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CARTER ARCHITECTURAL PANELS, INC.
TEST REPORT

SCOPE OF WORK
CAN/ULC S134, STANDARD METHOD OF FIRE TESTS OF EXTERIOR WALL ASSEMBLIES ON CARTER ARCHITECTURAL PANELS, INC. EVO™ "RIVETLESS" ATTACHMENT SYSTEM WITH 4MM ETALBOND® FR CORE ACM PANELS

REPORT NUMBER
G106019960SAT-001 R0

TEST DATE
01/09/25

ISSUE DATE **[REVISED DATE]**
01/27/25 MM/DD/YY

PAGES
80

DOCUMENT CONTROL NUMBER
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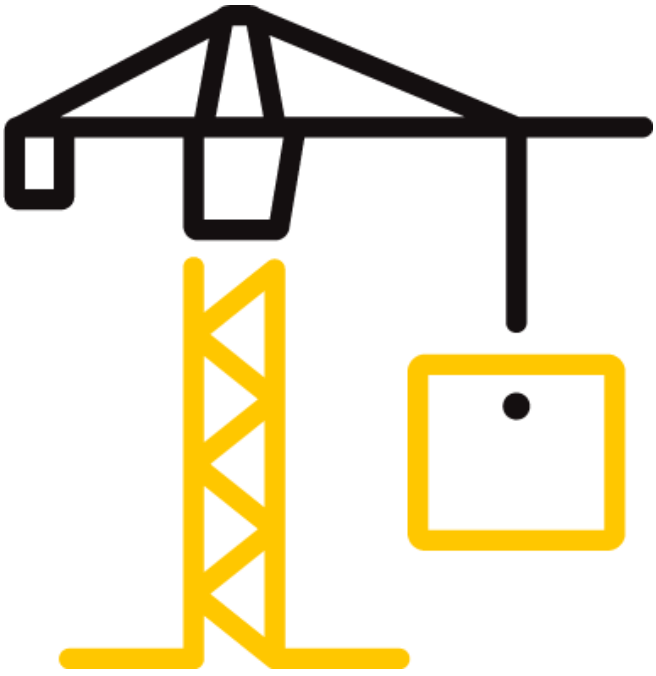

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TEST REPORT FOR CARTER ARCHITECTURAL PANELS, INC.
Report No.: G106019960SAT-001 R0
Date: 01/27/25

REPORT ISSUED TO

CARTER ARCHITECTURAL PANELS, INC.
7925 E Ray Road, Suite 133
Mesa, AZ 85212
USA

SECTION 1

SCOPE

Intertek Testing Services NA, Inc. dba Intertek Building & Construction (B&C) was contracted by Carter Architectural Panels, Inc., 7925 E Ray Road, Suite 133, Mesa, AZ, USA, to perform testing in accordance with CAN/ULC-S134-2013, *Standard Method of Fire Test of Exterior Wall Assemblies*, on their EVO™ "Rivetless" Attachment System with 4MM Etalbond® FR Core ACM Panels. Results obtained are tested values and were secured by using the designated test method(s). Testing was conducted at Intertek test facility in Elmendorf, Texas, USA.

Unless differently required, Intertek reports apply the "Simple Acceptance" rule also called "Shared Risk approach," of ILAC-G8:09/2019, Guidelines on Decision Rules and Statements of Conformity.

Intertek B&C will service this report for the entire test record retention period. The test record retention period ends four years after the test date. Test records, such as detailed drawings, datasheets, representative samples of test specimens (where required by Certification or Accreditation bodies), or other pertinent project documentation, will be retained for the entire test record retention period.

For INTERTEK B&C:

COMPLETED BY:	Tyler Griswold	**REVIEWED BY:**	Abel de Hoyos
TITLE:	Project Engineer – Fire Resistance	**TITLE:**	Manager – Project Engineering – Fire Resistance
SIGNATURE:		**SIGNATURE:**	
DATE:	01/27/25	**DATE:**	01/27/25

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SECTION 2
SUMMARY OF TEST RESULTS

The assembly tested and evaluated in this report **met** the acceptance criteria per the requirements of CAN/ULC-S134, Standard Method of Fire Test of Exterior Wall Assemblies. The summary of the entire assembly construction can be found in **Section 8** of the test report.

