

# ARCONIC ARCHITECTURAL PRODUCTS TEST REPORT

## SCOPE OF WORK

AC25 DURABILITY AND ASTM TEST METHODS D1781, C393, D5420, D1929, D635, AND E136 EVALUATIONS ON 3MM PRE-PAINTED BONDED SHEET AS3000B

## REPORT NUMBER

K3682.01-106-31 R1

## TEST DATE(S)

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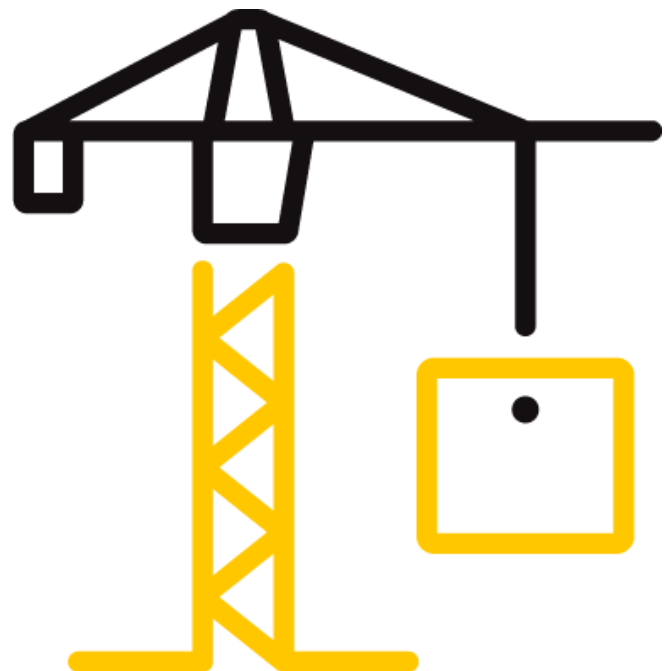
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## TEST REPORT FOR ARCONIC ARCHITECTURAL PRODUCTS

Report No.: K3682.01-106-31 R1

Date: 03/26/20

### REPORT ISSUED TO

#### ARCONIC ARCHITECTURAL PRODUCTS

50 Industrial Boulevard  
Eastman, Georgia 31023

### SECTION 1

#### SCOPE

**Product:** 3mm Pre-painted Bonded Sheet AS3000B

Intertek Building & Construction (B&C) was contracted by Arconic Architectural Products to evaluate 3mm Pre-painted Bonded Sheet AS3000B in accordance with AC25 for Durability, ASTM D1781 for Peel Strength, ASTM C393 for Flexural Properties, ASTM D5420 for Impact Resistance, ASTM D1929 for Ignition Temperature, ASTM D635 for Rate of Burn, and ASTM E136 for Combustibility. Results obtained are tested values and were secured by using the designated test method(s). Testing was conducted at the Intertek B&C test facility in York, Pennsylvania.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

For INTERTEK B&C:

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<b>SIGNATURE:</b>	
<b>DATE:</b>	06/03/20

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<b>DATE:</b>	06/03/20

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### SECTION 2

#### SUMMARY OF TEST RESULTS

PROCEDURE	PROPERTY	CONDITION	AVERAGE RESULT
ASTM D1781 (AC25)	Peel Torque	Room Temperature	135.6 in·lb <sub>f</sub> /in
		Boiling Water	136.9 in·lb <sub>f</sub> /in
		Water Immersion	116.8 in·lb <sub>f</sub> /in
		Freeze/Thaw	122.1 in·lb <sub>f</sub> /in
ASTM C393	Flexural Strength	Machine, Exterior	474 psi
		Machine, Interior	451 psi
		Cross, Exterior	475 psi
		Cross, Interior	465 psi
ASTM D5420	Impact Resistance	Standard	≥320 in·lb <sub>f</sub>
ASTM D1929	Ignition Temperature	Self-Ignition	490°C (914°F)
		Flash Ignition	490°C (914°F)
ASTM D635	Rate of Burn	Standard	No Sustained Burn
ASTM E136	Combustibility	Standard	Flaming after 30 sec

### SECTION 3

#### TEST METHODS

The specimens were evaluated in accordance with the following:

**ICC-ES AC25®-2018**, *Acceptance Criteria for Metal Composite Material (MCM)*, Sections 3.1.3, 4.5 and 4.6

**ASTM D1781-98 (Reapproved 2012)**, *Standard Test Method for Climbing Drum Peel for Adhesives*

**ASTM C393/C393M-16**, *Standard Test Method for Core Shear Properties of Sandwich Constructions by Beam Flexure*

**ASTM D5420-16**, *Standard Test Method for Impact Resistance of Flat, Rigid Plastic Specimen by Means of a Striker Impacted by a Falling Weight (Gardner Impact)*

**ASTM D1929-20**, *Standard Test Method for Determining Ignition Temperature of Plastics*

**ASTM D635-18**, *Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position*

**ASTM E136-19a**, *Standard Test Method for Assessing Combustibility of Materials in a Vertical Tube Furnace at 750°C, Option A*

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#### MATERIAL SOURCE

The 3mm Pre-Painted Bonded Sheet AS3000B material was selected by Intertek B&C personnel and tagged prior to shipment on 11/19/2019. Reference Intertek B&C Test Specimen Selection Report No. K3682.03-103-15. The following was received on 11/26/2019: three nominally 196-inch long by 62-inch wide by 0.125-inch thick sheets of double aluminum panels. Refer to the product description photos in Section 10. The material was tested as received with the exception of preparing the smaller test specimens from the materials. Representative materials/test specimen(s) will be retained by Intertek B&C for a minimum of four years from the test completion date.

### SECTION 5

#### LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Joshua A. Kennedy	Intertek B&C
Dawn M. Chaney	Intertek B&C

### SECTION 6

#### TEST PROCEDURES

All conditioning of test specimens and test conditions were at standard laboratory conditions unless otherwise reported. Refer to the test photos in Section 10, datasheets in Section 11 and graphs in Section 12.

#### ICC-ES AC25, Conditioning and Freeze-Thaw

Four sets of six specimens underwent different exposure conditions. Group 1 (Room Temperature) was exposed to 70°F and 50% relative humidity for one week in an ESPEC Environmental Chamber (ICN: INT01241). Group 2 (Boiling Water) was submerged in boiling water for eight hours in a Cole Parmer hot-water bath (ICN: Y002053). Group 3 (Water Immersion) was submerged in 70°F water for 21 days. The Freeze-Thaw set was exposed to 10 cycles consisting of: 120°F in an oven (ICN: Y002568) for eight hours, submerged in 75°F water for eight hours, and -20°F in a freezer (ICN: INT00207) for 16 hours. The four sets were utilized for the climbing drum peel testing.

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**ASTM D1781, Climbing Drum Peel**

The peel strength of the 3mm Pre-Painted Bonded Sheet AS3000B material was determined utilizing an Instron UTM (ICN: 005740) equipped with a 10 kN load cell (ICN: 005965) operating at a crosshead speed of 1.0 in/min. Prior to testing, the panels were machined to have a 1.5-inch overhang of one aluminum face and a 0.75-inch tab excluding one aluminum face for clamping. A peeling apparatus consisting of a flanged drum, flexible loading straps, and a steel plate with clamps for holding the specimen was utilized to peel one aluminum face from the panel. Dimensions were measured with a Fowler digital caliper (ICN: INT01066). A calibration peel was conducted on three aluminum skins for each of the exterior and interior faces of the 3mm Pre-Painted Bonded Sheet AS3000B.

**ASTM C393, Flexural Properties**

The flexural properties of the 3mm Pre-Painted Bonded Sheet AS3000B were determined utilizing an Instron UTM (ICN: 005740) equipped with a 2.0 kN load cell (ICN: 005742) operating at a crosshead speed of 0.25 in/min. A three-point loading configuration was used with a support span of six inches and one-inch diameter support and loading bars. Load was applied to the center of each specimen with five of each face in tension for both the machine and cross directions. A deflectometer (ICN: E95457) was used to measure the center deflection of each specimen. A nominal skin thickness of 0.060 inches was used for calculations. Dimensions were measured with a Fowler digital caliper (ICN: INT01066).

**ASTM D5420, Impact Resistance**

The impact resistance of the 3mm Pre-Painted Bonded Sheet AS3000B were determined utilizing an Gardner Impact Tester (ICN: Y000146) with 0.50-inch hemispherical tup head of GE geometry and an 8.0-lb<sub>f</sub> weight. Eleven impacts were conducted at a height of 40 inches, which is an impact energy of 320-in·lb<sub>f</sub>. 40 inches is the maximum drop height of the impact apparatus as prescribed in ASTM D5420 Section 7.1, so the impact height could not be increased after an impact that did not result in a failure. Dimensions were measured with a Fowler digital caliper (ICN: INT01066).

**ASTM D1929, Ignition Temperatures**

The self- and flash ignition temperatures of the 3mm Pre-Painted Bonded Sheet AS3000B material were determined utilizing a Setchkin Ignition Furnace Model CSI-88 system (ICN: 62156) connected to a data acquisition unit (ICN: 004682) in a fire hood (ICN: 005985). The specimen mass was measured utilizing a Mettler Toledo Balance Model XP1203S (ICN: 65216).

***Caveat:** These test results relate only to the behavior of test specimens under the particular conditions of the test. They are not intended to be used, and shall not be used, to assess the potential fire hazards of a material in use.*

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### ASTM D635, Rate of Burn

The linear rate of burn of the 3mm Pre-Painted Bonded Sheet AS3000B was determined utilizing a laboratory burner (ICN: Y002875) inside of a fire hood (ICN: 005985). Specimens, nominally 151-mm long by 13.6-mm wide by 3.22-mm thick, were supported horizontally at one end and exposed to a gas flame at the free end for 30 seconds. If the flame contacted the 25-mm mark, the rate of burn was measured with a timer until the flame contacted the 100-mm mark.

**Caveat:** This standard is used to measure and describe the response of materials, products or assemblies to heat and flame under controlled conditions but does not by itself incorporate all factors required for fire hazards or fire risk assessment of materials, products, or assemblies under actual fire conditions.

### ASTM E136, Combustibility

The behavior of the 3mm Pre-Painted Bonded Sheet AS3000B material when exposed to 750°C was evaluated utilizing a Setchkin Ignition Furnace Model CSI-88 (ICN: 62156) connected to a data acquisition unit (ICN: 63533) in a fire hood (ICN: 005985). The material was conditioned at 60°C for 48 hours in a Lindberg Blue M oven (ICN: 005316) prior to testing. The weight of each specimen was measured before and after exposure with a Mettler Toledo Model XP1203S balance (ICN: 65216).

