

# BRICK INDUSTRY ASSOCIATION LETTER OF RESULTS

## SCOPE OF WORK

NFPA 285 TESTING ON EXTERIOR 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. 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

I8508.01-121-24-R2

## TEST DATE

12/10/18

## LETTER OF RESULTS ISSUE DATE

01/30/20

## RECORD RETENTION END DATE

12/10/22

## PAGES

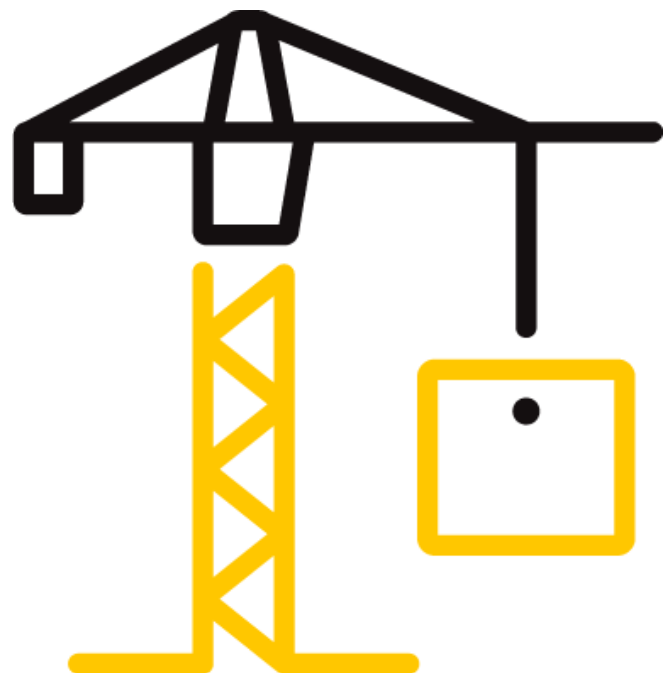
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## DOCUMENT CONTROL NUMBER

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## LETTER OF RESULTS BRICK INDUSTRY ASSOCIATION

Issue Date: 01/30/20

Reference Project No.: I8508.01-121-24-R2

### 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 flame propagation characteristics 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 I8508.01-121-24-R2.

### SECTION 2

#### SUMMARY OF TEST RESULTS

##### NFPA 285 Test Results

The assembly summarized and referenced in this document **did** meet the Conditions of Acceptance of NFPA 285. Construction of the tested assembly is summarized in Section 5 of this document.

For INTERTEK B&C:

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

SDG:ddr

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### SECTION 3

#### TEST METHOD

The assembly was evaluated in accordance with the following:

**NFPA 285-12**, *Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components*

### SECTION 4

#### TEST PROCEDURE

For complete test procedure, conditions, and calibration values, reference Intertek-ATI Test Report #I8508.01-121-24-R2.

### SECTION 5

#### TEST ASSEMBLY DESCRIPTION

##### Interior Cladding

The full interior surface of the wall assembly was clad with one (1) layer 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 on the burn floor consisted of four pieces of gypsum board fastened to the core wall, with the run edge running parallel with the framing and the cut edge perpendicular to the framing. Drywall orientation on the second floor consisted of vertically oriented boards with the run edge running parallel with the framing and the cut edge perpendicular to the framing. Drywall orientation for the areas above the top support angle and below the bottom support angle consisted of boards that were oriented with the run edge perpendicular with 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.

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### SECTION 5 (Continued)

#### TEST ASSEMBLY DESCRIPTION

##### Framing

The core wall consisted of 18 ft. long, 3-5/8 in. deep, 18 gauge galvanized steel studs (33 ksi steel) fastened to 14 ft. length, 3-5/8 in. deep, 18 gauge galvanized steel track every 24 inches on center. The studs were connected to the track with one #6 x 1/2 in. long self-drilling, pan head fastener per stud flange. Two additional 18 ft. long, 3-5/8 in. deep, 18 gauge studs were used as king studs for the window opening jambs. Mineral wool fiber safing pieces with a nominal density of 4.0 lb. /cu. ft. were installed per the manufacturer's installation instructions to fit into each stud cavity placed at the second story floor line. The safing length dimensions were no less than the apparatus floor slab thickness of 8 in.

##### 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.

##### Exterior Sheathing

One (1) layer 1/2 in. thick National Gypsum Gold Bond® eXP® Extended Exposure Gypsum Sheathing with glass mat facing, meeting the requirements of ASTM C1177, was placed horizontally across the full exterior surface of the assembly. A vertical joint offset of 24 in. was utilized during installation. 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.

##### 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 including inside the perimeter of the window rough opening. The application was allowed to cure for a minimum of 72 hours before additional components were added to the assembly.