SECTION 3
TEST METHOD

The specimen was evaluated in accordance with the following:

> **CAN/ULC-S134-13-REV2**, *Standard Method of Fire Test of Exterior Wall Assemblies*; 2nd Edition.

SECTION 4
MATERIAL SOURCE/INSTALLATION

This report is based on samples provided by the client. On December 26, 2024, the test facility received the following materials: one crate of ACM panels, one crate of metal flashing, one crate of insulation materials accompanied by a weather barrier, and one crate of 2" x 24" x 48" mineral wool. All items were received in good condition. The samples were assigned Intertek Sample IDs SAT2412260940-001, SAT2412260940-002, SAT2412260940-003, and SAT2412260940-004, respectively.

The wall assembly was constructed from January 6 to January 8, 2025, by personnel from Texas Roofing Co., with support from Carter Architectural Panels, Inc. Intertek B&C personnel instrumented the wall assembly between January 6 and January 9, 2025. The construction of the wall assembly was completed by January 8, 2025, and instrumentation was finalized on January 9, 2025.

SECTION 5
EQUIPMENT

ASSET #	DESCRIPTION	MODEL	CAL DUE DATE
170199534	Stopwatch	Fisher	04/17/25
HB9002195	DAQ Unit	National Instruments	07/14/25
1034017	Thermo/Hygrometer	Omega	06/18/25

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ASSET #	DESCRIPTION	MODEL	CAL DUE DATE
17335	Anemometer	Adafruit	06/04/25
17332	Anemometer	Adafruit	06/04/25
17336	Anemometer	Adafruit	06/04/25
222421	Radiometer	Medtherm	04/25/25
238521	Radiometer	Medtherm	08/19/25
215263	Radiometer	Medtherm	01/22/24
2642089	Gas Flow Transducer	Rosemount	11/26/25
461564	E-Type TC	Omega	12/15/24
1060215268	Gas Pressure Transducer	Omega	11/22/24

SECTION 6
LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Joel Mckinley	Carter Architectural Panels, Inc.
Bruce Bourne	Carter Architectural Panels, Inc.
Klarissa Gonzalez	Intertek B&C
Cooper Adams	Intertek B&C
Tyler Griswold	Intertek B&C

SECTION 7
TEST PROCEDURE

Testing was conducted on January 9, 2025, following the CAN/ULC-S134 test method. The ambient conditions during the test were 41.9°F and 46.3% relative humidity. As per the test method, anemometers were employed to ensure that the airflow did not exceed 2 m/s. The process was recorded through video, digital photographs, visual observations, and data collection. All observations have been documented in the table in **Section 9**. Per CAN/ULC-S134 standards, the pilot burners are ignited once the ambient conditions meet the requirements. This is followed by the ignition of the burners, controlled based on the test method. The burners go through a 5-minute growth period, a 15-minute steady state period, and a 5-minute ramp-down period to zero.

Three water-cooled heat flow transducers with a range of 0-100 kW/m^2 were installed through the test specimen and the front wall of the test chamber, 3.5 m above the top of the window

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opening. One was within 0.2 m ±0.05 m horizontally of the center line of the opening, and the other two were on each side, 0.5 ± 0.1 m horizontally from the first. The transducers were installed so that their sensing faces were flush with the outer face of the test specimen. Additionally, 24 GA (0.51 mm) Type K bare-beaded thermocouples were installed to monitor the temperature of the specimen. They were located roughly 89 mm to the right of the vertical center line and above the opening at 1.5 ± 0.05 m, 2.5 ± 0.05 m, 3.5 ± 0.05 m, 4.5 ± 0.05 m, and 5.5 ± 0.05 m.

The assembly was equipped with ten thermocouples at specified heights, as follows:

TCs 1-5: (Layer 1) Flush with exterior panels at 1.5 m, 2.5 m, 3.5 m, 4.5 m, and 5.5 m, respectively.

TCs 6-10: (Layer 2) Flush with the insulation at 1.5 m, 2.5 m, 3.5 m, 4.5 m, and 5.5 m, respectively.