## SECTION 7

### TEST SPECIMEN DESCRIPTIONS

TEST PROCEDURE	NUMBER OF SPECIMENS	NOMINAL SPECIMEN DIMENSIONS	VISUAL CHARACTERISTICS
ASTM D1781 (AC25)	24	16 x 3 x 0.125 inch	Brown/Grey Skins
ASTM C393	20	8 x 3 x 0.125 inch	Brown/Grey Skins
ASTM D5420	2 Strips	16 x 3 x 0.125 inch	Brown/Grey Skins
ASTM D1929	7	20 x 20 x 3.22 mm	Brown/Grey Skins
ASTM D635	10	151 x 13.6 x 3.22 mm	Brown/Grey Skins
ASTM E136	2	2 x 1.5 x 1.4 inch	Brown/Grey Skins

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**SECTION 8**

**TEST RESULTS**

**AC25, Conditioning and Freeze-Thaw**

CONDITIONING SET	CONDITIONING TYPE	PE CORE PANEL OBSERVATIONS
Group 1	Room Temperature	No visible deleterious effects
Group 2	Boiling Water	No visible deleterious effects
Group 3	Water Immersion	No visible deleterious effects
Freeze-Thaw	Heat, Water, Freeze	No visible deleterious effects

**ASTM D1781, Climbing Drum Peel Strength, Group 1**

SPECIMEN	PEAK LOAD (lb <sub>f</sub> )	AVERAGE LOAD (lb <sub>f</sub> )	AVERAGE PEEL TORQUE (in·lb <sub>f</sub> /in)	AVERAGE PEEL TORQUE (N·mm/mm)	FAILURE MODE
1	1,010	951.7	139.80	621.88	Adhesion to Skin
2	935	839.6	121.14	538.84	Adhesion to Skin
3	1,280	1,090.8	163.23	726.08	Adhesion to Skin
4	847	779.0	112.20	499.09	Adhesion to Skin
5	1,270	1,084.2	162.78	724.10	Adhesion to Skin
6	892	789.7	114.21	508.04	Adhesion to Skin
<b>Average</b>	<b>1,040</b>	<b>922.5</b>	<b>135.56</b>	<b>603.01</b>	

AC25 Acceptance Criteria Peel Torque Value: 112.2 in·lb<sub>f</sub>/in

**ASTM D1781, Climbing Drum Peel Strength, Group 2**

SPECIMEN	PEAK LOAD (lb <sub>f</sub> )	AVERAGE LOAD (lb <sub>f</sub> )	AVERAGE PEEL TORQUE (in·lb <sub>f</sub> /in)	AVERAGE PEEL TORQUE (N·mm/mm)	FAILURE MODE
1	1,140	1,019.1	150.65	670.11	Adhesion to Skin
2	1,150	989.4	145.99	649.39	Adhesion to Skin
3	976	874.2	127.50	567.15	Adhesion to Skin
4	1,040	922.2	135.74	603.80	Adhesion to Skin
5	1,100	899.5	132.45	589.16	Adhesion to Skin
6	1,050	881.8	129.32	575.24	Adhesion to Skin
<b>Average</b>	<b>1,080</b>	<b>931.0</b>	<b>136.94</b>	<b>609.14</b>	

AC25 Acceptance Criteria Peel Torque Value: 136.94 in·lb<sub>f</sub>/in

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**ASTM D1781, Climbing Drum Peel Strength, Group 3**

SPECIMEN	PEAK LOAD (lb <sub>f</sub> )	AVERAGE LOAD (lb <sub>f</sub> )	AVERAGE PEEL TORQUE (in·lb <sub>f</sub> /in)	AVERAGE PEEL TORQUE (N·mm/mm)	FAILURE MODE
1	1,050	908.2	132.81	590.75	Adhesion to Skin
2	885	788.3	112.95	502.44	Adhesion to Skin
3	900	810.1	116.79	519.52	Adhesion to Skin
4	850	794.5	114.62	509.87	Adhesion to Skin
5	904	773.8	111.40	495.55	Adhesion to Skin
6	956	777.8	112.03	498.32	Adhesion to Skin
<b>Average</b>	<b>925</b>	<b>808.8</b>	<b>116.77</b>	<b>519.41</b>	

**AC25 Acceptance Criteria Peel Torque Value: 116.77 in·lb<sub>f</sub>/in**

**ASTM D1781, Climbing Drum Peel Strength, Freeze-Thaw**

SPECIMEN	PEAK LOAD (lb <sub>f</sub> )	AVERAGE LOAD (lb <sub>f</sub> )	AVERAGE PEEL TORQUE (in·lb <sub>f</sub> /in)	AVERAGE PEEL TORQUE (N·mm/mm)	FAILURE MODE
1	1,280	982.7	144.50	642.79	Adhesion to Skin
2	1,230	974.0	143.58	638.69	Adhesion to Skin
3	874	772.3	110.75	492.63	Adhesion to Skin
4	918	806.4	116.33	517.46	Adhesion to Skin
5	938	795.9	115.05	511.77	Adhesion to Skin
6	884	720.3	102.49	455.89	Adhesion to Skin
<b>Average</b>	<b>1,020</b>	<b>841.9</b>	<b>122.12</b>	<b>543.20</b>	

**AC25 Acceptance Criteria Peel Torque Value: 102.49 in·lb<sub>f</sub>/in**



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**ASTM C393, Flexural Properties, Machine Direction, External Face**

SPECIMEN	WIDTH (in)	THICKNESS (in)	MAXIMUM LOAD (lbf)	ULTIMATE SHEAR STRENGTH (psi)	CORE YIELD SHEAR STRESS (psi)	FACING STRESS (psi)
1	3.001	0.125	188.738	484	307	24,189
2	2.988	0.125	183.990	474	301	23,683
3	3.008	0.125	186.259	476	303	23,816
4	3.024	0.125	185.903	473	297	23,645
5	3.004	0.125	181.514	465	300	23,240
<b>Average</b>			<b>185.281</b>	<b>474</b>	<b>302</b>	<b>23,715</b>
Standard Deviation			2.70	6.83	3.88	341.47
Coefficient of Variation (%)			1.46	1.44	1.29	1.44

**ASTM C393, Flexural Properties, Machine Direction, Internal Face**

SPECIMEN	WIDTH (in)	THICKNESS (in)	MAXIMUM LOAD (lbf)	ULTIMATE SHEAR STRENGTH (psi)	CORE YIELD SHEAR STRESS (psi)	FACING STRESS (psi)
1	3.032	0.125	180.137	457	306	22,851
2	3.016	0.125	178.823	456	305	22,804
3	3.016	0.125	175.515	448	306	22,383
4	3.040	0.125	176.162	446	310	22,288
5	3.046	0.125	177.972	449	301	22,472
<b>Average</b>			<b>177.722</b>	<b>451</b>	<b>305</b>	<b>22,560</b>
Standard Deviation			1.90	5.07	3.16	253.73
Coefficient of Variation (%)			1.07	1.12	1.03	1.12

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**ASTM C393, Flexural Properties, Cross Direction, External Face**

SPECIMEN	WIDTH (in)	THICKNESS (in)	MAXIMUM LOAD (lbf)	ULTIMATE SHEAR STRENGTH (psi)	CORE YIELD SHEAR STRESS (psi)	FACING STRESS (psi)
1	3.033	0.125	189.879	482	334	24,079
2	3.038	0.126	189.897	474	324	23,677
3	3.026	0.125	188.306	479	328	23,934
4	3.037	0.126	188.064	469	324	23,456
5	3.040	0.126	189.122	471	324	23,565
<b>Average</b>			<b>189.054</b>	<b>475</b>	<b>327</b>	<b>23,742</b>
Standard Deviation			0.86	5.17	4.49	258.66
Coefficient of Variation (%)			0.45	1.09	1.37	1.09

**ASTM C393, Flexural Properties, Cross Direction, Internal Face**

SPECIMEN	WIDTH (in)	THICKNESS (in)	MAXIMUM LOAD (lbf)	ULTIMATE SHEAR STRENGTH (psi)	CORE YIELD SHEAR STRESS (psi)	FACING STRESS (psi)
1	3.032	0.125	184.815	469	324	23,444
2	3.041	0.125	183.962	465	322	23,267
3	3.027	0.126	184.545	462	320	23,093
4	3.036	0.125	184.741	468	323	23,404
5	3.015	0.125	181.425	463	322	23,144
<b>Average</b>			<b>183.898</b>	<b>465</b>	<b>322</b>	<b>23,270</b>
Standard Deviation			1.42	3.09	1.32	154.40
Coefficient of Variation (%)			0.77	0.66	0.41	0.66

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**ASTM D5420, Impact Resistance**

SPECIMEN	IMPACT ENERGY (in·lb <sub>f</sub> )	THICKNESS (in)	FAILUR TYPE	OBSERVATIONS
1	320	0.127	None	Dimple; no crack or split
2	320	0.127	None	Dimple; no crack or split
3	320	0.127	None	Dimple; no crack or split
4	320	0.127	None	Dimple; no crack or split
5	320	0.127	None	Dimple; no crack or split
6	320	0.127	None	Dimple; no crack or split
7	320	0.127	None	Dimple; no crack or split
8	320	0.127	None	Dimple; no crack or split
9	320	0.127	None	Dimple; no crack or split
10	320	0.127	None	Dimple; no crack or split
11	320	0.127	None	Dimple; no crack or split

**Mean Failure Energy: ≥320 in·lb<sub>f</sub>**

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**ASTM D1929, Self-Ignition Temperature**

SPECIMEN	INITIAL MASS (g)	FINAL MASS (g)	MASS LOSS (g)	INITIAL TEMPERATURE (°C)			FINAL TEMPERATURE (°C)		
				AIR	FURNACE	SPECIMEN	AIR	FURNACE	SPECIMEN
1	3.195	3.145	0.050	400	407	389	400	406	390
2	3.127	3.054	0.073	500	506	493	500	506	493
3	3.177	3.099	0.078	460	467	452	460	466	451
4	3.198	3.116	0.082	480	487	472	480	487	472
5	3.197	3.119	0.078	490	496	483	490	496	482

SPECIMEN	OBSERVATIONS (min:sec)							COMBUSTION TYPE
	MELT	CHAR	BUBBLE	FOAM	SMOKE	IGNITION	SOOT	
1	--	2:30	--	--	1:40	--	--	None
2	--	1:10	--	--	1:05	1:40	--	Flame
3	--	1:35	--	--	1:25	--	--	None
4	--	1:15	--	--	1:00	--	--	None
5	--	1:10	--	--	1:10	2:15	--	Flame

**Self-Ignition Temperature: 490°C (914°F)**

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**ASTM D1929, Flash Ignition Temperature**

SPECIMEN	INITIAL MASS (g)	FINAL MASS (g)	MASS LOSS (g)	INITIAL TEMPERATURE (°C)			FINAL TEMPERATURE (°C)		
				AIR	FURNACE	SPECIMEN	AIR	FURNACE	SPECIMEN
1	3.192	3.109	0.083	490	496	482	490	496	483
2	3.185	3.105	0.080	480	486	471	480	486	472
SPECIMEN	OBSERVATIONS (min:sec)							COMBUSTION TYPE	
	MELT	CHAR	BUBBLE	FOAM	SMOKE	IGNITION	SOOT		
1	--	1:15	--	--	1:20	2:25	--	Flame	
2	--	1:20	--	--	1:25	--	--	None	

