board perimeter and 12 in. in the field.

Exposed Water-Resistive Barrier / Air Barrier

Tremco® Dymonic® 100 high performance, high movement single-component, polyurethane sealant was placed on all the screw heads used to secure the exterior gypsum. After the Dymonic® 100 was cured, application of the Tremco® ExoAir® 230 fluid-applied, synthetic air & vapor permeable membrane began. Using a 3/4 in. nap roller, the ExoAir® 230 was applied to achieve a thickness of 0.048 in. (48 wet mils) across the entire surface of the assembly. The application was allowed to cure for a minimum of 72 hours before additional components were added to the assembly.

Exposed Exterior Insulation

4 in. thick Kingspan® GreenGuard® Type IV 25 psi Extruded Polystyrene (XPS) Insulation Board meeting ASTM C578 Type IV was used as the exterior insulation. The insulation was placed horizontally and adhered to the exterior gypsum using Loctite® Power Grab® ultimate construction adhesive. This adhesive was applied vertically to the back of the insulation board on 24 inch intervals with a 1/4-inch bead thickness. A vertical joint offset of 24 in. was utilized during the installation.

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Reference Project No.: I8509.02-121-24-R3

SECTION 5 (Continued)

TEST ASSEMBLY DESCRIPTION

Exposed Exterior Cladding

The installation began with 10mm Keene Building Products Driwall™ Rainscreen drainage mat. This was secured with #10 x 6 in. long scorpion drill point drywall fasteners and 1-1/4 in. diameter metal washers placed at 24 in. centers into each vertical stud. The 1/2 in. thick PermaBase® cement board, meeting the requirements of ASTM C1325 Type A was secured to the assembly using #10 x 6 in. long scorpion drill point drywall fasteners placed on 8 in. centers into each vertical stud and horizontal track. The cement board was staggered in the same manner as the exterior insulation making sure to not have vertical and horizontal cement board joints that overlapped with the insulation vertical and horizontal joints. The cement board joint was taped with PermaBase® cement board fiberglass tape. A thin coat of Laticrete® MVIS Thin Brick Mortar polymer modified mortar meeting ANSI A118.15 and ANSI A118.4 was used to cover the tape and joints of the cement board. The same mortar was applied in accordance with ANSI A108.5 to the full exterior surface of the assembly and used to adhere the 1/2 in. thick Glen-Gery Thin Veneer Brick meeting ASTM C1088 Type TBS to the assembly. As the brick courses were installed, Glen-Gery Color Mortar Blend Portland cement-lime mortar meeting ASTM C270 Type N was utilized in a grout bag to fill the space between each brick. A concave jointer tool was used to strike the mortar when firm to finish the install.

SECTION 6

DRAWINGS

Test specimen construction was verified by Intertek B&C per the drawings included in this report. For a complete drawing set including drawings showing thermocouple locations for the test, reference Intertek-ATI Test Report #I8509.02-121-24-R3.

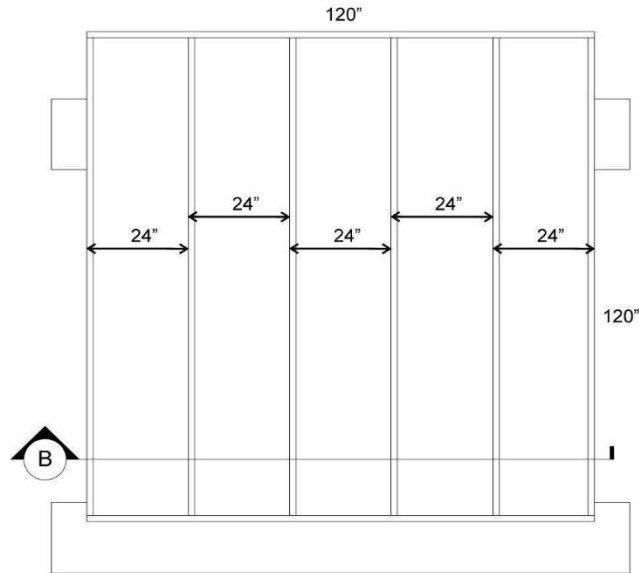
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Reference Project No.: I8509.02-121-24-R3



A FRAMING PLAN (ELEVATION VIEW)

intertek Total Quality. Assured.	Report #:	I8509.02-121-24
	Date:	03/29/19
	Verified by:	<i>[Signature]</i>