TCs 12-16: (Layer 3) Flush with WRB at 1.5 m, 2.5 m, 3.5 m, 4.5 m, and 5.5 m, respectively.

SECTION 8
TEST SPECIMEN DESCRIPTION

From January 6th to January 8th, staff from Texas Roofing Co., assisted by members from Carter Architectural Panels, Inc., constructed a test wall measuring 5 meters wide by 10 meters high. The wall assembly was built over a CMU block apparatus covered with a single layer of 1/2-inch LightRoc® gypsum wallboard.

Blueskin® VP100, a self-adhered water-resistant air barrier membrane, was applied over the gypsum substrate. Weather barrier layer thermocouples were taped to the Blueskin® VP100, positioned above the opening along the centerline of the sample.

Continuous 2" x 18 GA steel U-channels were fastened to the CMU block apparatus along the perimeter of the wall assembly and the window opening perimeter, using 3/16 in. x 1/4 in. Tapcon hex-washer-head concrete anchors spaced 16 inches on center. 2-inch KOA thermal clips were fastened to the CMU block apparatus with 3/16 x 1/4 in. Tapcon hex-washer-head concrete anchors spaced 24 inches on center, both vertically and horizontally. JM CladStone™ 45 Fire Block Insulation boards, measuring 2 in. x 24 in. x 48 in., were installed vertically over the Blueskin® VP100, sandwiched between the KOA thermal clips, and secured to the wall with two insulation pins per board. Vertically aligned galvanized steel angles, measuring 2" x 18 GA and spaced 24 inches on center, were fastened to the KOA thermal clips using 10 x 3/4-in Phillips modified truss head fine-thread drill point clear zinc screws.

6061-T6 aluminum EVO™ starter extrusions were fastened over the U-channel subgirts along the perimeter of the assembly and the window opening using 10 x 3/4-in Phillips modified truss head fine-thread drill point clear zinc screws spaced 16 inches on center. Insulation layer

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thermocouples were taped over the mineral wool and positioned above the opening along the centerline of the sample.

The assembly was clad with 4mm FR Core Etalbond® coil-coated ACM panels. These panels had 6061-T6 aluminum EVO™ perimeter extrusions fastened to the backside edges with #8 6-lobe self-tapping pan head fasteners spaced 12 inches on center. Three-inch-long 6061-T6 aluminum EVO™ mid-clips, spaced 24 inches on center, were secured to the EVO™ perimeter extrusions with #8 6-lobe self-tapping pan head fasteners. The ACM panels were installed over the mineral wool insulation and attached to the wall by fastening the EVO™ clips to the vertical angles with two 10 x 3/4-in Phillips modified truss head fine-thread drill point clear zinc screws. Three-inch-long 6061-T6 aluminum EVO™ half-clips were used for the panels at the window sill and the top of the assembly. Panels located along the perimeter of the assembly and around the window opening were installed by inserting the tongues of the EVO™ starter extrusions into the outer horizontal and vertical pockets of the EVO™ perimeter extrusions. Once the panels were secured to the wall, 4mm FR Core Etalbond® coil-coated ACM splines were fitted into slots within the perimeter extrusions to fill gaps between panels at horizontal and vertical joints. Air gaps between U-channel subgirts and EVO™ starter extrusions on the vertical edges of the assembly were sealed with Structural Steel Stiffener Tape.

26 GA pre-finished metal flashing with hem-return behind the clip systems was fastened to the interior surface of the window opening, the base of the wall, the top of the wall, and the vertical edges of the wall. The window header, sill, and jamb flashing were fastened between the EVO™ starter extrusions and U-channel subgirts with 10 x 3/4-in Phillips modified truss head fine-thread drill point clear zinc screws spaced 12 inches on center and fastened to the interior surface of the window opening of the CMU block apparatus with 3/16 in. x 1/4 in. Tapcon hex-washer-head concrete anchors spaced 12 inches on center. The base wall flashing was attached through the bottom of the panel above the perimeter extrusion with 10 x 3/4-in Phillips modified truss head fine-thread drill point clear zinc screws spaced 24 inches on center. The flashing on the top of the wall was affixed between the EVO™ starter extrusions and U-channel subgirts with 10 x 3/4-in Phillips modified truss head fine-thread drill point clear zinc screws spaced 24 inches on center. The flashing along the vertical edges of the wall assembly was fastened to the U-channel subgirts with 10 x 3/4-in Phillips modified truss head fine-thread drill point clear zinc screws spaced 24 inches on center. All gaps between the edges of the flashing and the wall assembly were sealed with Tremsil® 200, a single component acetoxy silicone sealant, and DAP AMP advanced waterproof window sealant.