**Flash Ignition Temperature: 490°C (914°F)**

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**ASTM D635, Rate of Burn**

SPECIMEN	INITIAL BURN	SUSTAINED BURN	COMMENTS
1	No	No	Class CC1
2	No	No	Class CC1
3	No	No	Class CC1
4	No	No	Class CC1
5	No	No	Class CC1
6	No	No	Class CC1
7	No	No	Class CC1
8	No	No	Class CC1
9	No	No	Class CC1
10	No	No	Class CC1

**Average Specimen Dimension:** 151-mm long by 13.6-mm wide by 3.22-mm thick

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**ASTM E136, Combustibility**

SPECIMEN	INITIAL TEMPERATURE (°C)			MAXIMUM TEMPERATURE (°C)		FINAL TEMPERATURE (°C)		
	SAMPLE CENTER	SAMPLE SURFACE	FURNACE	SAMPLE CENTER	SAMPLE SURFACE	SAMPLE CENTER	SAMPLE SURFACE	FURNACE
1	750	747	796	521	596	521	494	796
2	750	748	796	302	480	302	448	795
SPECIMEN	INITIAL MASS (g)	FINAL MASS (g)	MASS LOSS (g)	MASS LOSS (%)	SMOKE (min:sec)	IGNITION (min:sec)	COMMENTS	
1	159.066	154.983	4.083	2.57	2:45	1:45	Multi-Flash, then flame	
2	159.554	157.277	2.277	1.43	3:55	2:45	Multi-Flash, then flame	

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### SECTION 9

#### CONCLUSION

The 3mm Pre-Painted Bonded Sheet AS3000B product met the specified performance requirements of ICC ES AC25 with all four peel torque values exceeding 22.5 in·lb<sub>f</sub>/in.

The 3mm Pre-Painted Bonded Sheet AS3000B product met the specified performance requirements of ASTM D635 with a Class CC1 burn rating.

The 3mm Pre-Painted Bonded Sheet AS3000B product did not meet the specific performance requirements of ASTM E136 because all specimens tested had flaming beyond the first 30 seconds.

ASTM Test Methods C393, D5420, and D1929 do not contain specified performance criteria.

Intertek-ATI in York, PA has demonstrated compliance with ANS/ISO/IEC Standard 17025 and is consequently accredited as a Testing Laboratory (TL-144) by International Accreditation Service, Inc. Intertek-ATI is accredited to perform all testing reported herein.



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### SECTION 10 PHOTOGRAPHS



Photo No. 1

3mm Pre-Painted Bonded Sheet AS3000B Material - As Received

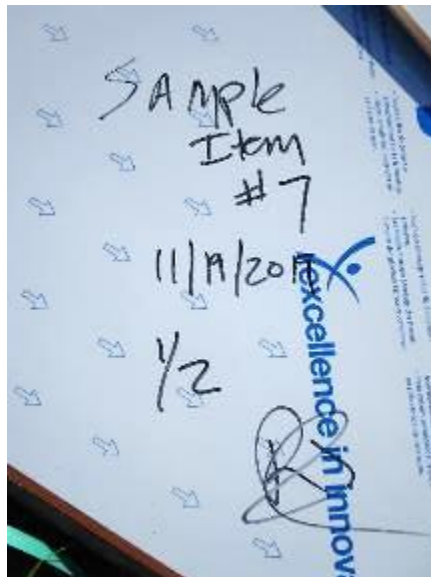


Photo No. 2

Sampling Mark Detail

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Report No.: K3682.01-106-31 R1

Date: 03/26/20



**Photo No. 3**

**Typical AC25 Conditioning and ASTM D1781 Peel Specimen Detail**



**Photo No. 4**

**Typical Climbing Drum Peel Setup Detail**

## TEST REPORT FOR ARCONIC ARCHITECTURAL PRODUCTS

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Date: 03/26/20



**Photo No. 5**  
**Typical Climbing Drum Peel Test In-Progress Detail**



**Photo No. 6**  
**Typical Adhesion to Skin Failure Detail**

**TEST REPORT FOR ARCONIC ARCHITECTURAL PRODUCTS**

Report No.: K3682.01-106-31 R1

Date: 03/26/20



**Photo No. 7**  
**Typical Flexural Specimen Detail**



**Photo No. 8**  
**Typical Flexural Test Setup Detail**

**TEST REPORT FOR ARCONIC ARCHITECTURAL PRODUCTS**

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Date: 03/26/20



**Photo No. 9**  
**Typical Flexural Test In-Progress Detail**



**Photo No. 10**  
**Typical Post-Test Flexural Specimen Detail**

## TEST REPORT FOR ARCONIC ARCHITECTURAL PRODUCTS

Report No.: K3682.01-106-31 R1

Date: 03/26/20



**Photo No. 11**

**Typical Impact Resistance Test Setup Detail**



**Photo No. 12**

**Typical Impact Detail**

**TEST REPORT FOR ARCONIC ARCHITECTURAL PRODUCTS**

Report No.: K3682.01-106-31 R1

Date: 03/26/20



**Photo No. 13**  
**Typical Impact Dimple Detail (Exterior)**

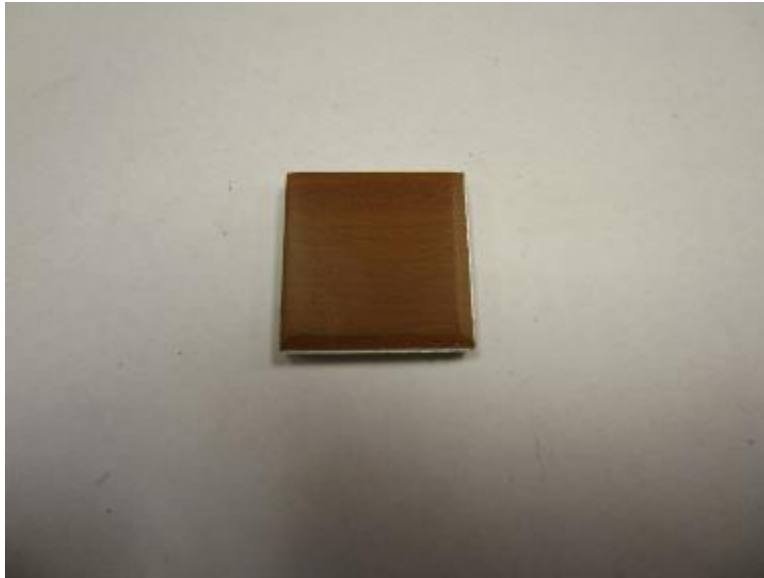


**Photo No. 14**  
**Typical Impact Dimple Detail (Interior)**

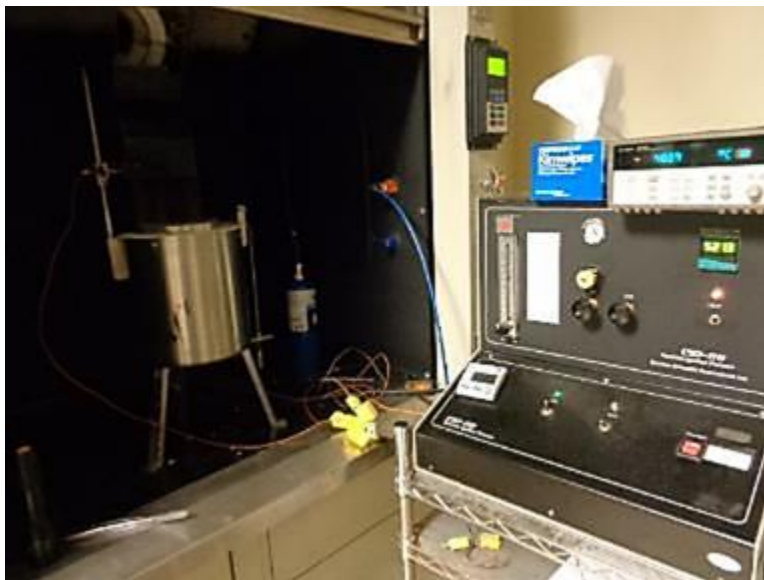
**TEST REPORT FOR ARCONIC ARCHITECTURAL PRODUCTS**

Report No.: K3682.01-106-31 R1

Date: 03/26/20



**Photo No. 15**  
**Typical Ignition Specimen Detail**



**Photo No. 16**  
**Typical Ignition Temperature Test Setup Detail**



**TEST REPORT FOR ARCONIC ARCHITECTURAL PRODUCTS**

Report No.: K3682.01-106-31 R1

Date: 03/26/20



**Photo No. 17**  
**Typical Specimen Flame Detail**



**Photo No. 18**  
**Typical Post-Test Ignition Specimen Detail**

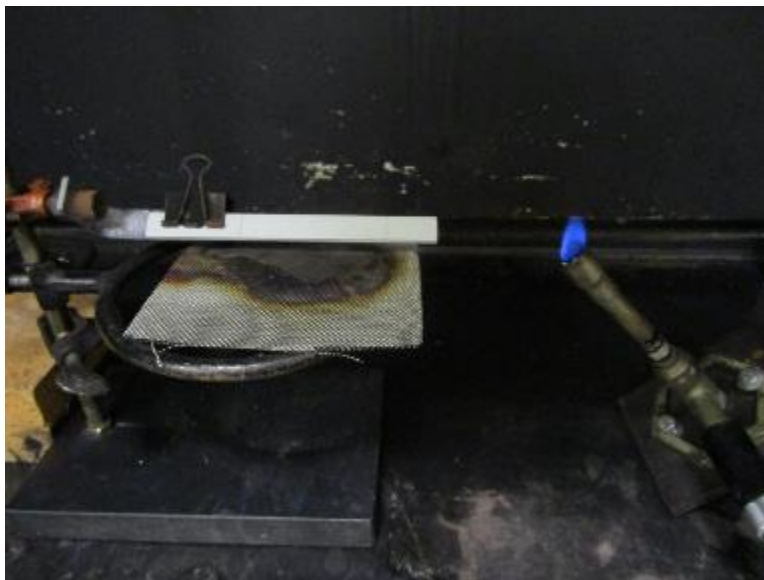
**TEST REPORT FOR ARCONIC ARCHITECTURAL PRODUCTS**

