

SPECIALTY COMPOSITES GROUP, LLC TEST REPORT

SCOPE OF WORK

ASTM E119-22/CAN-ULC S101 TEST ON A VERTICAL WALL ASSEMBLY COMPOSED OF 4X10 AND 2X10 ARMOR CORE LEVEL 3 PANELS

REPORT NUMBER

G105700914SAT-003

TEST DATES

02/23/2024 AND 06/26/2024

 ISSUE DATE
 REVISED DATE

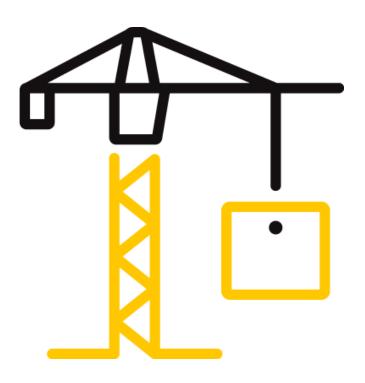
 02/29/24
 06/28/2024

PAGES

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DOCUMENT CONTROL NUMBER

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TEST REPORT FOR SPECIALTY COMPOSITES GROUP, LLC

Report No.: G105700914SAT-003 Date: 02/29/24

REPORT ISSUED TO

SPECIALTY COMPOSITES GROUP, LLC 302 S. 27th Street Waco, Tx 76710

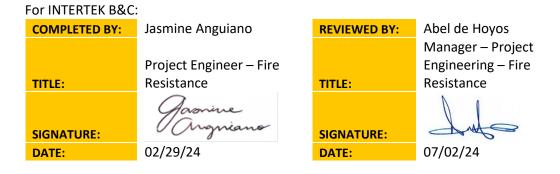
SECTION 1

SCOPE

Intertek Testing Services NA, Inc. dba Intertek Building & Construction (B&C) was contracted by Armor Core, 302 S. 27th Street Waco, Tx 76710 to perform testing in accordance with ASTM E119/CAN-ULC S101-2023, *Standard Test Methods for Fire Tests of Building Construction and Materials*, on their 2-in Leve 3 Armor Core 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.

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.



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SECTION 2

SUMMARY OF TEST RESULTS

The assembly described and tested in this report **met** the criteria set forth per the Conditions of Acceptance for ASTM E119-22: *Standard Test Methods for Fire Tests of Building Construction and Materials.* Construction of the assembly is in section 9 of this test report.

SECTION 3

TEST METHOD(S)

The specimen was evaluated in accordance with the following:

ASTM E119-22, Standard Test Methods for Fire Tests of Building Construction and Materials **CAN/ULC S101**, Standard Methods of Fire Endurance Test of Building Construction Materials

SECTION 4

MATERIAL SOURCE/INSTALLATION

Armor Core panels, along with materials to be used in the construction for the wall assembly were received at Intertek B&C test facility in Elmendorf, Texas, USA on 02/13/2024 and were given sample ID no. SAT2402131148-001. The test specimen was installed by Intertek B&C personnel.

The test assembly built for the hose stream re-test on 06/24/2024, used the same materials that was testing on 06/24/2024 and were given sample ID no. SAT2406181217-001. One change was added to the assembly by adding an extra stud in the joint on the assembly to be able to secure the material.

SECTION 5

EQUIPMENT

02/23/2024 Original Fire Test

ASSET #	DESCRIPTION	CAL DUE DATE
181512641	Stopwatch	10/04/2024
10340409	Thermo Hygrometer	03/23/2024
99LE004	DAQ Unit	04/13/2024
1379574	Pressure Transducer	03/03/2024
3688751	Pressure Transducer	06/05/2024



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06/26/2024 Hose Stream Re-Test

ASSET #	DESCRIPTION	CAL DUE DATE
181512641	Stopwatch	10/04/2024
10340419	Thermo Hygrometer	10/04/2024
99LE004	DAQ Unit	10/10/2024
310063314	Pressure Transducer	11/01/2024
310063329	Pressure Transducer	11/01/2024

SECTION 6

LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Alex Breeland	Armor Core
Warren Hampton	Armor Core
Abel de Hoyos	Intertek B&C
Klarissa Gonzalez	Intertek B&C
Jasmine Anguiano	Intertek B&C

SECTION 7

TEST PROCEDURE

The test assembly was instrumented with thermocouples (TCs) in accordance with criteria based in part on the requirements of the ASTM E119-22 test standard. Eleven 18 GA, closed probe, Type K TCs were used in the furnace and 24 GA, Type K were used on the exterior face of the wall assembly. Nine (9) TCs were placed on the exterior face of the wall assembly at points determined by Intertek B&C project engineers. The 1-hour Test was performed on 02/23/2023 in accordance with the ASTM E119-22 test method. Ambient conditions were 78.9 °F and 50.8% relative humidity. The test was initiated at 1:35 pm with the furnace burners on for 120 minutes. Following the fire test, hose-stream test accordance with CAN/ULC S101 was performed after the fire exposure test. Video recording, digital photographs, visual observations, and data collections were performed prior, during and after testing was completed. Temperature data was recorded every 30 seconds. Following the fire test, hose-stream test. All observations are recorded in the table located in Section 8.



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When the indicated resistance period is 1/2 hour or over, determined by the average or maximum temperature rise on the un-exposed or maximum temperature rise on the un-exposed surface or within the test specimen, or by failure under load, a correction shall be applied for variation of the furnace exposure from that prescribed, where it will affect the classification, by multiplying the indicated period by two-thirds of the difference in area between the curve of average furnace temperature and the standard curve for the first three-fourths of the period and dividing the product by the area between the standard curve and a base line of 68 °F for the same part of the indicated period, the latter area increased by 54 °F*h (3240 °F*min) to compensate for the thermal lag of the furnace thermocouples during the first part of the test. For fire exposure in the test higher than the standard, the indicated resistance period shall be increased by the amount of the correction and be similarly decreased for fire exposure below standard.