Once the test assembly was entirely constructed, exterior surface thermocouples were placed over the ACM panels along the centerline of the window. The edges and surfaces of the opening in the test specimen were protected by 16 GA flashing covered by 1-inch-thick ceramic fiber insulation, extending to the outermost edges of the opening. The insulation was fastened to the CMU block with 2-inch Tapcon hex washer head concrete anchors spaced 24 inches on center.

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SECTION 9
TEST OBSERVATIONS

On January 9, 2025, the test was conducted in a laboratory environment with a temperature of 41.9°F and a relative humidity of 46.3%. Below are the observations noted during the test:

TIME (Min:Sec)	OBSERVATIONS
00:00	Test starts at 9:03 AM
03:54	Flames coming out of the opening
04:15	The right center panel above the opening warping
04:51	Flame height is 1 meter, with flame tips reaching 2 meters
05:41	Panels warping up to 1 meter high
05:59	Flame height increases to 1.5 meters, with flame tips at 2 meters
07:44	Flame height remains at 1.5 meters, with flame tips reaching 2.5 meters
09:24	The right center panel above the opening intermittently flaming
12:45	Intermittent flames reaching up to 3 meters
13:55	Panels above the opening deflecting outwards
16:12	Intermittent flaming at the window header
16:46	The left panel ignites and is partially consumed by fire
17:21	Debris falls from the assembly
18:27	Flames spread laterally approximately 3 feet across the panels above the opening
19:41	Flaming along the entire length of the vertical joint, reaching up to 3 meters high
20:00	Start of the ramp-down phase
25:00	Start of the observation period
25:53	Flames present on the underside of the panel at the horizontal joint
39:42	No flames are present on the sample. Test terminated.

SECTION 10
TEST RESULTS

The acceptance criteria in accordance with **Clause 10.2** of the standard have the following requirements:

1) Flaming on or in the wall assembly shall not spread more than 5 m above the opening in the test specimen.

2) The average heat flux shall not be more than 35 kW/m^2 measured 3.5 m above the opening in the test specimen.

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Data for the three radiometers installed at 3.5 m above the window is listed in the table below. The maximum flame spread observed above the window opening was **3 m**. The maximum heat flux determined as required by the standard was **8.94 kW/m^2**.

Time	1-Minute Average			Visual Flame Height
	Left Radiometer	Right Radiometer	Center Radiometer	
(min)	(kW/m^2)	(kW/m^2)	(kW/m^2)	(m)
0:00	-0.01	-0.01	-0.01	0
1:00	0.71	0.37	0.35	0
2:00	1.57	0.78	0.99	0
3:00	1.80	0.91	1.20	0
4:00	3.50	2.01	2.60	0.5
5:00	3.43	2.43	1.57	1
6:00	4.44	2.77	1.59	1.5
7:00	4.35	2.95	1.62	1.5
8:00	4.69	3.38	3.94	1.5
9:00	6.09	3.36	4.27	1.5
10:00	5.30	3.46	4.44	1.5
11:00	4.68	3.86	4.53	1.5
12:00	4.98	4.49	5.91	1.5
13:00	5.12	4.30	6.93	2
14:00	5.37	4.28	8.14	2
15:00	5.80	4.07	8.39	2
16:00	6.29	4.30	8.19	2
17:00	6.91	4.57	8.28	2
18:00	6.79	4.82	6.59	2
19:00	6.69	5.54	6.59	3
20:00	6.93	5.49	7.59	2
21:00	6.95	5.39	7.62	1.5
22:00	6.46	4.56	7.02	0.5
23:00	5.84	4.02	6.83	0
24:00	5.25	3.55	6.04	0
25:00	4.73	2.98	6.18	0
26:00	3.73	2.08	8.89	0
27:00	3.26	1.91	6.05	0