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### SECTION 5 (Continued)

#### TEST ASSEMBLY DESCRIPTION

##### Window Opening

A 81 in. wide x 33 in. tall window opening was made from 18 gauge galvanized steel track. The opening was centered on the vertical centerline of the wall assembly such that the finished sill was located 30 in. above the first story floor line. The steel track sections were mechanically fastened with #6 x 1/2 in. long self-drilling, pan head fasteners at each corner. Upon the completion of the exterior sheathing Tremco ExoAir® was applied on the rough opening with a 3/4 in. nap roller to 48 wet mils. Three pieces of nominal 1/2 in. thick plywood pieces not treated with fire retardant and measuring 8-1/4 in. wide were stacked and secured to the perimeter of the window opening framing. A 26 gauge sheet metal flashing drip edge was added to the top of the window opening header. Self-adhered flashing tape was lapped over the horizontal leg of the metal flashing with the vertical rise of +/- 3 in.

##### Exterior Insulation

4 in. thick Kingspan® Type IV 25 psi GreenGuard® Extruded Polystyrene (XPS) Insulation Board, meeting the requirements of 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. At the horizontal plane of the window opening header, the long dimension of the board was placed perpendicular to the assembly's studs. A full board, measuring 48 in. wide x 96 in. long was used in conjunction with a cut board measuring 48 in. wide x 72 in. long to complete the row. The next row above started with the cut board and then the full-size board. This installation provided staggered vertical joints in the insulation. The staggering was utilized to complete the remaining uncovered area until the assembly was fully covered with the insulation. Pieces were then measured and cut to install beside and below the window opening.

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### SECTION 5 (Continued)

#### TEST ASSEMBLY DESCRIPTION

##### 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 to the full exterior surface of the PermaBase® cement board in accordance with ANSI A108.5 used to adhere the 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 conforming to 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 #I8508.01-121-24-R2.