The correction can be expressed by the following equation:

$$C = \frac{2I(A - As)}{3(As + L)}$$

where:

C = correction in the same units as I,

I = indicated fire resistance period,

A = area under the curve of indicated average furnace temperature for the first three-fourths of the indicated period,

AS = area under the standard furnace curve for the same part of the indicated period, and

L = lag correction in the same units as A and AS (3240 °F*min)

SECTION 8

TEST CALCULATIONS

Test 1:

VARIABLE	DESCRIPTION	VALUE	UNITS
С	Correction Factor	-0.31	seconds
I	Indicated FR Period	60	minutes
Α	Area under Indicated FR Period for first 3/4 of test period	57816	°F*min
As	Area under Standard E119 Time vs. Temp. Curve for first 3/4 of test period	58290	°F*min
L	Lag Correction	3240	°F*min
FR Period	Fire-Resistance Period	60	minutes



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Hose Stream Re-test

VARIABLE	DESCRIPTION	VALUE	UNITS
С	Correction Factor	-0.27	seconds
1	Indicated FR Period	30	minutes
Α	Area under Indicated FR Period for first 3/4 of test period	23778	°F*min
As	Area under Standard E119 Time vs. Temp. Curve for first 3/4 of test period	24487	°F*min
L	Lag Correction	3240	°F*min
FR Period	Fire-Resistance Period	30	minutes

SECTION 9

TEST SPECIMEN DESCRIPTION

Framing – The one-hour test assembly consists of steel stud/gypsum walls as the supporting construction along with Armor Core panels. Both the samples tested was an asymmetrical wall and was supported by studs and track framework to adhere to the test frame. Panels were cut to size and arranged together, forming the representative wall assembly.

Test Sample – Armor Core Level 3 Panels were utilized for both tests, two 4 x 10-ft. and one 2 x 10-ft. panels were installed on to the 10x10 frame. The Armor Core panels were sandwiched between an outer and inner layer of 5/8-in. Type X Gypsum Board and fastened to one side of the steel stud frame.

SECTION 10

TEST RESULTS

An ASTM E119-22 Fire Test was performed on February 23, 2024, at an ambient temperature of 78.9 °F and 50.8% relative humidity. A hose stream re-test was performed on June 26, 2024, at an ambient temperature of 86.7°F and 66.7% relative humidity. Below are observations taken during the original fire test and hose stream re-test. Recorded data taken during the test can be found in **Sections 12** and **13**.

Original Fire Test Observations – February 23, 2024



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TIME	OBSERVATIONS
(Min: Sec)	
00:00	Test started at 1:35 PM
03:30	Smoke coming out from top perimeter
04:43	Smoke coming from top left
15:43	Smoke coming top right
23:56	Flames on the seam in exposed side
24:42	Flames on top perimeter
33:06	Increase of smoke
42:28	Popping noises from sample
59:18	Flame stopped at top perimeter
61:41	Smoking decreased
65:54	Drywall on exposed side falling off
78:11	Crackling noises from sample
81:41	Test terminated at 2:57 PM

Second Fire Test for Hose Stream Re-Test Observations – June 26, 2024

Time (min:sec)	Observations
00:00	Test Started
05:34	Smoke seeping out
08:33	Rumbling noises from wall
30:00	Test Terminated

SECTION 11

CONCLUSION

Intertek Building and Construction (B&C) was contracted by Armor Core to evaluate the fire resistance characteristics of the 1-hour test assembly. The test described in this report **met** the applicable Conditions of Acceptance for ASTM E119-22 for the projected fire-resistance rating of 60 minutes.



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SECTION 12

PHOTOGRAPHS



Photo No 1. View of Test frame before Installation



Photo No. 2 Studs and tracks installed into frame



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Photo No. 3 View of Completed exposed side



Photo No. 4 View of Completed unexposed side



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Photo No. 5 View of Burner



Photo No. 6 Unexposed side with TCs



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Photo No. 7 Condensation on Top Perimeter



Photo No. 8 Flame in the Seam



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Photo No. 9 Flame in the Seam



Photo No. 10 Flames on Top Perimeter



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Photo No. 11 Increase in Smoke



Photo No. 12 Increase of Flame in Exposed Side



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Photo No. 13 Post-Test



Photo No. 14 Sample During Hose Stream



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Photo No. 15 Sample During Hose Stream



Photo No. 16 Sample Post Hose-Stream



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Hose Stream Re-Test



Photo No. 17 Tracks and Studs Installed Into Frame



Photo No. 18 Panels Arrive



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Photo No. 19 Measurement of Panels



Photo No. 20 Armor Core Panels Fastened into Gypsum



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Photo No. 21 Gypsum Board Fastened into Panels



Photo No. 22 View of Completed Unexposed Side



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Photo No. 23 View of Completed Exposed Side



Photo No. 24 View of Hose Stream Re-Test Sample During Test



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Photo No. 25 View of Exposed side Post-Test



Photo No. 26 View of Exposed side Post-Test



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Photo No. 27 Hose Stream Re-Test



Photo No. 28 Hose Stream Re-Test



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Photo No. 29 Hose Stream Re-Test

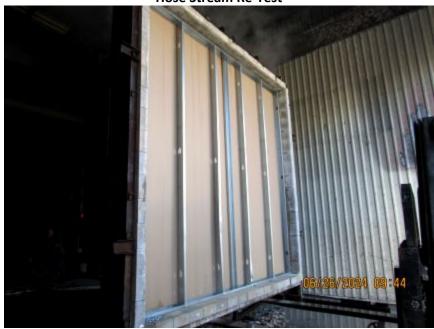


Photo No. 30 Post Hose Stream Re-Test



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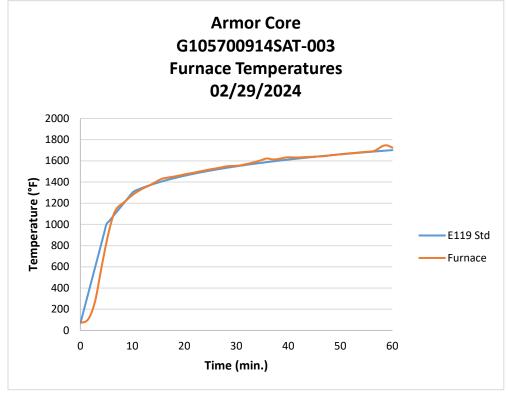
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SECTION 13