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Time	1-Minute Average			Visual Flame Height
	Left Radiometer	Right Radiometer	Center Radiometer	
(min)	(kW/m^2)	(kW/m^2)	(kW/m^2)	(m)
28:00	3.00	2.04	4.89	0
29:00	2.68	1.60	3.27	0
30:00	2.46	1.31	2.79	0
31:00	2.30	1.30	3.28	0
32:00	2.40	1.18	3.26	0
33:00	2.45	1.04	3.11	0
34:00	2.74	1.10	3.23	0
35:00	2.01	0.94	2.93	0
36:00	2.31	0.89	2.54	0
37:00	1.70	0.69	2.75	0
38:00	1.98	0.71	2.65	0
39:00	1.93	0.76	2.65	0

SECTION 11
CONCLUSION

The assembly tested and evaluated in this report **met** the acceptance criteria per the requirements of **CAN/ULC-S134,** *Standard Method of Fire Test of Exterior Wall Assemblies*. The criteria required for **CAN/ULC-S134** have been broken down in detail below.

ACCEPTANCE CRITERIA	TEST OBSERVATIONS	PASS/ FAIL
Flaming on or in the wall assembly **shall not spread more than 5 m** above the opening.	The flame on the wall assembly did not spread beyond five meters above the opening during the test. The **maximum height** of the flame was **3 meters**.	**PASS**
The heat flux for any one of the heat flow transducers **shall not be more than 35 kW/m^2**.	The heat flux **did not exceed 35 kW/m^2** during the test. The **maximum heat flux** was **8.94 kW/m^2**, recorded by the **center radiometer** 3.5 m above the opening.	**PASS**

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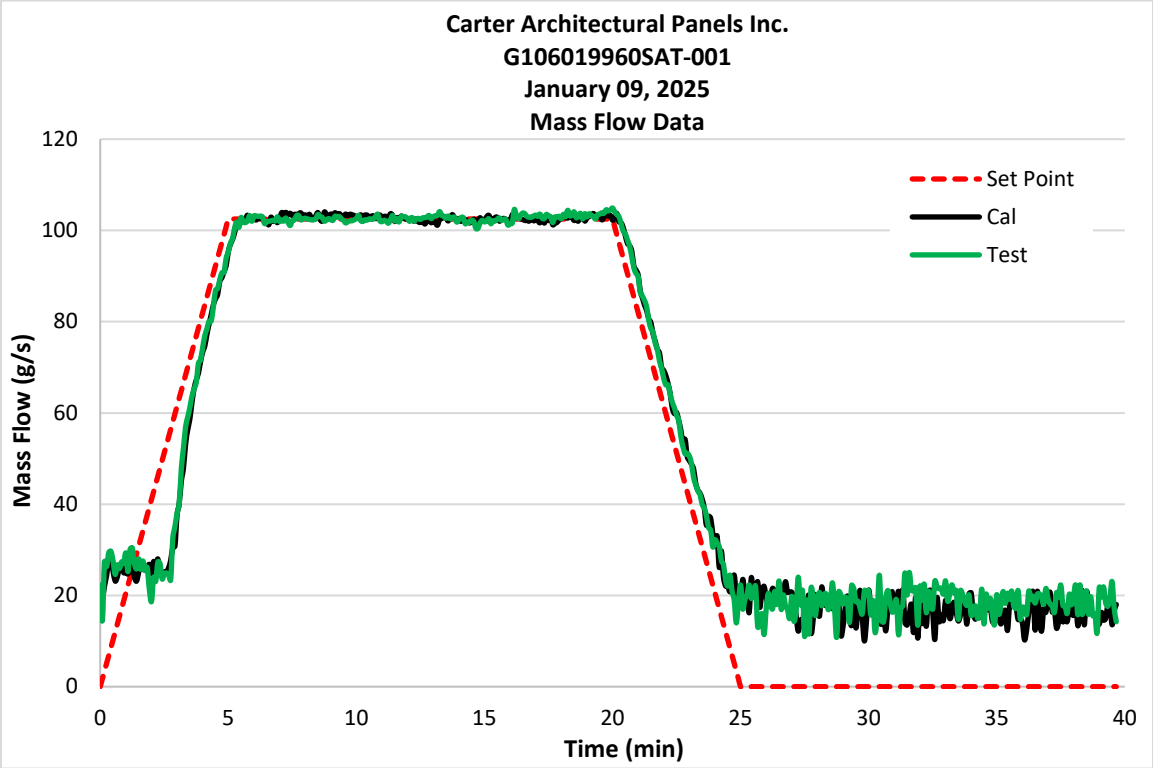
SECTION 12
GRAPHICAL DATA