Report No.: K3682.01-106-31 R1

Date: 03/26/20



**Photo No. 19**  
**Rate of Burn Specimen Identification**

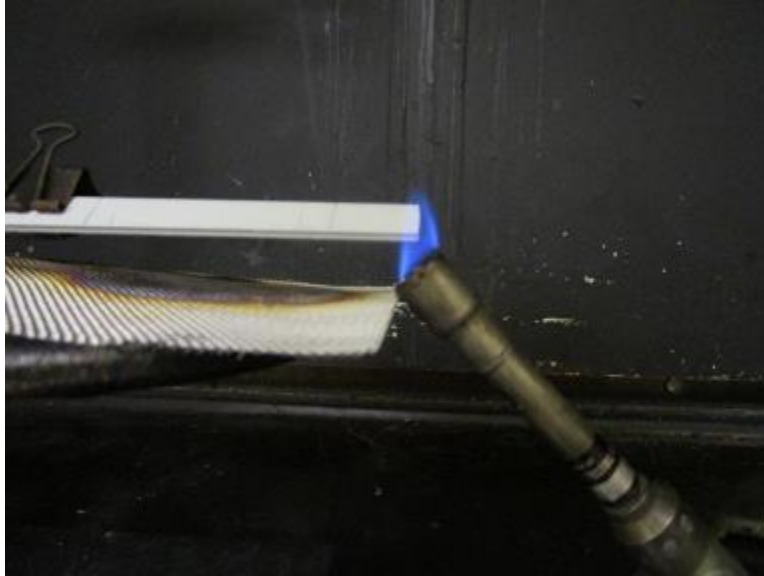


**Photo No. 20**  
**Typical Rate of Burn Test Setup Detail**

## TEST REPORT FOR ARCONIC ARCHITECTURAL PRODUCTS

Report No.: K3682.01-106-31 R1

Date: 03/26/20



**Photo No. 21**

**Typical Rate of Burn Test In-Progress Detail**



**Photo No. 22**

**Rate of Burn Post-Test Specimen Identification**

**TEST REPORT FOR ARCONIC ARCHITECTURAL PRODUCTS**

Report No.: K3682.01-106-31 R1

Date: 03/26/20



**Photo No. 23**

**Typical Combustibility Test Specimen Detail**



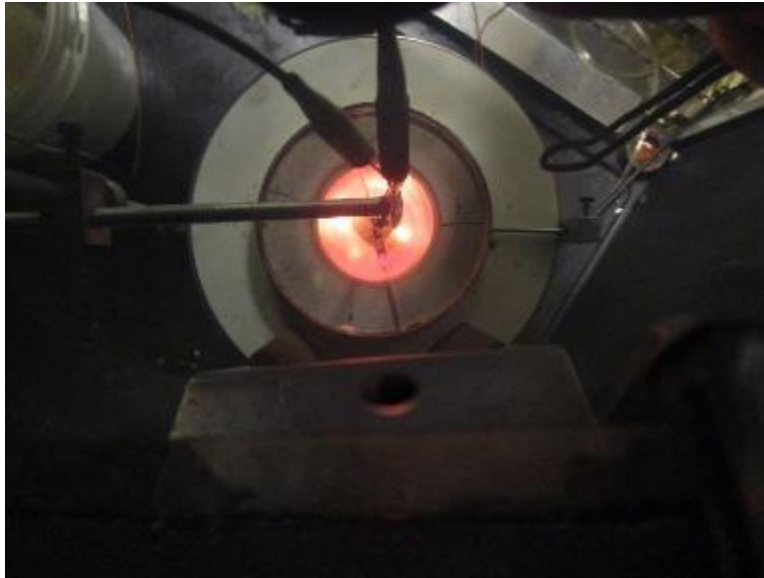
**Photo No. 24**

**Typical Combustibility Test Setup Detail**

**TEST REPORT FOR ARCONIC ARCHITECTURAL PRODUCTS**

Report No.: K3682.01-106-31 R1

Date: 03/26/20



**Photo No. 25**  
**Typical Specimen Flame Detail**



**Photo No. 26**  
**Typical Post-Test Combustion Specimen Detail**



Total Quality. Assured.

**TEST REPORT FOR ARCONIC ARCHITECTURAL PRODUCTS**

Report No.: K3682.01-106-31 R1

Date: 03/26/20

**SECTION 11**

**DATA SHEETS**

130 Derry Court  
York, Pennsylvania 17406

Telephone: 717-764-7700

Facsimile: 717-764-4129

[www.intertek.com/building](http://www.intertek.com/building)

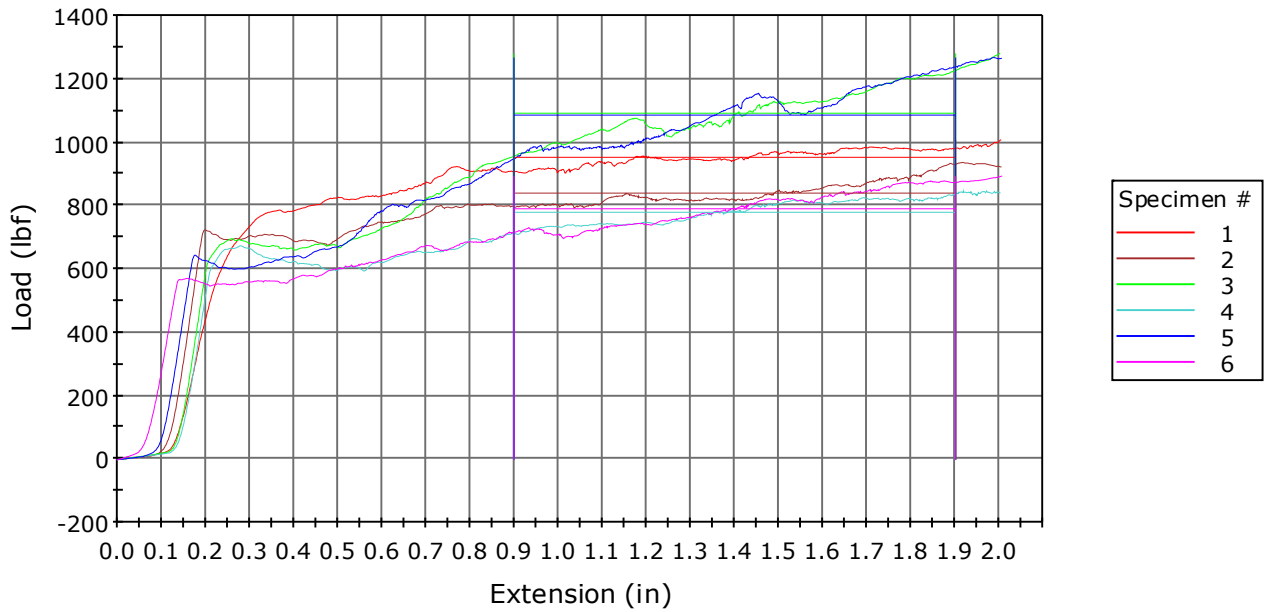


**Total Quality. Assured.**

ASTM D1781-98(2012), Climbing Drum Peel Test for Sandwich Panels

Intertek-ATI Job #	K3682.01-106-31
Client Name	Arconic Architectural Products
Sample Description	Reynodual - Control
Test Speed	1.00000 in/min
Test Frame / ICN	INSTRON 3369 / 005740
Load Cell / ICN	10kN / 005965
Lab Conditions	71.2°F / 42.5% RH
User	Josh K.

**Specimen 1 to 6**



	Specimen ID	Calibration Drum Peel (lbf)	Peak Load (lbf)	Average Load (lbf)	Average Peel Torque (in·lb/in)	Average Peel Torque (Nmm/mm)	Peel Strength (kgf/25mm)	Mode of Failure:
1	C-1	106.2	1010	951.7	139.80	621.88	124.09	Adhesion to Skin
2	C-2	105.6	935	839.6	121.14	538.84	107.52	Adhesion to Skin
3	C-3	106.2	1280	1090.8	163.23	726.08	144.88	Adhesion to Skin
4	C-4	105.6	847	779.0	112.20	499.09	99.59	Adhesion to Skin
5	C-5	106.2	1270	1084.2	162.78	724.10	144.48	Adhesion to Skin
6	C-6	105.6	892	789.7	114.21	508.04	101.37	Adhesion to Skin
Mean		105.9	1040	922.5	135.56	603.01	120.32	
Standard Deviation		0.33	189.58	141.70	23.38	104.02	20.76	

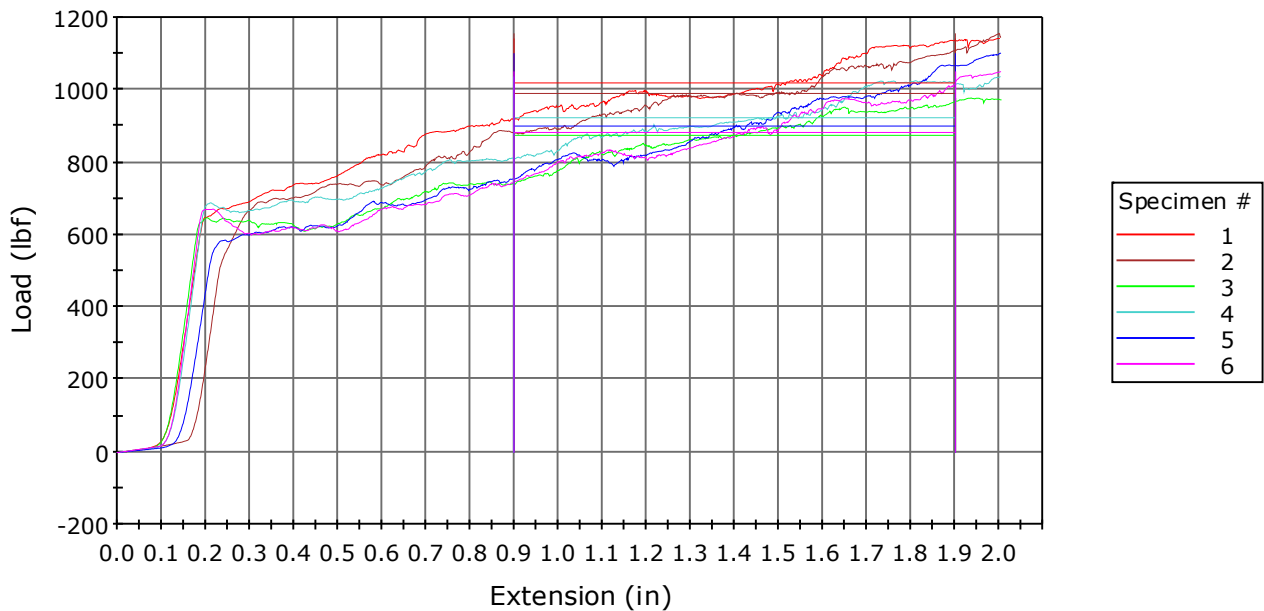


**Total Quality. Assured.**

ASTM D1781-98(2012), Climbing Drum Peel Test for Sandwich Panels

Intertek-ATI Job #	K3682.01-106-31
Client Name	Arconic Architectural Products
Sample Description	Reynodual - Boil
Test Speed	1.00000 in/min
Test Frame / ICN	INSTRON 3369 / 005740
Load Cell / ICN	10kN / 005965
Lab Conditions	71.3°F / 45.2% RH
User	Josh K.

