intertek
Total Quality. Assured.

METAL DESIGN SYSTEMS, INC.
Letter of Results

SCOPE OF WORK
NFPA 285 TESTING ON METAL DESIGN SYSTEMS, INC. SERIES 20 EXTERIOR CLADDING SYSTEM WITH ALPOLIC® FR 4MM THICK CLADDING PANELS, 4 IN. THICK ATLAS ENERGYSHIELD® PRO INSULATION, AND VAPROSHIELD® WRAPSHIELD® SA

REFERENCE PROJECT NUMBER
G2014.04-121-24

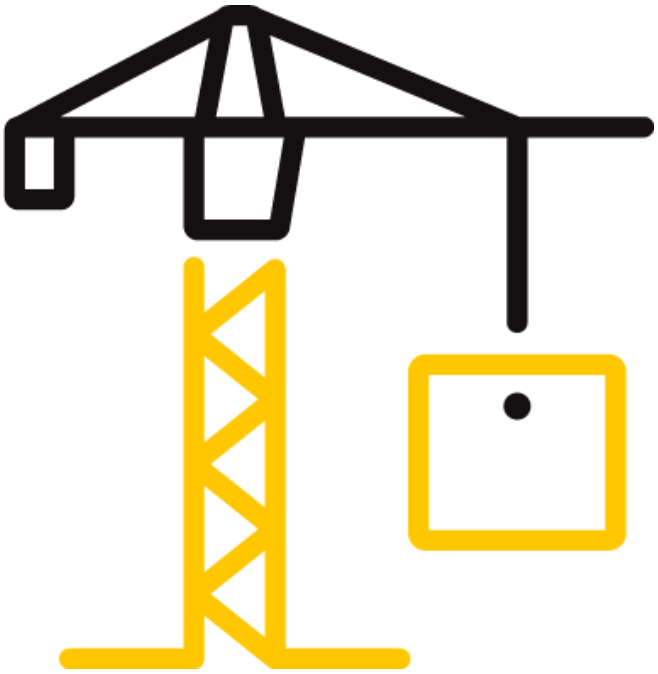
TEST DATE
12/07/16

REPORT ISSUE DATE
01/10/17

RECORD RETENTION END DATE
12/07/20

PAGES
5

DOCUMENT CONTROL NUMBER
ATI 00026 (07/24/17)
RT-R-AMER-Test-2766



intertek
Total Quality. Assured.

130 Derry Court
York, Pennsylvania 17406

Telephone: 717-764-7700
Facsimile: 717-764-4129
www.intertek.com/building

TEST CERTIFICATE FOR METAL DESIGN SYSTEMS, INC.
Project No.: G2014.04-121-24
Date: 08/15/17

CERTIFICATE ISSUED TO

Metal Design Systems, Inc.
4150 C Street SW
P.O. Box 1165
Cedar Rapids, Iowa 52406

SECTION 1
SCOPE

Intertek Building & Construction (B&C) was contracted by Metal Design Systems, Cedar Rapids, Iowa to evaluate the flame propagation characteristics of an exterior, non-load-bearing wall assembly containing Metal Design Systems, Inc. Series 20 Exterior Cladding System. 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 summary of test results and test assembly is reported herein.

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 G2014.04-121-24-R0

SECTION 2
SUMMARY OF TEST RESULTS

Wall System: Exterior Non-load-bearing Wall Assembly
Combustible Components: 4 in. thick Atlas EnergyShield® Pro Insulation, VaproShield® WrapShield® SA, and Metal Design Systems, Inc. Series 20 Exterior Cladding System utilizing Alpolic® FR 4mm thick cladding panels

NFPA 285 Test Results
The assembly described and tested in this report **did** meet the Conditions of Acceptance of NFPA 285. Construction of the tested assembly is summarized in Section 3 of this test report.

For INTERTEK B&C:

COMPLETED BY:	Scott Gingrich	**REVIEWED BY:**	Ethan Grove
TITLE:	Senior Technician – Fire Testing	**TITLE:**	Manager – Fire Testing
SIGNATURE:	 Digitally Signed by: Scott Gingrich	**SIGNATURE:**	 Digitally Signed by: Ethan Grove
DATE:	08/15/17	**DATE:**	08/15/17

SDG:ddr

intertek
Total Quality. Assured.