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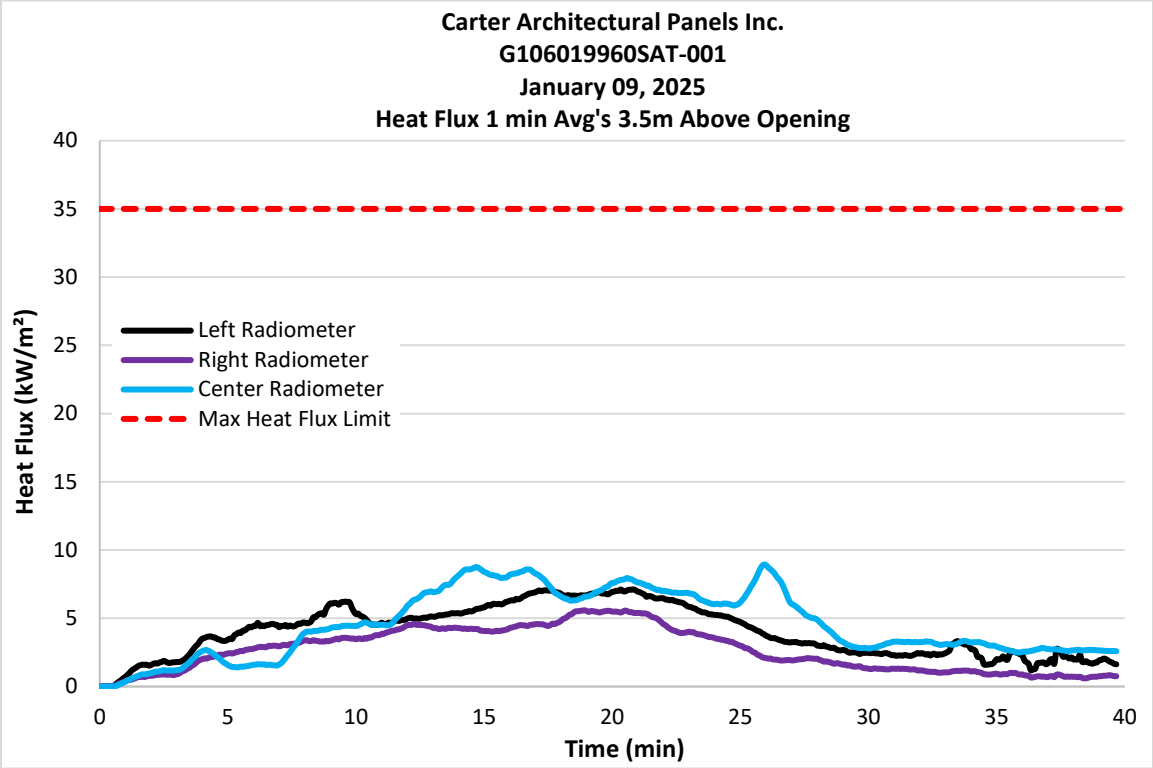