**Specimen 1 to 6**



	Specimen ID	Calibration Drum Peel (lbf)	Peak Load (lbf)	Average Load (lbf)	Average Peel Torque (in·lb/in)	Average Peel Torque (Nmm/mm)	Peel Strength (kgf/25mm)	Mode of Failure:
1	B-1	105.6	1140	1019.1	150.65	670.11	133.71	Adhesion to Skin
2	B-2	105.6	1150	989.4	145.99	649.39	129.58	Adhesion to Skin
3	B-3	105.6	976	874.2	127.50	567.15	113.17	Adhesion to Skin
4	B-4	105.6	1040	922.2	135.74	603.80	120.48	Adhesion to Skin
5	B-5	105.6	1100	899.5	132.45	589.16	117.56	Adhesion to Skin
6	B-6	105.6	1050	881.8	129.32	575.24	114.78	Adhesion to Skin
Mean		105.6	1080	931.0	136.94	609.14	121.54	
Standard Deviation		0.00	68.28	59.81	9.37	41.66	8.31	



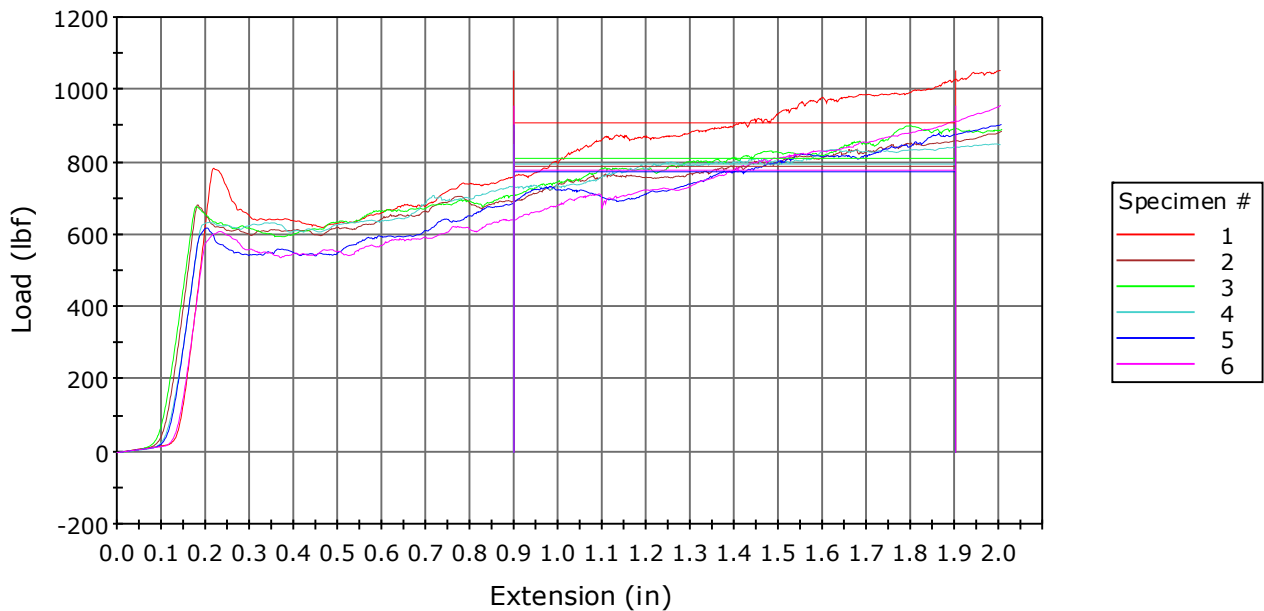


**Total Quality. Assured.**

ASTM D1781-98(2012), Climbing Drum Peel Test for Sandwich Panels

Intertek-ATI Job #	K3682.01-106-31
Client Name	Arconic Architectural Products
Sample Description	Reynodual - Water
Test Speed	1.00000 in/min
Test Frame / ICN	INSTRON 3369 / 005740
Load Cell / ICN	10kN / 005965
Lab Conditions	71.4°F / 45.1% RH
User	Josh K.

**Specimen 1 to 6**



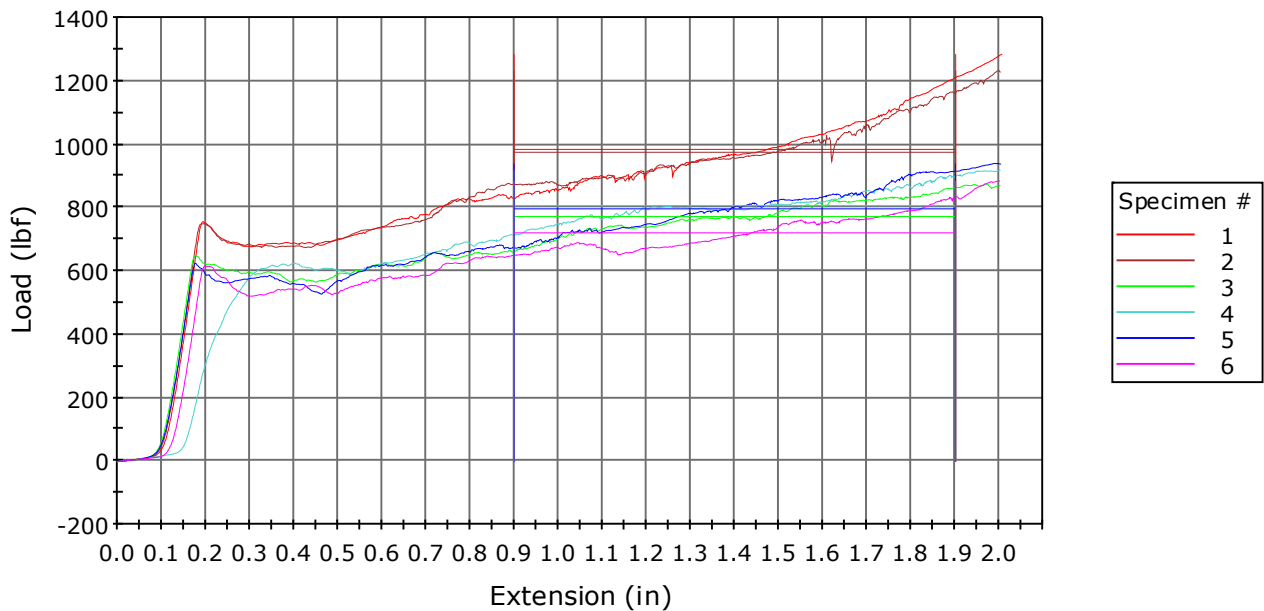
	Specimen ID	Calibration Drum Peel (lbf)	Peak Load (lbf)	Average Load (lbf)	Average Peel Torque (in-lb/in)	Average Peel Torque (Nmm/mm)	Peel Strength (kgf/25mm)	Mode of Failure:
1	W-1	105.6	1050	908.2	132.81	590.75	117.88	Adhesion to Skin
2	W-2	105.6	885	788.3	112.95	502.44	100.25	Adhesion to Skin
3	W-3	105.6	900	810.1	116.79	519.52	103.66	Adhesion to Skin
4	W-4	105.6	850	794.5	114.62	509.87	101.74	Adhesion to Skin
5	W-5	105.6	904	773.8	111.40	495.55	98.88	Adhesion to Skin
6	W-6	105.6	956	777.8	112.03	498.32	99.43	Adhesion to Skin
Mean		105.6	925	808.8	116.77	519.41	103.64	
Standard Deviation		0.00	71.54	50.41	8.09	36.01	7.18	

**Total Quality. Assured.**

ASTM D1781-98(2012), Climbing Drum Peel Test for Sandwich Panels

Intertek-ATI Job #	K3682.01-106-31
Client Name	Arconic Architectural Products
Sample Description	Reynodual - Freeze/Thaw
Test Speed	1.00000 in/min
Test Frame / ICN	INSTRON 3369 / 005740
Load Cell / ICN	10kN / 005965
Lab Conditions	70.8°F / 37.5% RH
User	Josh K.

### Specimen 1 to 6



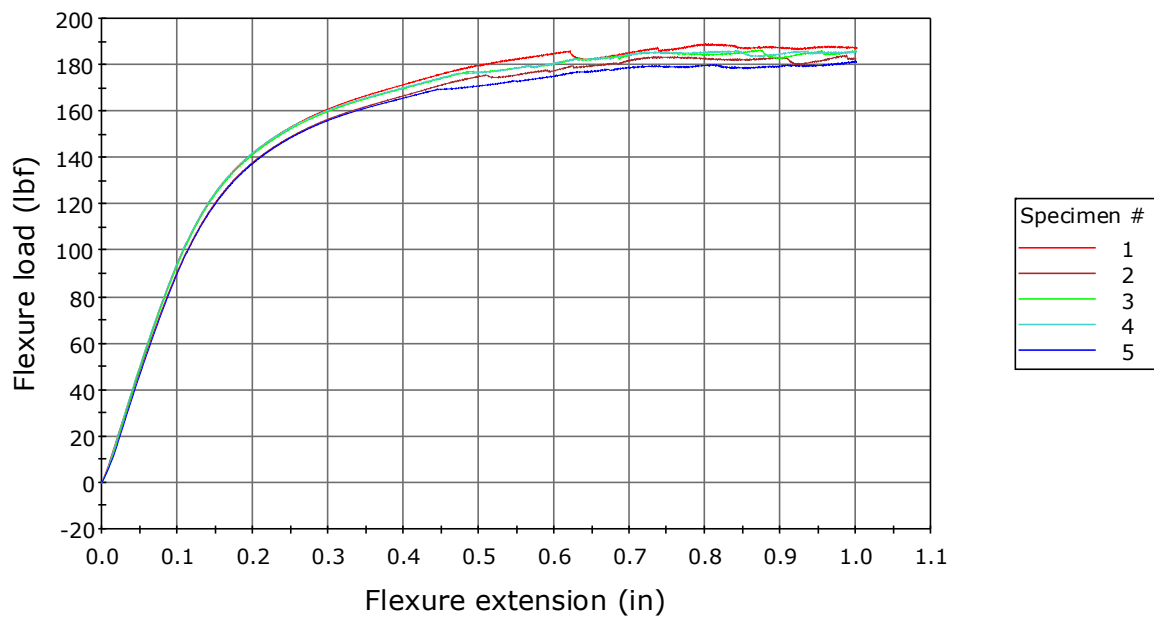
	Specimen ID	Calibration Drum Peel (lbf)	Peak Load (lbf)	Average Load (lbf)	Average Peel Torque (in-lb/in)	Average Peel Torque (Nmm/mm)	Peel Strength (kgf/25mm)	Mode of Failure:
1	F-1	105.6	1280	982.7	144.50	642.79	128.26	Adhesion to Skin
2	F-2	105.6	1230	974.0	143.58	638.69	127.44	Adhesion to Skin
3	F-3	105.6	874	772.3	110.75	492.63	98.30	Adhesion to Skin
4	F-4	105.6	918	806.4	116.33	517.46	103.25	Adhesion to Skin
5	F-5	105.6	938	795.9	115.05	511.77	102.12	Adhesion to Skin
6	F-6	105.6	884	720.3	102.49	455.89	90.96	Adhesion to Skin
Mean		105.6	1020	841.9	122.12	543.20	108.39	
Standard Deviation		0.00	185.13	109.79	17.66	78.57	15.68	