130 Derry Court
York, Pennsylvania 17406

Telephone: 717-764-7700
Facsimile: 717-764-4129
www.intertek.com/building

TEST CERTIFICATE FOR METAL DESIGN SYSTEMS, INC.
Project No.: G2014.04-121-24
Date: 08/15/17

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

The wall assembly was instrumented with thermocouples (TCs) in accordance with figures 6.1(a) and 6.1(b) of NFPA 285 test method. 18-gauge Type "K" TCs were used in the burn room and 20-gauge Type "K" was used on exterior façade and cavity air space. The window burner was positioned in the center of the opening and 3 in. off the exterior face of the wall assembly. Testing was performed on 12/07/2016 in accordance with NFPA 285 test method. Ambient conditions were 61°F and 30% relative humidity. An anemometer was used to verify airflow across test assembly was less than 4 ft./sec as specified in the test method. Video recording, digital photographs, visual observations, and data collection were performed prior, during, and after testing was completed. Temperature data was recorded every 15 seconds. The test was performed at 10:04 AM with the burners on for 30 minutes. All observations are recorded in the table located in Section 6.

The apparatus is considered to be under calibrated conditions when the time average temperatures and the time average heat flux readings obtained for a calibration wall match the requirements of Table 8.1.6 of NFPA 285. Calibration was performed on February 18, 2016 with natural gas as the fuel source and the window burner placed 3 inches from the exterior surface of the assembly.

Total Quality. Assured.

130 Derry Court
York, Pennsylvania 17406

Telephone: 717-764-7700
Facsimile: 717-764-4129
www.intertek.com/building

TEST CERTIFICATE FOR METAL DESIGN SYSTEMS, INC.
Project No.: G2014.04-121-24
Date: 08/15/17

SECTION 5
TEST ASSEMBLY DESCRIPTION

For complete assembly description and installation procedures, reference Intertek-ATI Test Report number G2014.04-121-24-R0.

Interior Cladding
5/8 in. thick National Gypsum Gold Bond® Fire-Shield® gypsum board meeting the requirements of ASTM C1396

Framing
3-5/8 inches deep, 20 gauge galvanized steel studs fastened 3-5/8 inches deep, 20 gauge galvanized steel track every 24 inches on center. Johns Manville MinWool® Safing pieces with a nominal density of 4.0 lbs. /cu. ft. were installed per the manufacturer's installation instructions to fit into each stud cavity placed at the floor line.

Exterior Sheathing
No exterior sheathing was used in the assembly.

Exterior Insulation
4 in. thick Atlas EnergyShield® Pro polyisocyanurate insulation installed with horizontal galvanized steel Z furring pieces.

Water-resistive Barrier
VaproShield® WrapShield® SA installed vertically utilizing a 3 inches minimum overlap.

Window Opening
5/8 in. thick National Gypsum Gold Bond® Fire-Shield® gypsum board meeting ASTM C 1396 was installed over the full window opening perimeter. Once the gypsum board was installed, a 24 gauge stainless steel drip edge was installed on the header of the window. A 0.040 in. thick aluminum drip edge then was installed around the liner to create a 2-piece drip edge flashing assembly. The window opening jambs and sill were then flashed with 0.040 aluminum L-flashing pieces.

Exterior Cladding
Metal Design Systems, Inc. (MDS) Series 20 Exterior Cladding System with Alpolic® fr 4mm aluminum cladding panels.

intertek
Total Quality. Assured.

130 Derry Court
York, Pennsylvania 17406

Telephone: 717-764-7700
Facsimile: 717-764-4129
www.intertek.com/building

TEST CERTIFICATE FOR METAL DESIGN SYSTEMS, INC.
Project No.: G2014.04-121-24
Date: 08/15/17

SECTION 6
TEST OBSERVATIONS

TIME	OBSERVATIONS
00:00	Ignition of the room burner.
01:53	Window header flashing warping.
04:22	Window header flashing begins to bow.
08:40	Paint on the panel surface directly above the window header chars and burns off.
11:21	Paint chars flaking off of the second row of panels above the window header.
14:44	Window header flashing melts away.
17:40	Ignition at the window opening header.
22:10	Flames emitting from the exterior surface 2 feet above the window opening header.
26:18	Flames emitting from the exterior surface 4 feet above the window opening header.
27:05	Panel core begins to fall out of panels directly above the window header.
30:00	Burners extinguished.
40:00	Test complete.

SECTION 7
TEST RESULTS

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**