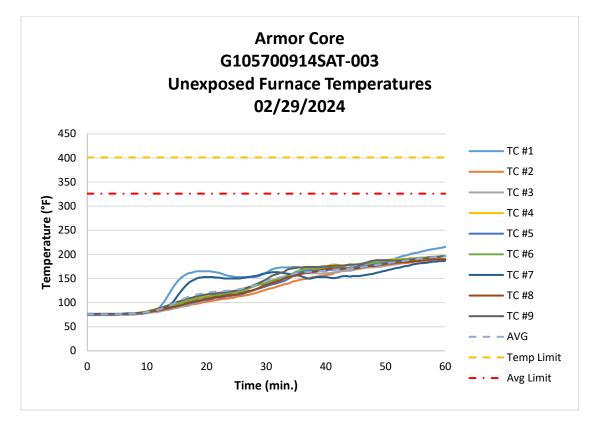
GRAPHS

ORIGINAL FIRE TEST - FEBRUARY 23, 2024





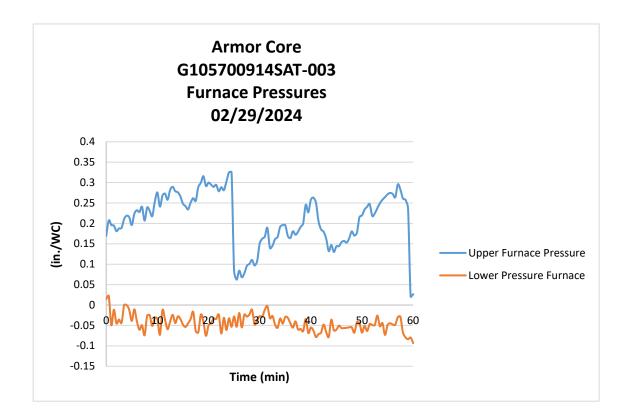
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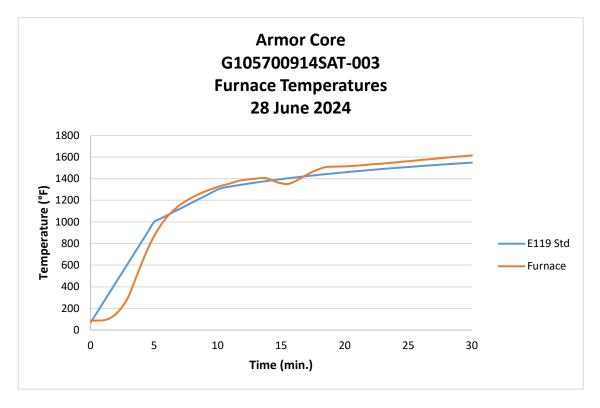


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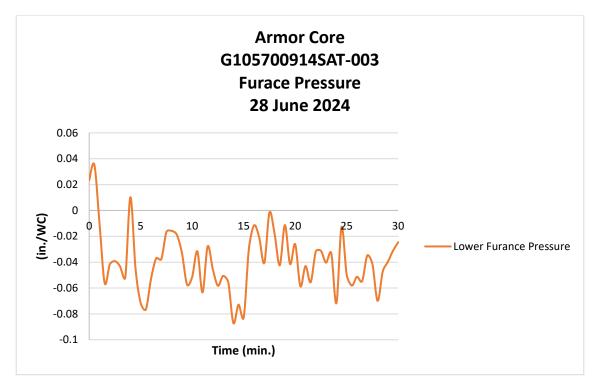
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HOSE STREAM RE-TEST – JUNE 26, 2024





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SECTION 14

NUMERICAL DATA

G105700914	SAT-001				Armor Cor	e	
			Integration	Integration	1	Upper	Lower
	E119 Std	Furnace	of Furnace	of E119 Sto	i i	Furnace	Furnace
Time	Average	Average	Average	Average	Error	Pressure	Pressure
(min)	(°F)	(°F)	(°F•min)	(°F•min)	(%)	(in./WC)	(in./WC)
0	68	76	0	0	0.00%	0.1692	0.0142
0.5	161	76	4	23	-82.62%	0.2072	0.0223
1	254	83	10	93	-89.30%	0.196	-0.0493
1.5	348	106	23	210	-88.89%	0.1947	-0.0113
2	441	152	54	373	-85.58%	0.181	-0.045
2.5	534	219	112	583	-80.70%	0.1877	-0.0355
3	627	312	211	839	-74.84%	0.1888	-0.0436
3.5	720	444	366	1142	-67.95%	0.2107	-0.0003
4	814	579	588	1491	-60.59%	0.2188	-1E-04
4.5	907	707	875	1887	-53.63%	0.2153	-0.0119
5	1000	828	1225	2330	-47.43%	0.1959	-0.0389
5.5	1030	937	1632	2804	-41.79%	0.2237	-0.0105
6	1060	1032	2090	3292	-36.51%	0.2322	-0.04
6.5	1090	1108	2591	3796	-31.73%	0.2278	-0.0605
7	1120	1152	3122	4314	-27.63%	0.2407	-0.0494
7.5	1150	1177	3670	4848	-24.29%	0.2068	-0.074
8	1180	1195	4229	5396	-21.63%	0.2387	-0.0263
8.5	1210	1214	4797	5960	-19.50%	0.2308	-0.0251
9	1240	1236	5376	6538	-17.78%	0.2177	-0.0512
9.5			5965		-16.36%	0.2533	-0.031
10			6564		-15.19%	0.2758	-0.0337
10.5			7173			0.2411	-0.0729
11			7790			0.2683	-0.0118
11.5			8415			0.273	
12			9047			0.258	-0.0594
12.5			9686			0.2823	-0.0401
13			10330			0.2896	-0.024
13.5			10980			0.2788	-0.0441
14			11636			0.2762	
14.5			12299			0.2662	
15			12969			0.2482	
15.5			13646			0.2424	
16			14327			0.2342	
16.5			15012			0.2507	
17			15699			0.2618	-0.0166
17.5			16388			0.2553	-0.0638
18			17079			0.289	-0.0669
18.5			17772			0.2995	-0.0234
19			18467			0.3157	
19.5			19165			0.2915	-0.0754
20			19866			0.3	-0.0497
20.5			20569			0.2949	-0.044
21	1470	1481	21275	22372	-4.91%	0.2896	-0.0329