**Total Quality. Assured.**

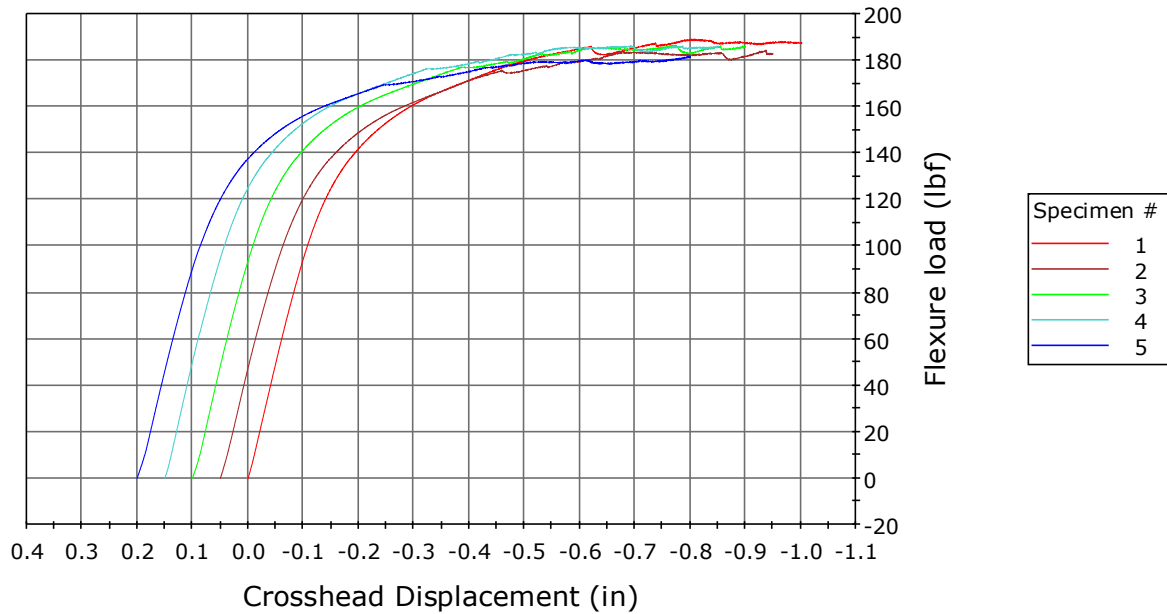
ASTM C393/C393M-16, Core Shear Properties of Sandwich Constructions by Beam Flexure, 3-point

Intertek-ATI Job #	K3682.01-106-31
Client Name	Arconic Architectural Products
Sample description	3-mm Reynodual, Machine Direction, Face in Tension
Lab Conditions	71.2°F / 44.1% RH
Test Speed	0.250 in/min
Load Cell	2.0 kN
Load Cell Calibration Due Date	10/10/20
Test Frame	INSTRON 3369 / 005740
Frame Calibration Due Date	10/10/20
User	Josh K.

## Specimen 1 to 5



## Specimen 1 to 5



	Specimen ID	Width (in)	Thickness (in)	Maximum Load (lbf)
1	F-M-T-1	3.001	0.125	188.738
2	F-M-T-2	2.988	0.125	183.990
3	F-M-T-3	3.008	0.125	186.259
4	F-M-T-4	3.024	0.125	185.903
5	F-M-T-5	3.004	0.125	181.514
Mean		3.005	0.125	185.281
Standard Deviation		0.01300	0.00000	2.69937
Coefficient of Variation		0.43261	0.00000	1.45691

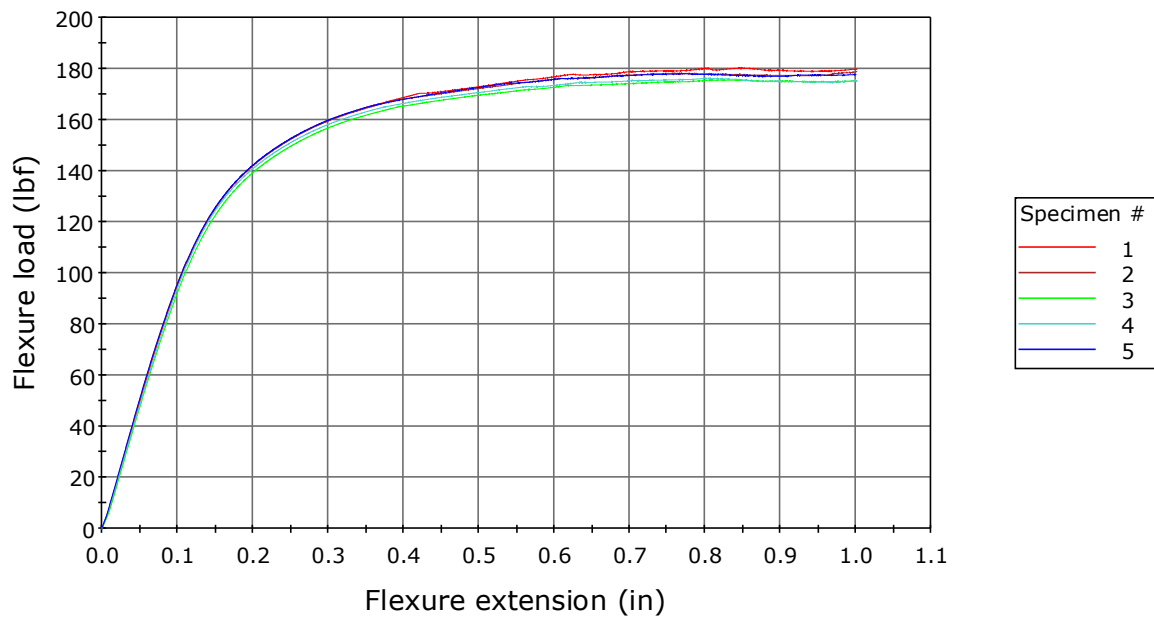
	Specimen ID	Core Shear Ultimate Stress (psi)	Core Shear Yield Stress (psi)	Facing Stress (psi)
1	F-M-T-1	484	307	24189
2	F-M-T-2	474	301	23683
3	F-M-T-3	476	303	23816
4	F-M-T-4	473	297	23645
5	F-M-T-5	465	300	23240
Mean		474	302	23715
Standard Deviation		6.82944	3.88468	341.47195
Coefficient of Variation		1.43993	1.28780	1.43993

**Total Quality. Assured.**

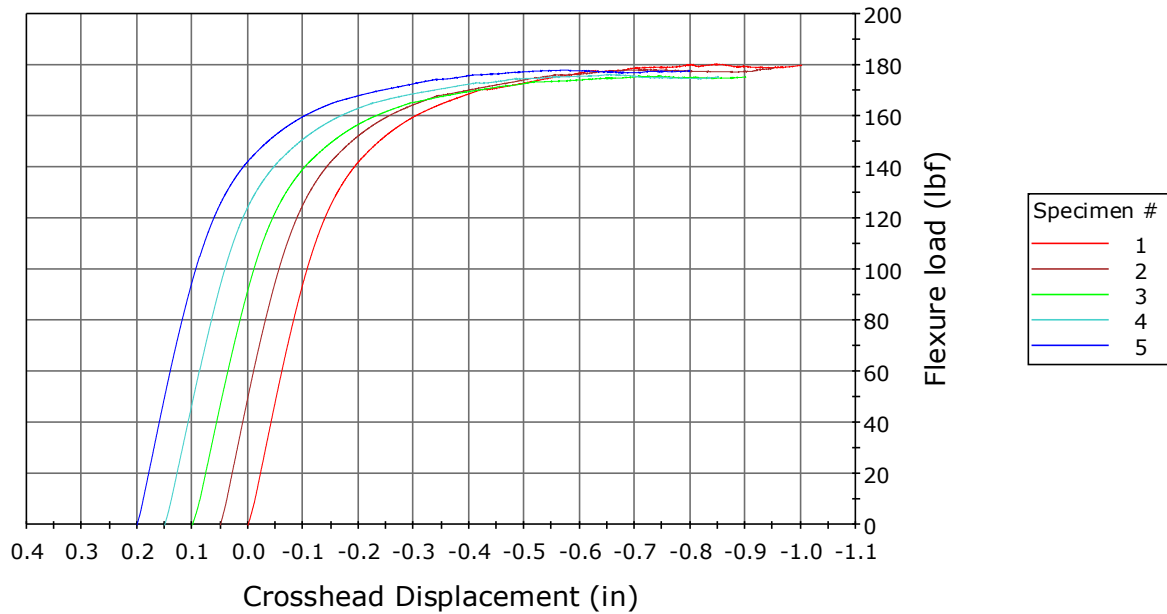
ASTM C393/C393M-16, Core Shear Properties of Sandwich Constructions by Beam Flexure, 3-point

Intertek-ATI Job #	K3682.01-106-31
Client Name	Arconic Architectural Products
Sample description	3-mm Reynodual, Machine Direction, Face in Compression
Lab Conditions	71.1°F / 43.9% RH
Test Speed	0.250 in/min
Load Cell	2.0 kN
Load Cell Calibration Due Date	10/10/20
Test Frame	INSTRON 3369 / 005740
Frame Calibration Due Date	10/10/20
User	Josh K.

### Specimen 1 to 5



## Specimen 1 to 5



	Specimen ID	Width (in)	Thickness (in)	Maximum Load (lbf)
1	F-M-C-1	3.032	0.125	180.137
2	F-M-C-2	3.016	0.125	178.823
3	F-M-C-3	3.016	0.125	175.515
4	F-M-C-4	3.040	0.125	176.162
5	F-M-C-5	3.046	0.125	177.972
Mean		3.030	0.125	177.722
Standard Deviation		0.01371	0.00000	1.89784
Coefficient of Variation		0.45252	0.00000	1.06787

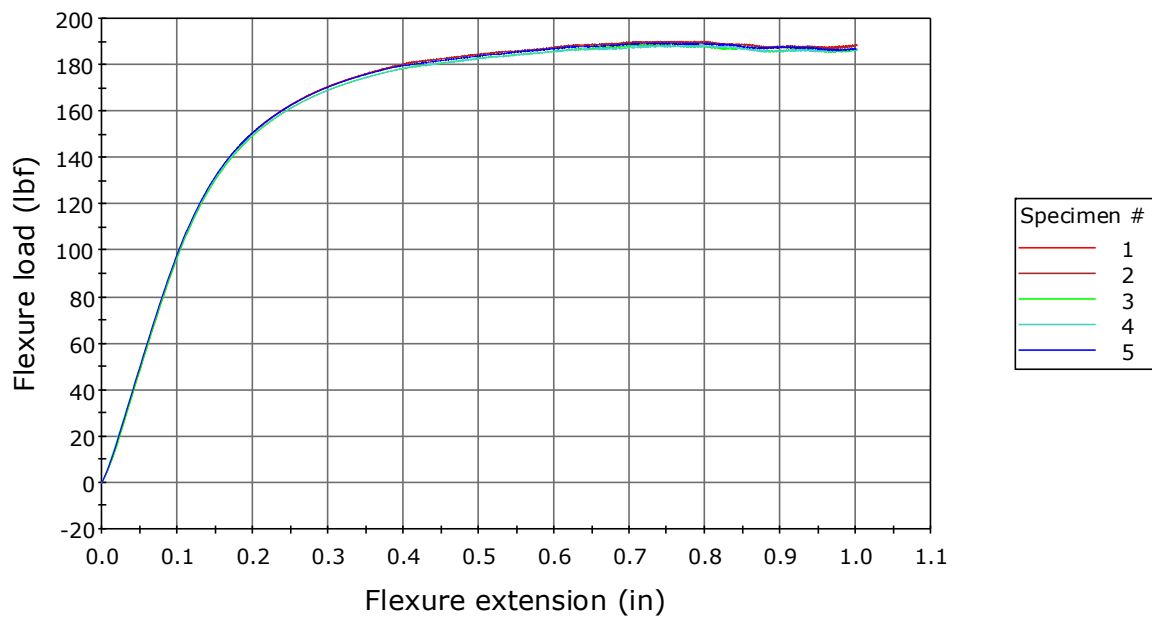
	Specimen ID	Core Shear Ultimate Stress (psi)	Core Shear Yield Stress (psi)	Facing Stress (psi)
1	F-M-C-1	457	306	22851
2	F-M-C-2	456	305	22804
3	F-M-C-3	448	306	22383
4	F-M-C-4	446	310	22288
5	F-M-C-5	449	301	22472
Mean		451	305	22560
Standard Deviation		5.07458	3.15609	253.72898
Coefficient of Variation		1.12471	1.03313	1.12471