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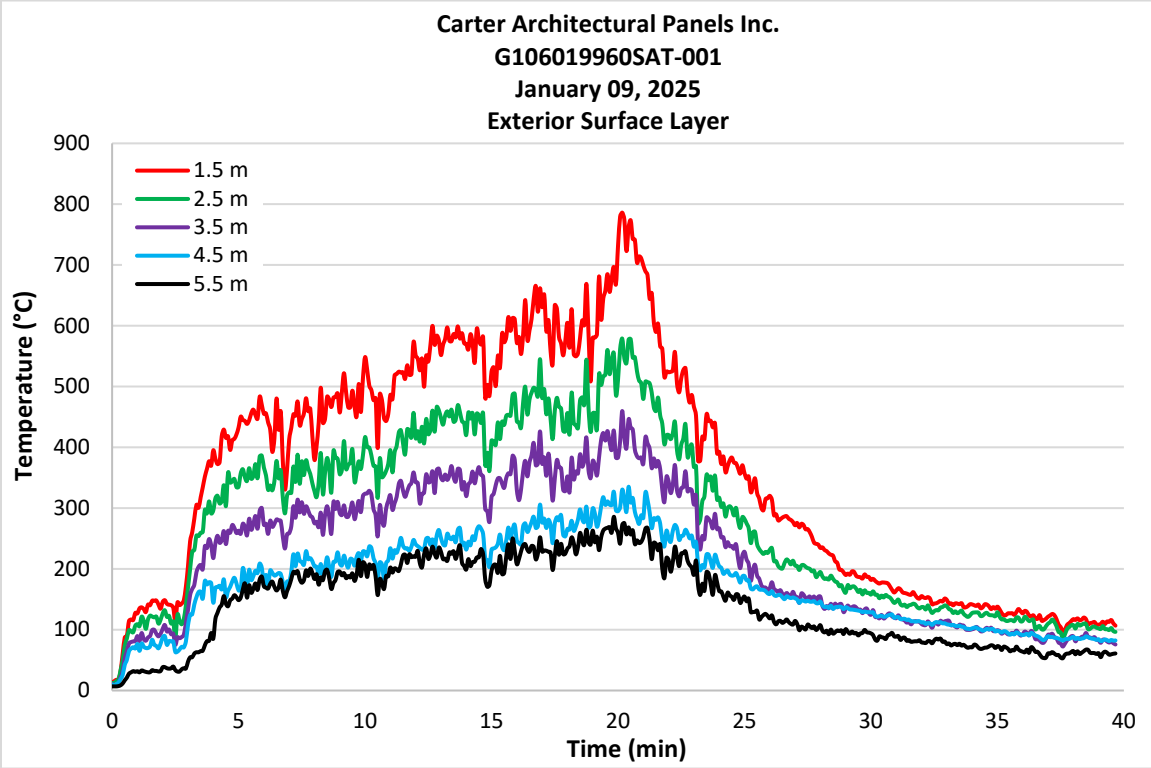

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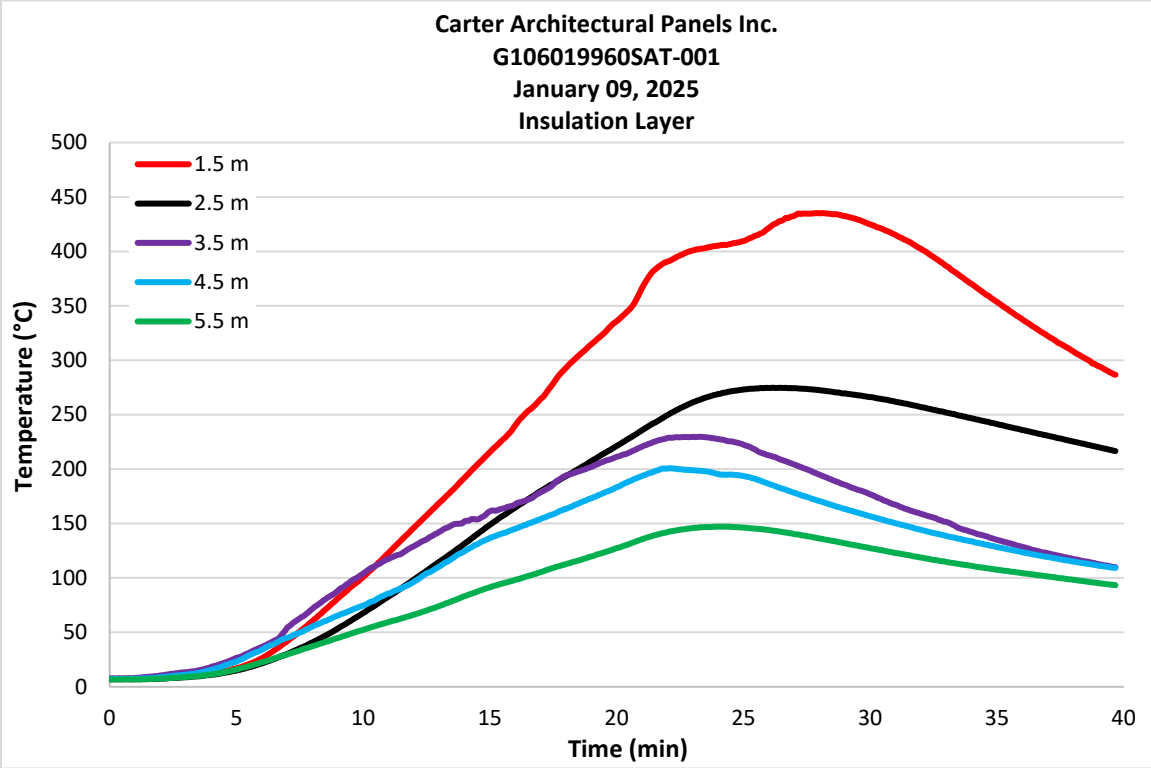