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G1057(00914	SAT-001		Armor Core							
				Integration	Integration		Upper	Lower			
		E119 Std	Furnace	of Furnace	of E119 Std		Furnace	Furnace			
ime		Average	Average	Average	Average	Error	Pressure	Pressure			
nin)		(°F)	(°F)	(°F•min)	(°F•min)	(%)	(in./WC)	(in./WC)			
	21.5	1475	1486	21982	23074	-4.73%	0.2945	-0.0342			
	22	1480	1490	22692	23779	-4.57%	0.2787	-0.0235			
	22.5	1485	1495	23405	24487	-4.42%	0.2887	-0.0698			
	23	1490	1501	24120	25196	-4.27%	0.2814	-0.0312			
	23.5	1495	1506	24837	25909	-4.14%	0.3026	-0.0613			
	24	1499	1511	25557	26623	-4.00%	0.3252	-0.0324			
	24.5	1504	1516	26280	27340	-3.88%	0.3252	-0.0533			
	25	1508	1520	27005	28059	-3.76%	0.0827	-0.0279			
	25.5	1513	1524	27732	28781	-3.64%	0.0621	-0.0533			
	26	1517	1528	28461	29504	-3.54%	0.0842	-0.0194			
	26.5	1521	1532	29192	30230	-3.43%	0.0681	-0.0548			
	27	1525	1537	29926	30957	-3.33%	0.0777	-0.0235			
	27.5	1529	1543	30662	31687	-3.24%	0.0959	-0.0283			
	28	1533	1548	31400	32419	-3.14%	0.101	-0.023			
	28.5	1537	1550	32141	33153	-3.05%	0.1105	-0.0113			
	29	1541	1551	32882	33888	-2.97%	0.0969	-0.0475			
	29.5	1545	1552	33624	34626	-2.89%	0.1075	-0.0361			
	30	1549	1554	34366	35365	-2.82%	0.151	-0.0272			
	30.5	1552	1556	35110	36106	-2.76%	0.1623	-0.0284			
	31	1556	1560	35855	36850	-2.70%	0.1676	-0.0116			
	31.5	1559	1565	36602	37594	-2.64%	0.1891	-0.0027			
	32	1563	1570	37351	38341	-2.58%	0.1398	-0.0323			
	32.5	1566	1576	38104	39089	-2.52%	0.1452	-0.0268			
	33	1570	1582	38860	39839	-2.46%	0.1615	-0.0474			
	33.5	1573	1588	39618	40591	-2.40%	0.1669	-0.0557			
	34	1576	1595	40380	41344	-2.33%	0.1917	-0.0329			
	34.5	1579	1602	41145	42099	-2.27%	0.1957	-0.0454			
	35	1583	1611	41915	42856	-2.20%	0.1955	-0.0291			
	35.5	1586	1619	42688	43614	-2.12%	0.1692	-0.0314			
	36	1589	1623	43464	44373	-2.05%	0.1642	-0.0446			
	36.5	1592	1617	44240	45135	-1.98%	0.1808	-0.0554			
	37	1595	1614	45014	45897	-1.92%	0.1721	-0.04			
	37.5	1598	1614	45787	46661	-1.87%	0.1797	-0.06			
	38	1601	1617	46561	47427	-1.83%	0.1914	-0.0585			
	38.5	1604	1622	47337	48194	-1.78%	0.2001	-0.0641			
	39	1606	1627	48115	48963	-1.73%	0.2456	-0.0342			
	39.5	1609	1632	48896	49733	-1.68%	0.2272	-0.0685			
	40	1612	1634	49678	50504	-1.64%	0.2581	-0.0552			
	40.5	1615	1633	50461	51277	-1.59%	0.2631	-0.0625			
	41	1617	1633	51243	52051	-1.55%	0.2507	-0.0785			

29-February-2024



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G105700914SAT-001		Armor Cor	e	
Integrat	on Integratio	n	Upper	Lower
E119 Std Furnace of Furna	ce of E119 St	d	Furnace	Furnace
lime Average Average Average	Average	Error	Pressure	Pressure
min) (°F) (°F) (°F•min)	(°F•min)	(%)	(in./WC)	(in./WC)
	025 52826		0.2053	-0.071
	807 53603			-0.0677
	589 54381			-0.0478
	372 55160			-0.0661
	156 55941			-0.0779
	941 56723			-0.0359
	725 57506			
	511 58290			-0.0602
	297 59076			
	084 59863			-0.0565
	871 60651		0.157	-0.0564
	659 61440			-0.0557
	449 62230			-0.0546
	240 63022	-1.24%	0.1805	-0.0548
48.5 1655 1655 63	63815	-1.23%	0.17	-0.0677
49 1657 1657 63	826 64608	-1.21%	0.1768	-0.0425
49.5 1659 1660 64	65403	-1.20%	0.2153	-0.0443
50 1661 1663 65	418 66199	-1.18%	0.2195	-0.0675
50.5 1663 1665 66	216 66997	-1.17%	0.2338	-0.0511
51 1666 1668 67	015 67795	-1.15%	0.2408	-0.0637
51.5 1668 1670 67	815 68594	4 -1.14%	0.2472	-0.0468
52 1670 1672 68	69394	-1.12%	0.2183	-0.0489
52.5 1672 1674 69	419 70196	-1.11%	0.2244	-0.0491
53 1674 1676 70	222 70998	-1.09%	0.2375	-0.0258
53.5 1676 1679 71	027 71802	-1.08%	0.2492	-0.052
54 1678 1681 71	833 72607	-1.07%	0.258	-0.0443
54.5 1680 1683 72	540 73412	-1.05%	0.2644	-0.0733
55 1682 1685 73	448 74219	-1.04%	0.2712	-0.0488
55.5 1684 1687 74	257 75026	-1.03%	0.2747	-0.0447
56 1686 1689 75	067 75835	-1.01%	0.2722	-0.0475
56.5 1688 1694 75	878 76645	-1.00%	0.2638	-0.0483
57 1690 1706 76	694 77455	-0.98%	0.2957	-0.0298
57.5 1692 1722 77	517 78267	-0.96%	0.2829	-0.0286
58 1694 1737 78	348 79079	-0.93%	0.2613	-0.0672
58.5 1696 1746 79	184 79893	-0.89%	0.2576	-0.0791
	023 80707			-0.0837
	860 81522			-0.0797
	691 82338			-0.0932