## Total Quality. Assured.

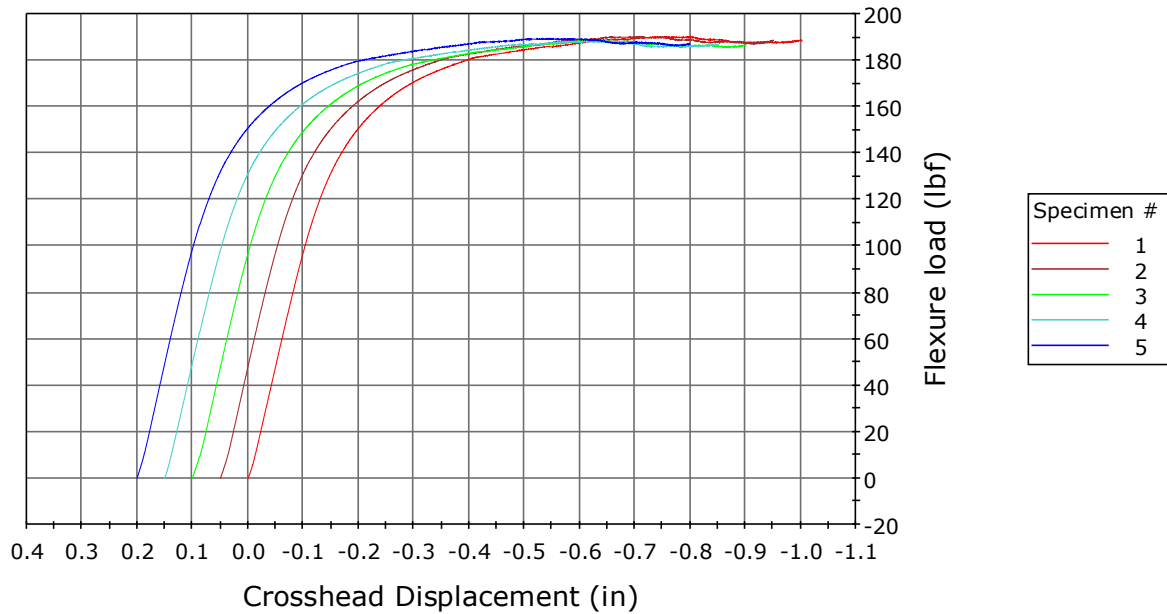
ASTM C393/C393M-16, Core Shear Properties of Sandwich Constructions by Beam Flexure, 3-point

Intertek-ATI Job #	K3682.01-106-31
Client Name	Arconic Architectural Products
Sample description	3-mm Reynodual, Cross Direction, Face in Tension
Lab Conditions	70.7°F / 43.4% RH
Test Speed	0.250 in/min
Load Cell	2.0 kN
Load Cell Calibration Due Date	10/10/20
Test Frame	INSTRON 3369 / 005740
Frame Calibration Due Date	10/10/20
User	Josh K.

### Specimen 1 to 5



## Specimen 1 to 5



	Specimen ID	Width (in)	Thickness (in)	Maximum Load (lbf)
1	F-C-T-1	3.033	0.125	189.879
2	F-C-T-2	3.038	0.126	189.897
3	F-C-T-3	3.026	0.125	188.306
4	F-C-T-4	3.037	0.126	188.064
5	F-C-T-5	3.040	0.126	189.122
Mean		3.035	0.126	189.054
Standard Deviation		0.00554	0.00055	0.85656
Coefficient of Variation		0.18257	0.43608	0.45308

	Specimen ID	Core Shear Ultimate Stress (psi)	Core Shear Yield Stress (psi)	Facing Stress (psi)
1	F-C-T-1	482	334	24079
2	F-C-T-2	474	324	23677
3	F-C-T-3	479	328	23934
4	F-C-T-4	469	324	23456
5	F-C-T-5	471	324	23565
Mean		475	327	23742
Standard Deviation		5.17321	4.48735	258.66062
Coefficient of Variation		1.08946	1.37363	1.08946

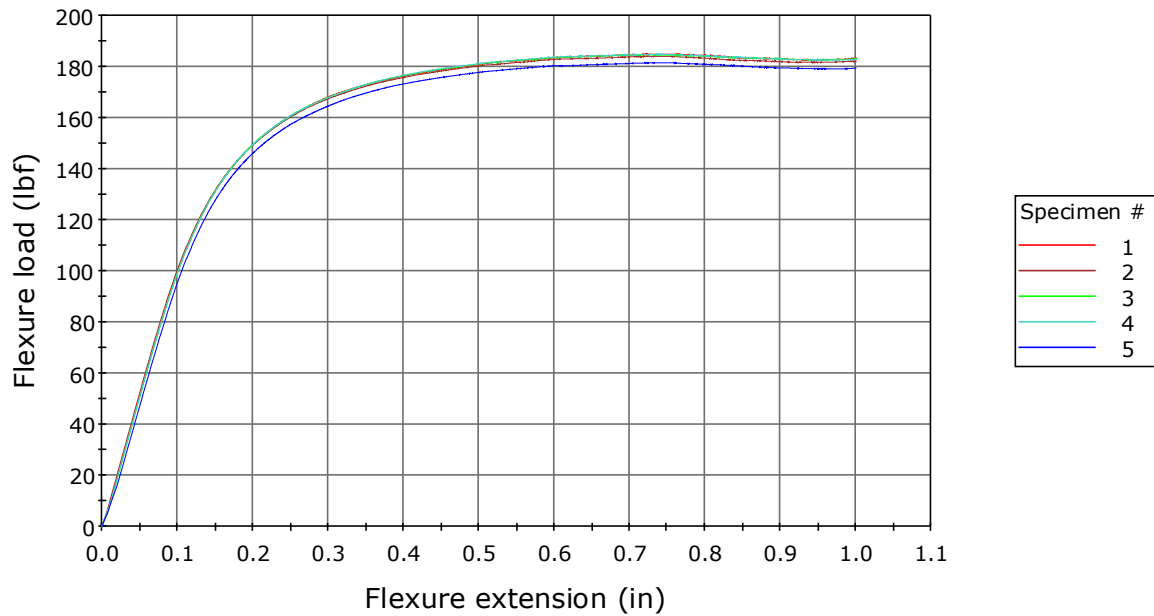


**Total Quality. Assured.**

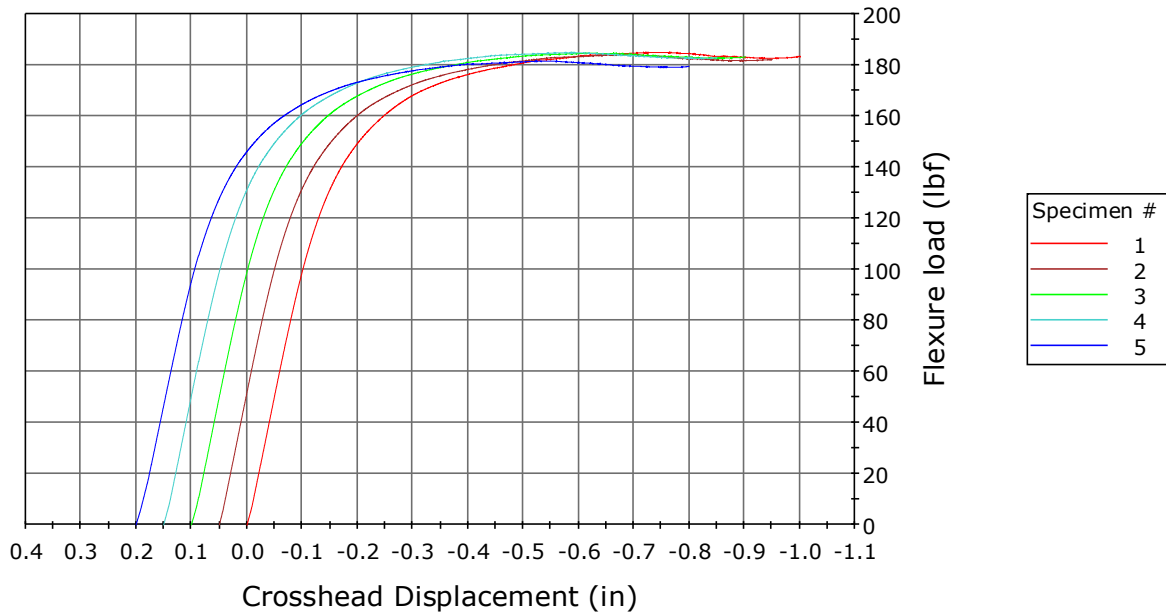
ASTM C393/C393M-16, Core Shear Properties of Sandwich Constructions by Beam Flexure, 3-point

Intertek-ATI Job #	K3682.01-106-31
Client Name	Arconic Architectural Products
Sample description	3-mm Reynodual, Cross Direction, Face in Compression
Lab Conditions	70.7°F / 45.7% RH
Test Speed	0.250 in/min
Load Cell	2.0 kN
Load Cell Calibration Due Date	10/10/20
Test Frame	INSTRON 3369 / 005740
Frame Calibration Due Date	10/10/20
User	Josh K.