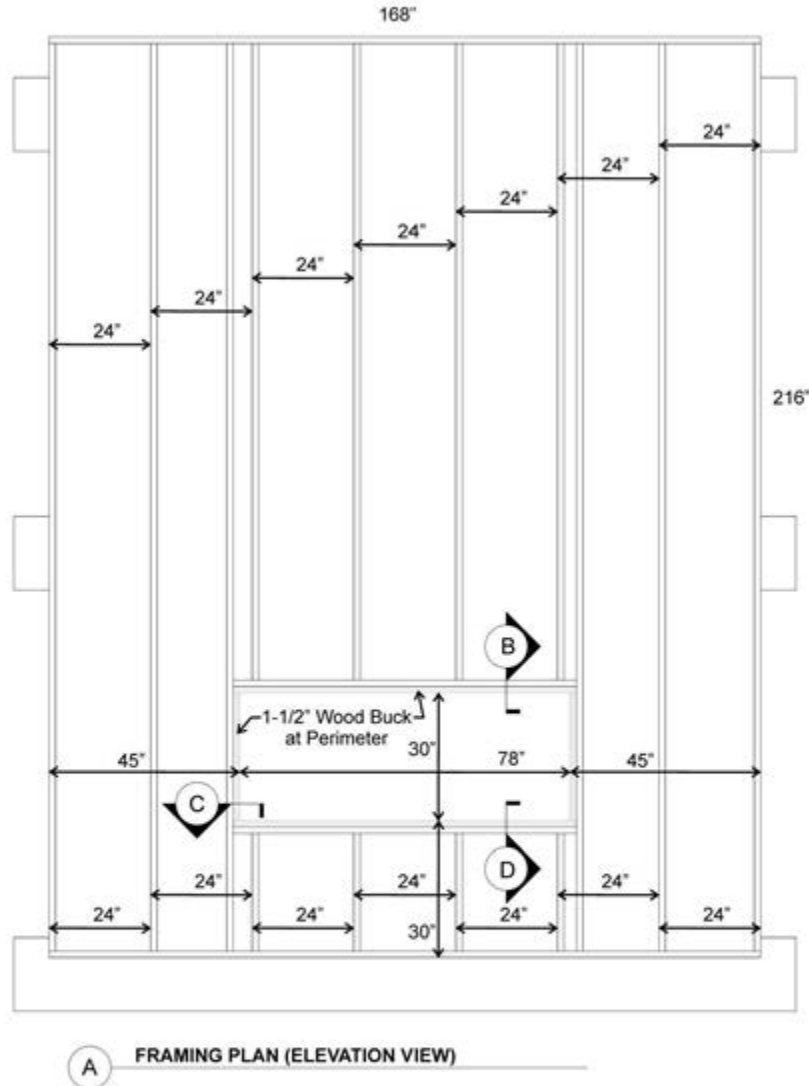
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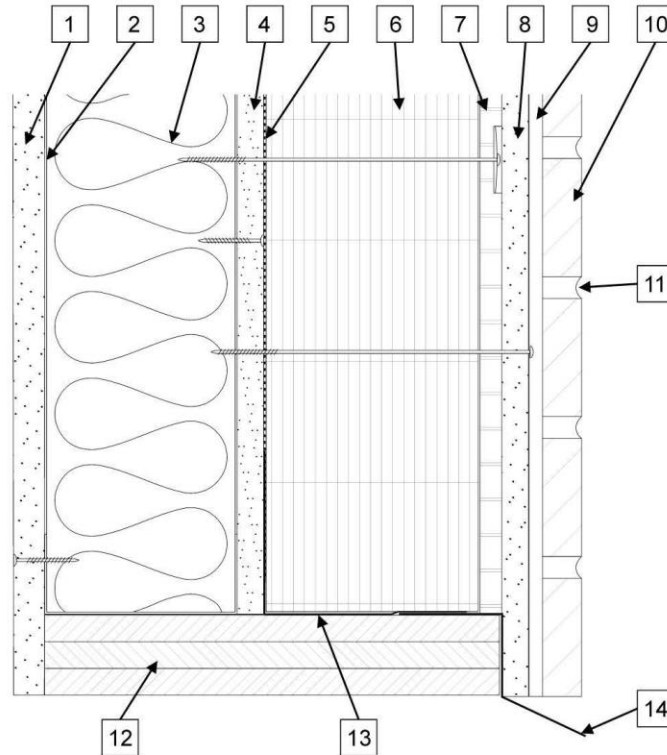
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1. Gypsum board (interior side) - One layer 5/8 in. thick National Gypsum Gold Bond ® Fire-Shield ® gypsum board
2. Cold-formed metal framing - 3-5/8 in. wide No. 18 (43 mil) gauge galvanized cold-formed metal studs and track
3. Batt insulation - R-11 Johns-Mansville unfaced fiberglass batt insulation
4. Exterior gypsum sheathing (exterior 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 - Tremco ® ExoAir ® 230 fluid-applied, synthetic air & vapor permeable membrane applied to a thickness of 0.048 in. (48 wet mils)
6. Exterior insulation - 4 in. thick Kingspan ® GreenGuard ® Type IV 25 psi Extruded Polystyrene (XPS) Insulation Board
7. Drainage mat - Keene Building Products Drinwall™ Rainscreen 10 mm
8. Cement board - 1/2 in. thick PermaBase ® Cement Board
9. Mortar bed - Latcrete ® MVIS™ Thin Brick Mortar polymer modified mortar
10. Clay thin brick - 1/2 in. thick Glen-Gery clay thin brick
11. Mortar joints - Glen-Gery Color Mortar Blend
12. Wood buck - three layers 1/2 in. thick plywood nailing buck
13. Flashing tape - Self-adhered flashing tape
14. Flashing - 26 gauge sheet metal flashing

**B SECTION AT HEAD**

<p>Total Quality. Assured.</p>	Report #:	I8508.01-121-24
	Date:	03/29/19
	Verified by:	<i>[Signature]</i>

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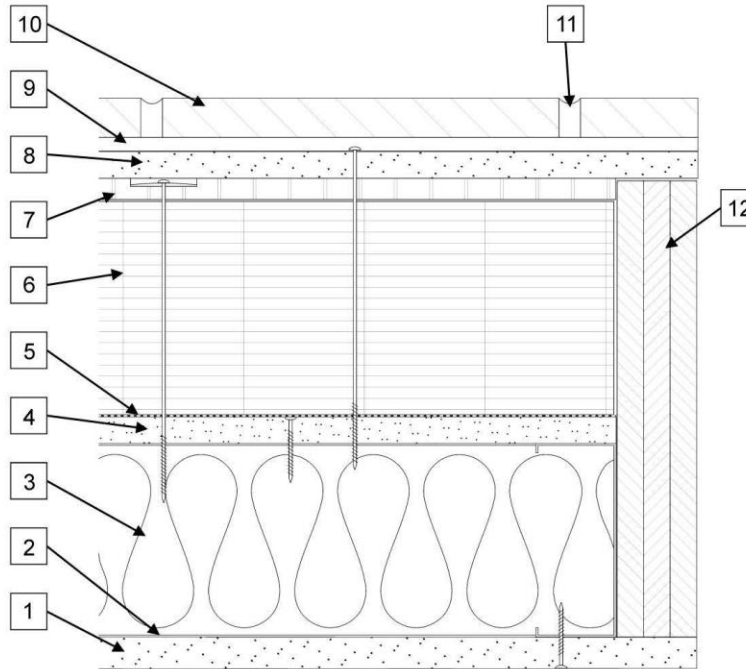