MAX Temp MAX Allow



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TEST REPORT FOR SPECIALTY COMPOSITES GROUP, LLC

1057009	14SAT	-001		Armor Core							
	Fur	nace be	Furnace Probe								
ime	#1		#2	#3	#4	#5	#6	#7	#8	#9	#10
min)	(°F)	(°F)								
	0	77	76	76	76	76	76	75	75	75	76
1	0.5	77	78	76	76	76		76		76	
	1	82		82		81		81		80	
:	1.5	102	132	102		98		106	88	97	
	2	142	206	144		141		154	108	131	
	2.5	200	302	210		212		224		181	
	3	281	422	312		317		321		247	
	3.5	402		463		479		460	242	350	
	4	535	729	633				610	323	458	
	4.5	667	843	798		799		749	415	564	
	5	796	949	938	928	931		877	527	670	
1	5.5	908	1041	1039		1037		982		781	
	6	1002	1112	1113		1114				894	
	6.5	1078	1169	1171		1172		1139	967	990	
	7	1127	1197	1201				1176	1055	1055	
	7.5	1157	1210	1218	1221	1212	1232	1197	1107	1098	1120
	8	1178	1221	1228	1232	1220	1242	1211	1142	1130	1144
3	8.5	1198	1234	1242	1247	1233	1258	1228	1173	1159	1165
	9	1220	1251	1260	1266	1253	1279	1249	1203	1188	1187
	9.5	1241	1272	1276	1286	1271	1298	1268	1235	1214	1208
	10	1260	1289	1293	1304	1288	1315	1287	1262	1238	1229
1	0.5	1278	1304	1309	1320	1305	1331	1303	1287	1260	1248
	11	1294	1319	1325	1334	1320	1345	1319	1307	1280	1266
1:	1.5	1309	1331	1338	1348	1333	1358	1332	1324	1297	1282
	12	1323	1343	1351	1362	1345	1371	1345	1340	1313	1296
1	2.5	1335	1354	1361	1373	1356	1382	1357	1355	1325	1309
	13	1346	1365	1373	1383	1366	1391	1367	1368	1337	1321
1:	3.5	1358	1376	1384	1395	1378	1404	1380	1381	1350	1333
	14	1372	1389	1397	1409	1393	1417	1393	1397	1363	1347
1	4.5	1384	1403	1410	1422	1407	1430	1406	1414	1376	1362
	15	1397	1416	1423	1434	1421	1441	1418	1432	1389	1378
1	5.5	1408	1428	1435	1445	1434	1452	1429	1445	1400	1393
	16	1416	1436	1443	1452	1442	1459	1436	1456	1408	1403
1	6.5	1421	1439	1447	1456	1447	1461	1440	1462	1413	1410
	17	1425	1443	1452	1459	1451	1463	1444	1468	1418	1416
1	7.5	1430	1447	1455	1462	1454	1466	1447	1472	1422	1421
	18	1435	1451	1459	1466	1458	1470	1451	1475	1428	1425
12	8.5	1439	1455	1463	1469	1463	1474	1456	1480	1434	1430
	19	1444	1461	1468	1474	1468	1479	1461	1485	1439	1436
19	9.5	1450	1465	1473	1480	1473	1484	1466	1492	1444	1441
	20	1454	1471	1479	1485	1479	1489	1471	1499	1447	1446
2	0.5	1460	1476	1483	1491	1483	1494	1476	1503	1451	1451
	21	1465	1481	1488	1495	1488		1480		1456	



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TEST REPORT FOR SPECIALTY COMPOSITES GROUP, LLC

G105700	9145	AT-001		Armor Core							29-February-20	
		Furnace	Furnace	Furnace	Furnace	Furnace	Furnace	Furnace	Furnace	Furnace	Furnace	
		Probe	Probe	Probe	Probe	Probe	Probe	Probe	Probe	Probe	Probe	
ime		#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	
min)		(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	
	21.5	1469					1502					
	22	1474	1489	1497	1502	1498	1506	1489	1514	1467	1465	
	22.5	1480	1495	5 1502	1507	1502	1511	1495	1520	1472	1470	
	23	1485	1500	1508	1512	1508	1516	1500	1526	1477	1475	
	23.5	1490	1504	1513	1518	1514	1520	1505	1531	1481	1480	
	24	1495	1510	1518	1522	1519	1525	1509	1536	1486	1485	
	24.5	1500	1515	5 1523	1528	1522	1531	1515	1540	1492	1489	
	25	1505	1519	1527	1532	1527	1536	1520	1544	1498	1494	
	25.5	1509	1522	1532	1536	1531	1539	1524	1548	1503	1498	
	26	1514	1527	1535	1540	1535	1543	1528	1552	1506	1503	
	26.5	1518	1530	1540	1544	1540	1547	1532	1555	1510	1508	
	27	1524					1551	1538	1561	1515	1512	
:	27.5	1529	1541	1551	1553	1550	1556	1543	1567	1518	1518	
	28	1534					1561		1572			
:	28.5	1537	1548	1558	1561	1557	1563	1551	1574	1527	1527	
	29	1539					1563					
:	29.5	1539					1563					
	30	1542					1565					
:	30.5	1543					1567					
	31	1547					1571					
1	31.5	1552					1577					
	32	1558					1583					
1	32.5	1564					1588					
	33	1570			1592		1595					
:	33.5	1576			1598		1601					
	34	1583					1608					
-	34.5	1590					1615					
	35	1598					1623					
:	35.5	1606					1631					
	36	1612					1633					
:	36.5	1608					1624					
	37	1606					1620					
:	37.5	1605					1620					
	38	1608			1622		1623					
:	38.5	1611					1627					
	39	1615					1630					
:	39.5	1619			1633		1634					
	40	1620					1634					
	40.5	1619			1631		1632			1611		
	41	1619	1617	1638	1630	1649	1630	1622	1670	1611	1639	



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TEST REPORT FOR SPECIALTY COMPOSITES GROUP, LLC

Report No.: G105700914SAT-003 Date: 02/29/24

G10570	009149	SAT-001		Armor Core									
		Furnace	Furnace	Furnace	Furnace	Furnace	Furnace	Furnace	Furnace	Furnace	Furnace		
		Probe	Probe	Probe	Probe	Probe	Probe	Probe	Probe	Probe	Probe		
Time		#1	#2	#3	#4	#5	#6	#7	#8	#9	#10		
(min)		(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)		
	41.5	1618	1615	1637	1629	1648	1630	1621	1671	1610	1639		
	42	1618	1615	1637	1629	1647	1629	1621	1674	1611	1639		
	42.5	1619			1629	1648	1630	1622	1676				
	43	1620			1630		1631		1678				
	43.5	1621			1632		1632		1679				
	44	1622	1618	1641	1633	1651	1633	1625	1680	1620	1647		
	44.5	1623	1620	1642	1633	1652	1634	1627	1680	1622	1648		
	45	1624	1621	1644	1635	1653	1635	1628	1682	1623	1649		
	45.5	1625	1622	1645	1636	1655	1636	1629	1684	1625	1652		
	46	1627	1624	1646	1637	1657	1638	1630	1685	1626	1653		
	46.5	1628	1625	1647	1638	1659	1639	1631	1687	1627	1655		
	47	1629	1627	1649	1640	1660	1641	1633	1688	1628	1658		
	47.5	1632	1630	1651	1643	1663	1644	1636	1691	1630	1661		
	48	1635	1634	1655	1647	1666	1648	1640	1694	1633	1664		
	48.5	1638	1637	1658	1650	1669	1650	1643	1696	1635	1669		
	49	1640	1639	1660	1652	1671	1653	1645	1698	1639	1673		
	49.5	1643	1642	1663	1655	1674	1655	1647	1700	1642	1676		
	50	1646	1645	1666	1657	1676	1658	1650	1702	1645	1681		
	50.5	1648	1647	1668	1660	1678	1661	1652	1704	1647	1683		
	51	1651	1650	1671	1663	1681	1663	1655	1706	1650	1686		
	51.5	1653	1653	1673	1665	1684	1666	1658	1708	1653	1689		
	52	1655	1654	1675	1667	1685	1667	1659	1711	1655	1690		
	52.5	1657	1657	1676	1669	1687	1669	1662	1712	1658	1691		
	53	1660	1659	1679	1672	1690	1671	1663	1714	1659	1694		
	53.5	1662	1662	1682	1675	1693	1674	1666	1716	1659	1698		
	54	1665	1665	1685	1677	1696	1677	1669	1716	1661	1699		
	54.5	1668	1667	1688	1680	1699	1679	1670	1716	1662	1700		
	55	1670	1669	1690	1682	1701	1680	1672	1718	1663	1704		
	55.5	1672	1672	1692	1685	1703	1683	1673	1720	1660	1706		
	56	1676	1676	1694	1688	1707	1685	1675	1721	1657	1706		
	56.5	1685	1681	1703	1692	1719	1688	1678	1727	1660	1706		
	57	1700	1691	1718	1701	1733	1700	1687	1743	1672	1710		
	57.5	1723	1707	1738	1717	1752	1717	1701	1759	1684	1719		
	58	1745			1734		1734		1771	1691			
	58.5	1763			1742				1776				
	59	1772			1742		1740		1771				
	59.5	1777			1735		1731		1755				
	60	1773			1724		1718		1738				