### Specimen 1 to 5



## Specimen 1 to 5



	Specimen ID	Width (in)	Thickness (in)	Maximum Load (lbf)
1	F-C-C-1	3.032	0.125	184.815
2	F-C-C-2	3.041	0.125	183.962
3	F-C-C-3	3.027	0.126	184.545
4	F-C-C-4	3.036	0.125	184.741
5	F-C-C-5	3.015	0.125	181.425
Mean		3.030	0.125	183.898
Standard Deviation		0.00993	0.00045	1.42199
Coefficient of Variation		0.32786	0.35720	0.77325

	Specimen ID	Core Shear Ultimate Stress (psi)	Core Shear Yield Stress (psi)	Facing Stress (psi)
1	F-C-C-1	469	324	23444
2	F-C-C-2	465	322	23267
3	F-C-C-3	462	320	23093
4	F-C-C-4	468	323	23404
5	F-C-C-5	463	322	23144
Mean		465	322	23270
Standard Deviation		3.08806	1.32388	154.40300
Coefficient of Variation		0.66352	0.41096	0.66352

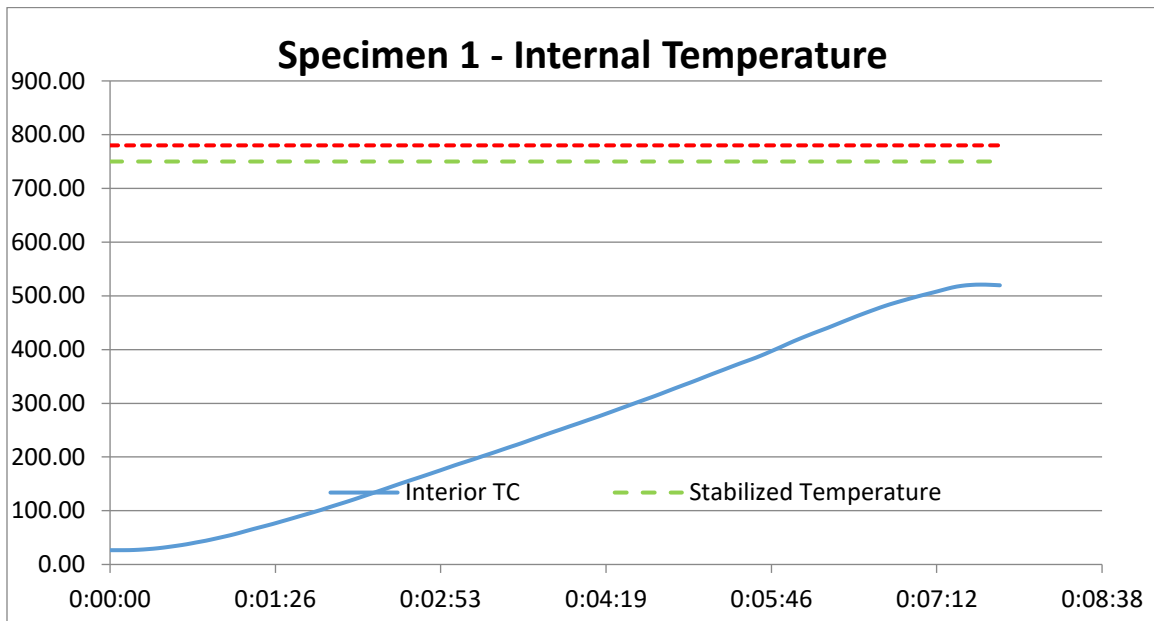
## TEST REPORT FOR ARCONIC ARCHITECTURAL PRODUCTS

Report No.: K3682.01-106-31 R1

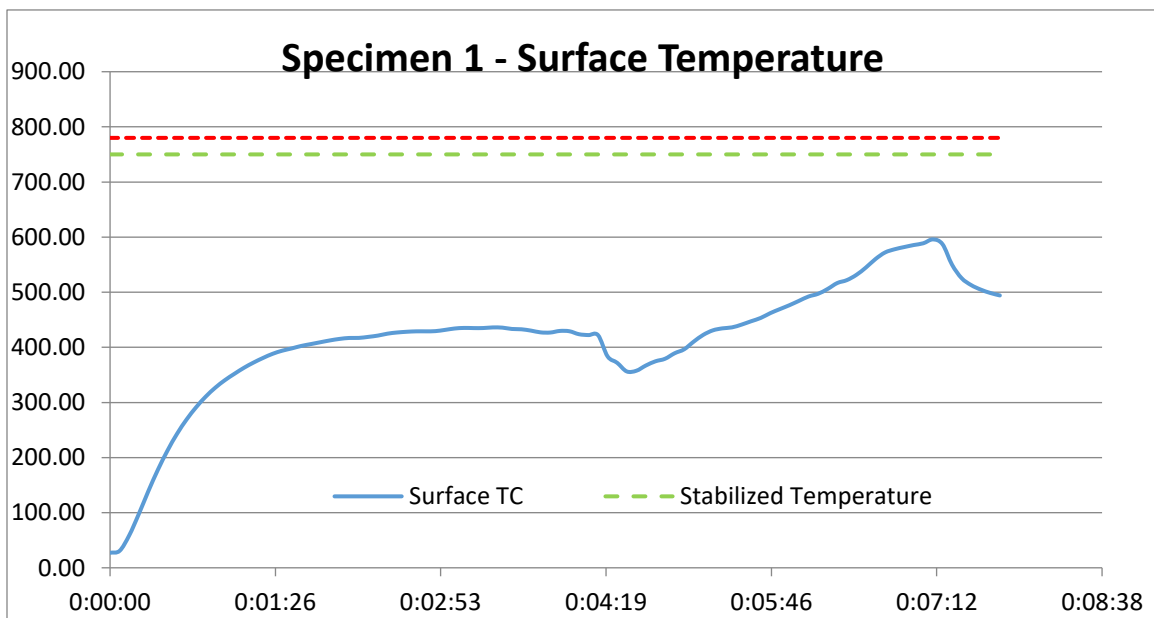
Date: 03/26/20

### SECTION 12

#### GRAPHS



**Graph No. 1**  
**Specimen 1 Center Temperature**

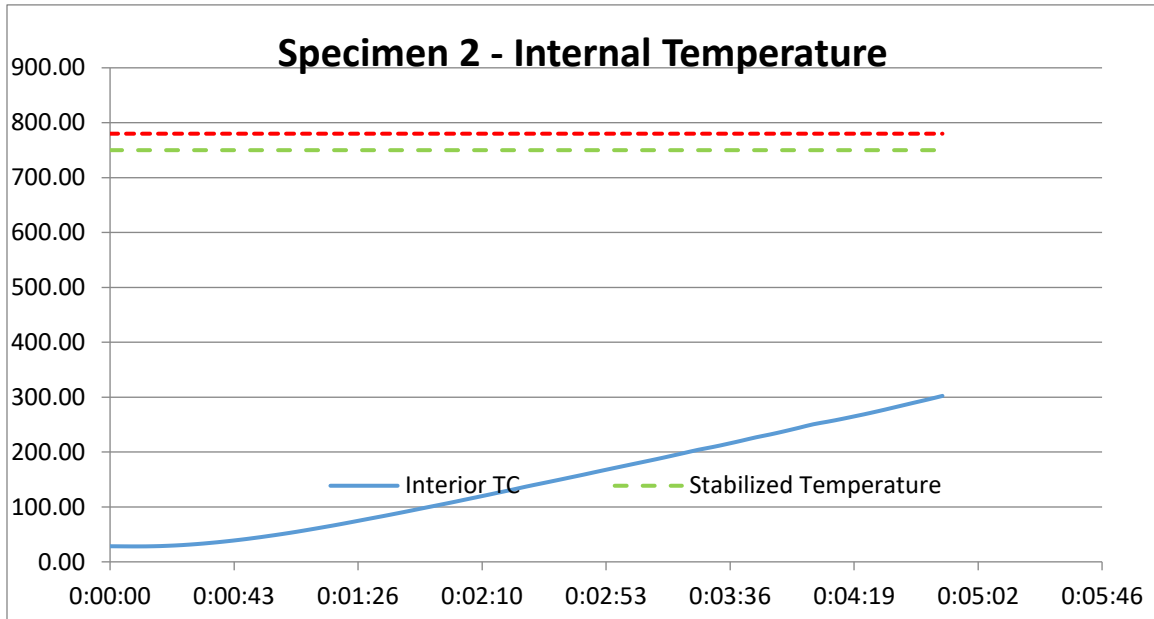


**Graph No. 2**  
**Specimen 1 Surface Temperature**

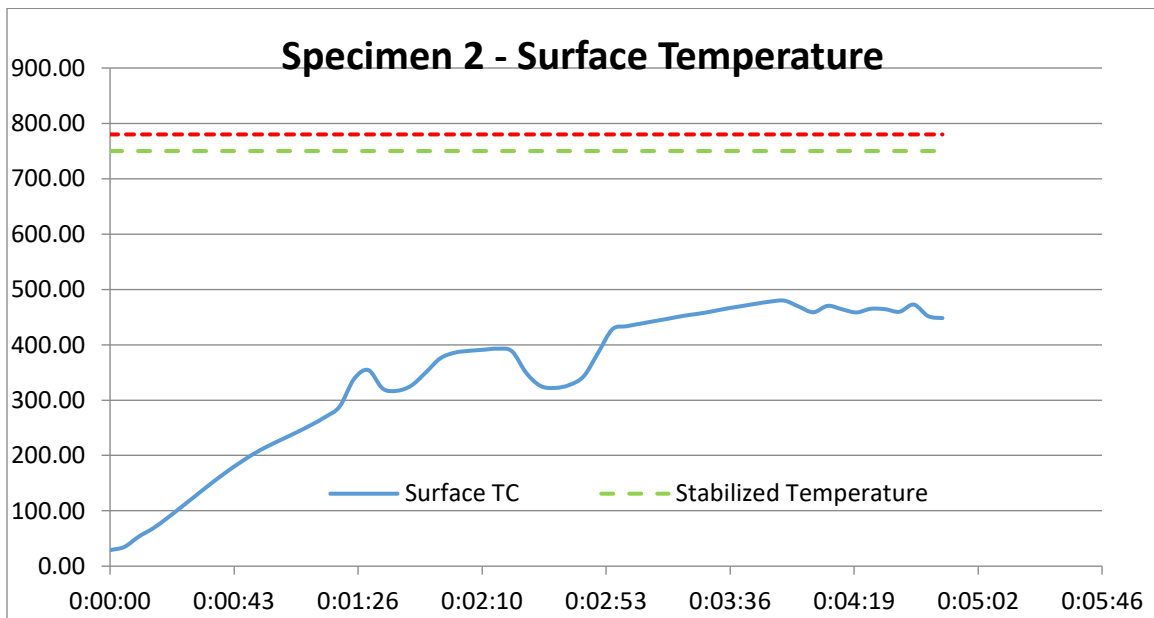
## TEST REPORT FOR ARCONIC ARCHITECTURAL PRODUCTS

Report No.: K3682.01-106-31 R1

Date: 03/26/20



**Graph No. 3**  
**Specimen 2 Center Temperature**



**Graph No. 4**  
**Specimen 2 Surface Temperature**

## TEST REPORT FOR ARCONIC ARCHITECTURAL PRODUCTS

Report No.: K3682.01-106-31 R1

Date: 03/26/20

### SECTION 13

#### REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	03/26/20	N/A	Original Report Issue
1	06/03/20	Throughout	Change product name from 3mm Reynodual to 3mm Pre-painted Bonded Sheet AS3000B