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4. Exterior gypsum sheathing (exterior side) - One layer 1/2 in. thick National Gypsum Gold Bond® eXP® Extended Exposure Gypsum Sheathing with glass mat facing
5. Water-resistive barrier / air barrier - Tremco® ExoAir® 230 fluid-applied, synthetic air & vapor permeable membrane applied to a thickness of 0.048 in. (48 wet mils)
6. Exterior insulation - 4 in. thick Kingspan® GreenGuard® Type IV 25 psi Extruded Polystyrene (XPS) Insulation Board
7. Drainage mat - Keene Building Products Driwall™ Rainscreen 10 mm
8. Cement board - 1/2 in. thick PermaBase® Cement Board
9. Mortar bed - Laticrete® MVI™ Thin Brick Mortar polymer modified mortar
10. Clay thin brick - 1/2 in. thick Glen-Gery clay thin brick
11. Mortar joints - Glen-Gery Color Mortar Blend
12. Wood buck - three layers 1/2 in. thick plywood nailing buck

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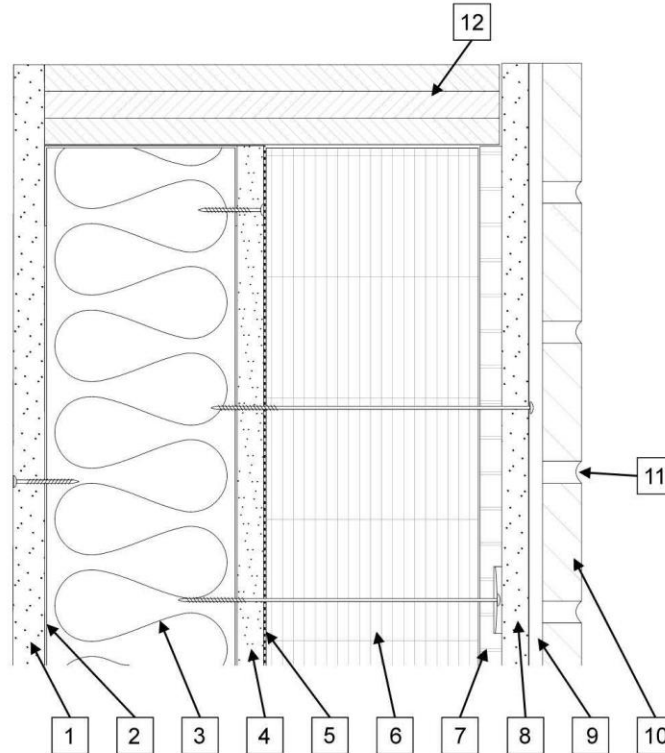
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7. Drainage mat - Keene Building Products Drivall™ Rainscreen 10 mm
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### D SECTION AT SILL



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### SECTION 7

#### TEST OBSERVATIONS & RESULTS

TIME (Min:Sec)	OBSERVATIONS
00:00	Ignition of room burner.
02:08	Interior gypsum ignition.
05:00	Ignition of window opening burner.
06:30	Window frame ignition.
16:44	Window header fallout and reignition.
30:00	Burners Extinguished. Post-test 10-minute observation period begins.
40:00	Post-test 10-minute observation period ends; test concluded.

TEST REQUIREMENTS	TEST RESULTS	PASS/FAIL
Flames did not reach 10 ft. above the window opening header.	Flames did not reach 10 ft. above the window opening header.	PASS
Flames did not reach a lateral distance of 5 ft. from the vertical centerline.	Flames did not reach a lateral distance of 5 ft. from the vertical centerline.	PASS
Flames did not propagate beyond the limits of the first story test room.	Flames did not propagate beyond the limits of the first story test room.	PASS
No visible flaming in the second story test room	No visible flaming in the second story test room.	PASS
TC's 11 and 14-17 (1000°F limit)	TC's 11 and 14-17 did not exceed their 1000°F limit.	PASS
TC's 18-19, 28, and 31-40 (1000°F limit)	TC's 18-19, 28, and 31-40 did not exceed their 1000°F limit.	PASS
TC's 49-54 (500°F above ambient)	TC's 49-54 did not exceed 500°F above their ambient temperatures.	PASS
TC's 55-67 (750°F above ambient)	TC's 55-67 did not exceed 750°F above their ambient temperatures.	PASS

For complete test observations and specific acceptance criteria, reference Intertek-ATI Test Report #I8508.01-121-24-R2.

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