MAX Temp MAX Allow



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TEST REPORT FOR SPECIALTY COMPOSITES GROUP, LLC

G105700	0914SAT-00)1				29-February-20					
Time (min)	TC #1 (°F)	. TC #2 (°F)	TC # (°F)	3 TC #4 (°F)	TC #5 (°F)	TC #6 (°F)	TC #7 (°F)	TC #8 (°F)	TC #9 (°F)	AVG (°F)	
	0	77	76	74	76	76	76	76	76	75	76
	0.5	77	76	74	76	76	76	76	76	75	76
	1	77	76	74	76	76	76	76	76	75	76
	1.5	77	76	74	76	76	76	76	76	75	76
	2	77	76	74	76	76	76	76	76	75	76
	2.5	77	76	74	76	76	76	76	76	75	76
	3	77	76	74	76	76	76	76	76	75	76
	3.5	77	76	74	76	76	76	76	76	75	76
	4	77	76	74	76	76	76	76	76	75	76
	4.5	77	76	74	76	76	76	76	76	75	76
	5	77	76	74	76	76	76	76	76	75	76
	5.5	77	76	75	77	76	76	76	76	76	76
	6	77	76	75	77	76	76	77	76	76	76
	6.5	78	77	75	77	77	76	77	76	76	77
	7	78	77	75	77	77	77	77	76	76	77
	7.5	78	77	75	78	77	77	77	77	77	77
	8	78	77	75	78	77	78	78	77	77	77
	8.5	79	78	76	79	78	78	78	78	78	78
	9	80	78	76	80	78	79	79	78	79	79
	9.5	80	79	77	81	79	80	80	79	80	79
	10	81	80	78	82	80	81	81	80	81	80
	10.5	82	80	79	84	81	82	82	81	83	82
	11	83	81	80	85	82	83	83	82	84	83
	11.5	85	82	80	87	83	84	84	83	86	84
	12	89	83	81	89	84	86	85	84	88	85
	12.5	96	84	83	90	86	87	87	85	90	88
	13	104	85	84	92	87	89	89	87	92	90
	13.5	114	86	85	94	88	91	93	88	94	93
	14 14.5	124 134	87 88	86 88	96 98	89 91	93 94	97 103	90 91	96 99	95 98
	14.5	134 142	88 89	88	98 100	91 92	94 96	103	91 93	101	98 102
	15.5	142	91	91	102	94	98	120	94	101	102
	16	154	92	92	102	95	100	128	96	105	107
	16.5	158	93	94	105	97	102	135	98	107	110
	17	161	94	96	103	98	102	141	100	109	112
	17.5	162	96	97	108	100	104	141	101	110	114
	18	162	97	99	110	101	107	148	101	112	116
	18.5	165	98	101	112	102	108	151	104	113	117
	19	165	99	102	113	102	110	152	104	115	118
	19.5	165	101	104	114	105	111	153	107	116	120
	20	165	102	106	116	106	112	153	108	117	121
	20.5	165	103	108	117	107	113	153	109	118	121
	21	164	104	109	118	108	114	153	110	118	122



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TEST REPORT FOR SPECIALTY COMPOSITES GROUP, LLC

10570	5700914SAT-001							Armor Core								29-Februar				
ime	т	°C #1		TC #2		TC #3	TC #4	×.	TC #5		TC #6		TC#7		TC #8		TC #9		AVG	
nin)		°F)		(°F)		(°F)	(°F)		(°F)		(°F)		(°F)		(°F)		(°F)		(°F)	
	21.5	16	63		105	111		119		110		115		152		112		119		123
	22	10	62		106	113	1	119		110		116		152		112		120		123
	22.5	10	60		107	114	Ļ	120		111		117		151		113		121		124
	23	1	58		108	116	6	121		112		118		150		114		121		124
	23.5	1	56		108	117	1	122		113		118		150		115		122		125
	24	1	55		110	119)	123		114		119		150		116		123		125
	24.5	1	54		110	120)	124		115		120		150		116		124		126
	25	1	53		112	122	2	125		116		122		150		117		125		127
	25.5		53		113	124		126		117		123		150		119		127		128
	26	1	53		114	126	i	128		118		124		151		120		128		129
	26.5		53		115	128		130		120		127		152		122		130		131
	27		53		116	131		132		122		129		153		124		132		132
	27.5		53		118	133		134		124		132		154		125		134		134
	28		53		119	135		136		126		134		155		127		137		136
	28.5		54		121	137		138		128		136		156		129		139		138
	29		56		123	139		139		130		138		158		132		142		140
	29.5		59		125	141		141		132		139		160		135		145		142
	30		62		127	143		143		134		141		161		137		148		144
	30.5		66		129	145		145		136		143		162		139		152		146
	31		69		130	147		146		138		145		163		141		156		148
	31.5		71		132	149		148		139		147		163		143		158		150
	32		72		134	151		150		141		149		163		145		160		152
	32.5		73		136	152		152		143		151		162		147		162		153
	33		73		138	154		153		145		153		161		150		164		155
	33.5 34		73 73		139 141	156		155 157		148 152		155 158		160 159		152 153		168 170		156 158
	34.5		73 74		141	150		157		152		158		159		155		170		158
	34.5		74		144	161		161		150		161		156		155		171		161
	35.5		73		145	162		161		161		164		157		150		172		161
	36		71		148	162		165		164		169		154		160		173		163
	36.5		70		140	162		167		165		170		152		161		174		163
	37		69		150	161		168		166		171		150		162		174		163
	37.5		68		152	161		170		167		171		150		163		174		164
	38		68		153	161		170		166		171		152		164		174		164
	38.5		68		154	161		172		166		171		153		165		174		165
	39		68		155	160		174		166		171		153		167		174		165
	39.5		68		156	161		175		166		171		153		168		175		166
	40		69		157	161		176		166		172		153		169		175		166
	40.5		71		158	161		177		168		173		152		171		176		167
	41		72		159	162		179		168		173		151		171		176		168