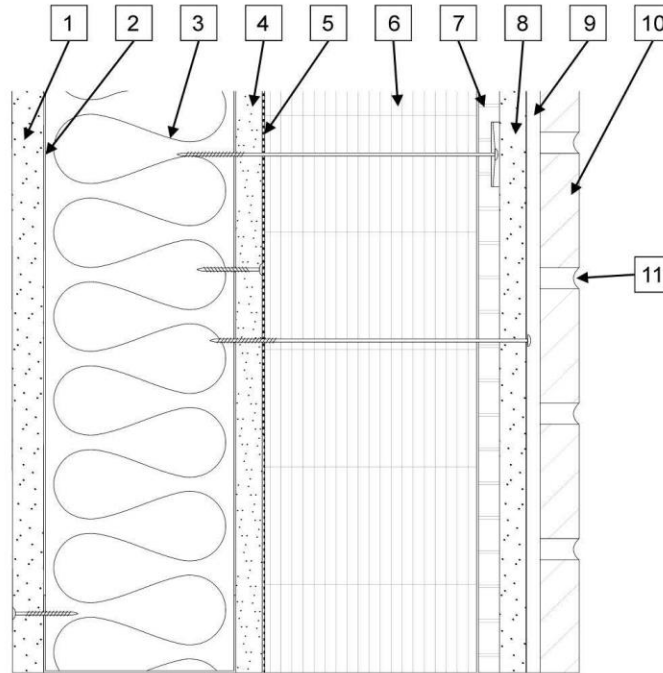
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Reference Project No.: I8509.02-121-24-R3



1. Gypsum board (unexposed side) - One layer 5/8 in. thick National Gypsum Gold Bond ® Fire-Shield ® gypsum board
2. Cold-formed metal framing - 3-5/8 in. wide No. 18 (43 mil) gauge galvanized cold-formed metal studs and track
3. Batt insulation - R-11 Johns-Mansville unfaced fiberglass batt insulation
4. Exterior gypsum sheathing (exposed side) - One layer 1/2 in. thick National Gypsum Gold Bond ® eXP ® Extended Exposure Gypsum Sheathing with glass mat facing
5. Water-resistive barrier / air barrier (exposed side) - Tremco ® ExoAir ® 230 fluid-applied, synthetic air & vapor permeable membrane applied to a thickness of 0.048 in. (48 wet mils)
6. Exterior insulation (exposed side) - 4 in. thick Kingspan ® GreenGuard ® Type IV 25 psi Extruded Polystyrene (XPS) Insulation Board
7. Drainage mat (exposed side) - Keene Building Products Drivall™ Rainscreen 10 mm
8. Cement board (exposed side) - 1/2 in. thick PermaBase ® Cement Board
9. Mortar bed (exposed side) - Laticrete ® MVI-S™ Thin Brick Mortar polymer modified mortar
10. Clay thin brick (exposed side) - 1/2 in. thick Glen-Gery clay thin brick
11. Mortar joints (exposed side) - Glen-Gery Color Mortar Blend

B SECTION AT BASE

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	Date: 03/29/19
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Reference Project No.: I8509.02-121-24-R3

SECTION 7

TEST OBSERVATIONS & RESULTS

FIRE-RESISTANCE TEST OBSERVATIONS	
Time (Min:Sec)	Observations
00:00	Ignition of furnace burners. Fire-resistance test begins.
01:58	Expanding sounds from assembly.
09:20	Vapor emits from top of assembly.
14:50	Cracks observed in the mortar.
17:17	Ignition on the mortar cracks.
51:40	XPS dripping from bottom of assembly.
01:08:16	Observed brick fell into the furnace.
01:10:00	Cement board fell into furnace.
01:19:50	Cracks observed in exterior gypsum.
01:37:00	Unexposed temperatures pass allowable thresholds.
01:40:00	Burners shut off. Conclusion of fire-resistance test.

HOSE STREAM TEST OBSERVATIONS	
Time (Min:Sec)	Observations
00:00	Prescribed water pressure achieved at the hose stream apparatus. Test begins
00:14	Water passed thru assembly. Hose stream test concluded.

VARIABLE	DESCRIPTION	VALUE	UNITS
C	Correction Factor	-59	seconds
I	Indicated FR Period	120	minutes
A	Area under Indicated FR Period for first 3/4 of test period	107194	°F*min
As	Area under Standard E119 Time vs. Temp. Curve for first 3/4 of test period	108850	°F*min
L	Lag Correction	3240	°F*min
FR Period	Fire-Resistance Period	100	minutes

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Reference Project No.: I8509.02-121-24-R3

SECTION 7 (Continued)

TEST OBSERVATIONS & RESULTS

HOSE STREAM RETEST

HOSE STREAM RETEST FIRE-RESISTANCE TEST OBSERVATIONS	
Time (Min:Sec)	Observations
00:00	Ignition of furnace burners. Fire-resistance test begins.
09:11	Vapor emits from top of assembly.
17:37	Ignition on the mortar cracks.
20:42	Observed brick cracking.
25:55	Assembly bows toward furnace.
30:00	Burners shut off. Conclusion of fire-resistance test.

HOSE STREAM RETEST OBSERVATIONS	
Time (Min:Sec)	Observations
00:00	Prescribed water pressure achieved at the hose stream apparatus. Test begins
01:00	Hose stream test concluded.

VARIABLE	DESCRIPTION	VALUE	UNITS
C	Correction Factor	-10	seconds
I	Indicated FR Period	30	minutes
A	Area under Indicated FR Period for first 3/4 of test period	25179	°F*min
As	Area under Standard E119 Time vs. Temp. Curve for first 3/4 of test period	25407	°F*min
L	Lag Correction	3240	°F*min
FR Period	Fire-Resistance Period	30	minutes

For complete test observations and specific acceptance criteria, reference Intertek-ATI Test Report #I8509.02-121-24-R3.

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