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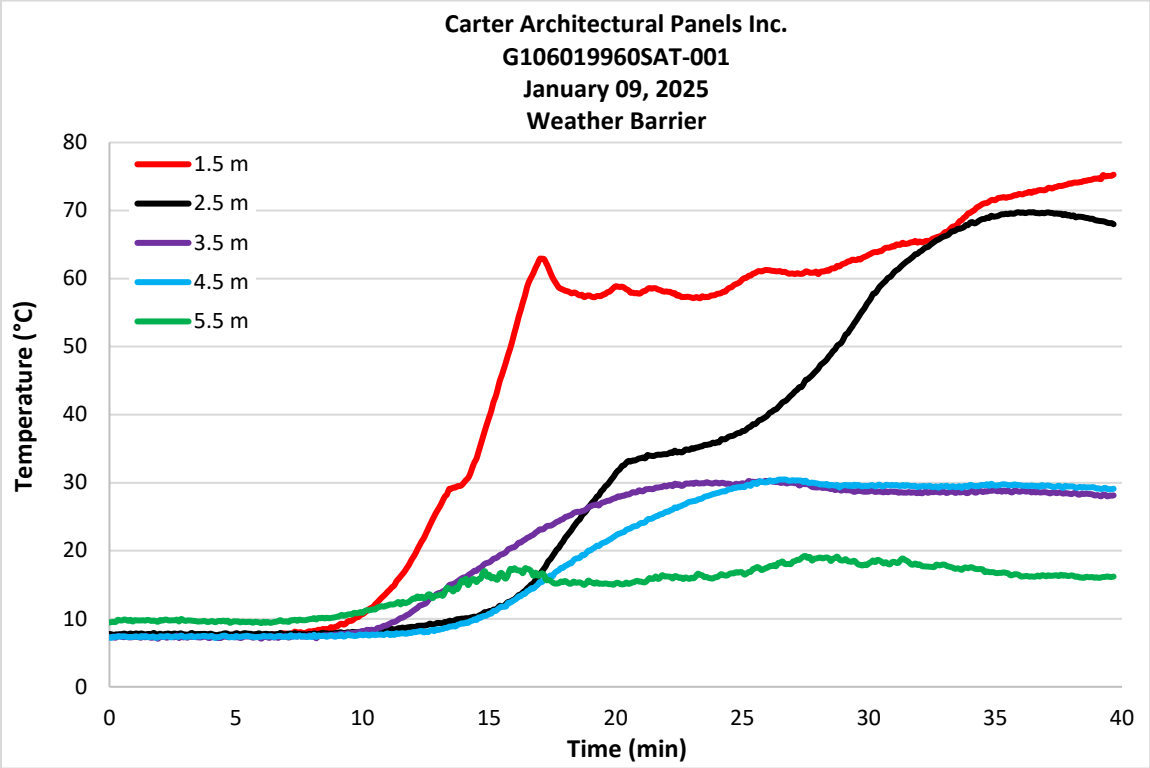

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SECTION 15

REVISION LOG

REVISION #	DATE	SECTION	REVISION
0	01/27/25	N/A	Original Report Issue