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TEST REPORT FOR SPECIALTY COMPOSITES GROUP, LLC

10570	00914SAT-00							Armor	Core							29-February				
ime	TC #1		TC #2		TC #3		TC #4		C #5		C #6		TC #7		TC #8		TC #9		AVG	
min)	(°F)		(°F)		(°F)		(°F)		°F)	_	F)		(°F)		(°F)		(°F)		(°F)	
	41.5	173		162		163		179	16			174		151		171		177		169
	42	173		163		164		178	16			174		152		171		177		169
	42.5	173		165		165		177	16			175		154		171		177		170
	43 43.5	172 172		166 167		165 166		177 177	17 17			176 177		155 155		171 171		177 178		170 170
	43.5	171		168		166		178	17			177		155		171		179		171
	44.5	171		169		167		178	17			178		155		171		179		171
	45	171		169		169		179	17			179		155		171		179		172
	45.5	172		170		170		179	17			180		155		172		179		172
	46	173		171		172		180	17			181		156		173		180		174
	46.5	174		172		173	1	180	17	7		182		157		174		182		175
	47	176		173		173		181	17	7		182		158		175		184		175
	47.5	177		174		173	1	182	17	8		182		159		176		186		176
	48	179		175		173	1	183	17	9		183		160		176		187		177
	48.5	180		176		174	i i	184	18	30		183		162		177		188		178
	49	182		176		174	1	185	18	31		184		163		178		188		179
	49.5	184		177		175	3	187	18	32		185		165		179		188		180
	50	186		177		176	0	188	18			186		166		180		188		181
	50.5	188		178		177		189	18			187		168		181		188		182
	51	189		179		178		189	18			187		169		181		188		183
	51.5	191		179		179		190	18			188		171		182		187		184
	52	193		180		181		190	18			189		172		183		187		185
	52.5	195		181		182		190	18			189		173		183		187		185
	53	197		182		184		191	18			190		175		184		188		187
	53.5	198		182		186		191	18			190		176		184		188		187
	54	200		183		188		192	18			191		177		185		189		188
	54.5 55	202 203		184 185		189 190		192 192	19			191 192		179 180		185 186		189 190		189 190
	55.5	203		185		190		192	19			192		181		186		190		190
	56	204		187		193		193	19			192		182		187		191		191
	56.5	200		187		193		193	19			193		182		187		192		192
	57	209		187		194		194	19			193		183		189		193		193
	57.5	210		188		195		194	19			194		184		189		194		193
	58	211		189		195		195	19			195		185		190		194		194
	58.5	212		189		195		195	19			195		185		190		195		195
	59	213		190		195		195	19			196		186		190		195		195
	59.5	214		190		196	ł.	196	19	6		197		186		190		196		196
	60	216		190		196	1	196	19	97		197		187		190		196		196
AX Te	emp	216		190		196	2	196	19	17		197		187		190		196		196
AX AL	low	402		401		399	4	101	40	1		401		401		401		400		326



TEST REPORT FOR SPECIALTY COMPOSITES GROUP, LLC

Report No.: G105700914SAT-003 Date: 02/29/24

HOSE STREAM TABULAR DATA

G105700914SAT-003 Armor Core 28 June 2024 Integration Integration Upper Lower E119 Std Furnace of Furnace of E119 Std Furnace Furnace Time Average Average Average Average Error Pressure Pressure (°F) (°F•min) (°F•min) (%) (min) (°F) (in./WC) (in./WC) 68 85 0 0 0.00% 0.0021 0.0235 0 0.5 161 88 9 23 -60.41% 0.0018 0.0352 254 89 19 93 -79.12% 0.0015 -0.0099 1 1.5 348 108 35 210 -83.35% 0.0028 -0.0561 2 441 149 65 373 -82.49% 0.0013 -0.0417534 123 583 -78.95% 0.0029 -0.0392 2.5 216 3 627 314 221 839 -73.63% 0.0007 -0.0433 720 462 381 0.0008 -0.0518 3.5 1142 -66.61% 611 615 1491 -58.73% 0.0003 0.0102 4 814 4.5 907 750 922 1887 -51.16% 0.0022 -0.0452 1000 869 1292 2330 -44.53% 0.0021 -0.0717 5 5.5 1030 966 1717 2804 -38.75% 0.0027 -0.0766 1060 2185 3292 -33.61% 1043 0.0011 -0.053 6 6.5 1090 1105 2688 3796 -29.17% 0.0023 -0.037 3219 7 1120 1154 4314 -25.38% 0.0018 -0.0377 7.5 1150 1194 3772 4848 -22.19% 0.0014 -0.0166 8 1180 1227 4343 5396 -19.51% 0.0011 -0.0158 4930 5960 -17.28% 8.5 1210 1256 0.0006 -0.0187 9 1240 1281 5530 6538 -15.41% 0.0018 -0.0328 9.5 1270 1304 6143 7132 -13.87% 0.0021 -0.0574 1300 1324 6766 7740 -12.59% 0.0021 -0.0513 10 10.5 1317 1341 7398 8360 -11.51% 0.0022 -0.0316 1328 1356 8038 8988 -10.56% 0.0022 -0.0634 11 11.5 1337 1376 8687 9620 -9.69% 0.0011 -0.0278 12 1347 1387 9344 10257 -8.90% 0.0011 -0.0454 12.5 1356 1394 10005 10898 -8.19% 0.0014 -0.0582 13 1364 1401 10670 11545 -7.57% 0.0014 -0.0506

12195 -7.03%

0.0009 -0.0555

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13.5

1407

1373

11338



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TEST REPORT FOR SPECIALTY COMPOSITES GROUP, LLC

G105	700914SA	T-003			Armor C	ore	
	E119 Std	Furnace	Integration of Furnace	Integration of E119 Std	_	Upper Furnace	Lower Furnace
lime	Average	Average	Average	Average	Error	Pressure	Pressure
(min) 14	(°F) 1381	(°F) 1399	(°F•min) 12005	(°F•min) 12849	(%) -6.57%	(in./WC) 0.0027	(in./WC) -0.0871
14.5		1374	12005	13507		0.00027	-0.0728
14.5			13314	14170		0.0002	-0.0828
15.5			13957	14170		0.0021	-0.03
16			14603	15505		0.00022	-0.0116
16.5			15263	16177		0.0018	-0.0207
10.0		1437	15205	16854		0.0019	-0.0406
17.5			16630	17533		0.001	-0.0017
18			17335	18215		0.0019	-0.0182
18.5		1508	18051	18901		0.0005	-0.0424
19	1448	1511	18771	19590	-4.18%	0.001	-0.0113
19.5	1454	1513	19493	20281	-3.88%	0.0029	-0.0414
20	1459	1514	20216	20975	-3.62%	0.0011	-0.0261
20.5	1465	1517	20939	21672	-3.38%	0.0017	-0.0586
21	1470	1521	21665	22372	-3.16%	0.0034	-0.043
21.5	1475	1526	22393	23074	-2.95%	0.001	-0.0555
22	1480	1531	23123	23779	-2.76%	0.0022	-0.0317
22.5	1485	1536	23856	24487	-2.58%	0.0018	-0.0312
23	1490	1540	24591	25196	-2.40%	0.0008	-0.0404
23.5	1495	1546	25329	25909	-2.24%	0.0027	-0.033
24	1499	1551	26069	26623	-2.08%	0.0025	-0.0717
24.5	1504	1557	26812	27340	-1.93%	0.0016	-0.0128
25	1508	1562	27558	28059	-1.79%	0.002	-0.0498
25.5	1513	1567	28306	28781	-1.65%	0.0025	-0.0581
26	1517	1573	29057	29504	-1.52%	0.0028	-0.0513
26.5	1521	1579	29811	30230	-1.39%	0.0018	-0.0547
27	1525	1584	30567	30957	-1.26%	0.0007	-0.0348
27.5	1529	1590	31327	31687	-1.14%	0.0022	-0.0416
28			32089	32419		0.0031	-0.0699
28.5			32854			0.001	-0.0473
29		1606	33622			0.0012	-0.0397
29.5			34392			0.0022	-0.0311
30	1549	1616	35164	35365	-0.57%	0.0012	-0.0246



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TEST REPORT FOR SPECIALTY COMPOSITES GROUP, LLC

G105	700914	SAT-003		Armor Core									
Time	Furnace Probe #1	Furnace Probe #2	Furnace Probe #3	Furnace Probe #4	Furnace Probe #5	Furnace Probe #6	Furnace Probe #7	Furnace Probe #8	Furnace Probe #9	Furnace Probe #10			
(min)	(°F)												
0	86	86	86	85	85	85	85	85	85	86			
0.5	86	6 86	86	85	103	86	86	85	86	86			
1	89	91	92	89	325	89	87	88	90	90			
1.5	102	110	115	108	504	110	98	102	120	110			
2		146	158					139					
2.5	187	204	227	227	753	233	168	205	274	221			
3	265	287	333	328	1012	343	242	303	402	325			
3.5	392	420	494	461	931	516	380	450	560	482			
4	531	566	647	596	995	686	534	605	706	632			
4.5	670	709	784	715	1074	834	683	755	831	766			
5	799	838	900	817	1143	952	818	886	934	880			
5.5	905	943	992	898	1190	1047	929	989	1018	971			
6	990	1025	1065	969	1236	1121	1015	1072	1087	1044			
6.5	1058	1090	1122	1027	1256	1181	1084	1135	1143	1101			
7	1113	1142	1169	1075	1281	1230	1139	1184	1188	1147			
7.5	1157	1184	1207	1113	1302	1267	1182	1223	1225	1184			
8	1193	1219	1239	1146	1327	1298	1219	1258	1257	1215			
8.5	1226	1249	1268	1173	1347	1325	1251	1288	1283	1243			
9	1254	1274	1293	1198	1358	1348	1279	1313	1306	1267			
9.5	1279	1297	1315	1220	1375	1369	1304	1335	1326	1289			
10	1300	1317	1335	1240	1393	1388	1325	1356	1345	1309			
10.5	1318	1335	1352	1258	1401	1404	1344	1374	1361	1326			
11	1335	1351	1366	1273	1412	1417	1360	1389	1376	1341			
11.5	1347	1367	1378	1287	1429	1428	1373	1406	1387	1357			
12	1361	1379	1391	1299	1428	1437	1385	1420	1398	1372			
12.5	1369	1388	1399	1309	1427	1444	1392	1429	1404	1382			
13	1377	1394	1405	1316	1432	1450	1400	1433	1410	1388			
13.5	1383	1401	1410	1324	1442	1455	1407	1439	1414	1394			



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Armor Core

28 June 2024

	Furnace									
	Probe									
Time	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
(min)	(°F)									
14	1383	1397	1406	1324	1380	1452	1406	1434	1414	1390
14.5	1364	1373	1380	1307	1333	1430	1386	1408	1395	1367
15	1344	1351	1358	1288	1351	1409	1367	1387	1374	1346
15.5		1343	1350	1278	1358	1400	1359	1380	1367	1338
16	1343	1356	1364	1286	1457	1412	1368	1397	1377	1350
16.5				1312	1496	1442	1395			1385
17	1405	1428	1438	1343	1520	1475	1427	1473	1438	1419
17.5										
18										
18.5										
19				1429						
19.5										
20				1435						
20.5										
21										
21.5										
22										
22.5						1574				
23										
23.5										
24										
24.5										
25										
25.5										
26				1495						
26.5										
27										
27.5										
28										
28.5										
29										
29.5										
30	1600	1612	1626	1539	1649	1649	1614	1648	1616	1607



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SECTION 15

DRAWINGS

The "As-Built" drawings for Armor Core, which follow have been reviewed by Intertek B&C and are representative of the project reported herein. Project construction was verified by Intertek B&C per the drawings included in this report. Any deviations are documented herein or on the drawings.



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SECTION 16

REVISION LOG

REVISION #	DATE	SECTION	REVISION
0	02/29/24	N/A	Original Report Issue