

An abstract collage of architectural elements, primarily featuring close-up views of building facades with horizontal metallic or stone-like panels. The collage is composed of several overlapping, tilted rectangular and triangular fragments. One fragment in the lower-left shows a glass-enclosed structure, possibly a modern transit station or a large atrium, with a blue-tinted sky visible through the glass. The overall composition is dynamic and geometric, set against a plain light gray background.

General Testing Summary

General Testing

Cladify is committed to producing the finest quality composite panels available. As one of the world leaders in composite honeycomb panels, Cladify observes rigorous quality control procedures and testing. Architects, designers, specifiers and end-users receive the peace of mind that comes from knowing that Cladify has been subjected to testing well beyond the minimum codes. Testing is performed at both independent national laboratories and universities, as well as Cladify's own research and manufacturing facilities.

● Category	● Test	● Specification	● Methodology	● Result
Acoustic	Sound Transmission Loss Of Building Elements	ASTM E90	This test method covers the measurement of airborne sound transmission loss of building partitions including walls of all kinds.	Sound Transmission Rating: CladiShield Rainscreen : 34 Claditized Unitized : 35 CladiFab Prefab : 55
Environmental	Salt Spray Resistance	ASTM B117-16	1000 Hours of exposure.	No deleterious effects.
	Laboratory Aging of Sandwich Construction	ASTM C481-99 (Reapproved 2016)	Procedure A, for six repetitions of following load cycle is applied: Immerse in water at 50 °C for 1h. Spray with steam at 95 °C for 3h. Store at -12 °C for 20h Heated at 100 °C for 3h. Spray with steam at 95 °C for 3h Heat in dry air at 100 °C for 18h.	ASTM C273; C297; C364; C393 tests were reconduted after aging: the variation was +1.36 %, -5.90%; +2.55%; -7.95%. Note: Positive variation indicates no decrease in strength after aging.
	Resistance to Rapid Freezing and Thawing	ASTM C666/C666M-15	200 cycles of rapid freeze and thaw (4 °C to - 18 °C).	No visible change to facing, aluminum, or adhesive.
	Air Leakage Resistance	ASTM E283-04 (2012)	Air infiltration and exfiltration tests were performed using test pressure of 75 Pa (1.57 psf). The maximum air leakage rate was calculated and compared to the allowable air leakage.	LITE, CladiShield & Claditized : Qinf = 0.031 cfm/ft ² or 0.155 L/s-m ² at 300 Pa; Qexf = 0.024 cfm/ft ² or 0.122 L/s-m ² at 300 Pa CladiFab : Qinf = 0.037 cfm/ft ² or 0.189 L/s-m ² at 300 Pa; Qexf = 0.052 cfm/ft ² or 0.264 L/s-m ² at 300 Pa
	Fluorescent Ultraviolet Radiation Exposure	ASTM G154 -16	2000 hours of UV exposure.	No visible change to glass, aluminum, or adhesive.
	Water Penetration Resistance	ASTM E331	During the 15-minute test period, using a pressure differential of 720 Pa (15.0 psf), there was no water leakage observed.	No water infiltration at 15 psf or 720 Pa
	Specific Gravity and Water Absorption	ASTM C97 / C97M - 15	Limestone was tested.	0.992 @ 23 °C and 0.4% Respectively.

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Impact / Safety	Large Missile Impact Test	ASTM E1996 / TAS 201	Standard Specification for performance of exterior windows, curtain walls, doors, and Impact protective systems impacted by windborne debris in hurricanes.	Passed the test with honey-comb backing panel. A weighted 2x4 was fired at the Cladify panel at 50 fps.
	Cyclic Pressure Loading	ASTM E1886 / TAS 203	Standard test method for performance of exterior windows, curtain walls, Doors, and impact protective systems impacted by missile(s) and exposed to cyclic pressure differentials.	Passed the test. Over 3,500 positive and negative pressure cycles were applied at ± 2880 Pa (60 psf), equivalent wind load of 165 mph.
Mechanical	Density of Sandwich Core	ASTM C271/C271M-16	12" X 12" X 0.6"	327 kg/m ³ (20.42 lbm/ft ³)
	Flatwise Tensile Bond Strength	ASTM C297/C297M-16	Load was applied to the top and bottom layers of the composite panel.	1.52 MPa (220 psi)
	Edgewise Compressive Strength	ASTM C364/C364M-16	Compressive load was applied at a rate of 0.02 in/min.	Ultimate compressive strength = 37.85 MPa (5490 psi)
	Flatwise Compressive Strength	ASTM C365	Speed of testing – 0.5mm/min.	1.92 MPa (278 psi).
	Shear Strength by Beam Flexure	ASTM C393/C393M-16	Loaded in flexure with facing side in tension at a cross head speed of 0.025 in/min.	Maximum core shear strength = 0.94 MPa (137 psi) Facing bending stress = 8.14 MPa (1180 psi)
	Flexure Creep Evaluation	ASTM C480/C480M-16	Midspan loading setup was used with facing side in tension at a cross head speed of 0.025 in/min. until achieved.	Net creep (in/day) facing - 0.029
	Shear Stress and Shear Modulus	ASTM C273/C273M-18	Compressive force applied until rupture.	Ultimate core shear strength = 1.01 MPa (147 psi) Core shear modulus = 10.9 MPa (1583 psi)
	Flexural Strength	ASTM C880/C880M-15	Tested a composite panel with granite stone.	22.83 MPa (3311.21 psi)
	Tensile Properties of Adhesive Bond	ASTM C897-08 (20160	The adhesive bond never failed.	No Failure
	Damage Resistance Testing of Sandwich Constructions	ASTM D7766/D7766M-16	Load was applied at the specimen midpoint through a 0.5 in diameter hemispherical steel indenter at a constant rate of 0.01 in/min until a drop-in load was observed.	No panel deformation.

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Structural	Structural Performance by Uniform Static Air Pressure Difference	ASTM E330	The test specimen was tested to failure with both positive and negative loads to examine the deflection of the panel.	<u>LITE, CladiShield & Claditized:</u> Design Load at +/-80 psf or +/- 3840 Pa; No Failure <u>CladiFab:</u> Design Load at +39.16 psf (+1875 Pa); -40.06 psf (-2062 Pa); No Failure
	Compressive Strength	ASTM C170 / C170M -17	Limestone was tested.	1.57 MPa (228psi).
Thermal	Thermal Resistance	ASTM 1363-11	Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus.	0.20 m ² oC/W (1.12 hr-ft ² -oF/B-TU)
	Linear Thermal Expansion	ISO 10545-8	Tested from room temperature to 100°C.	11.28 × 10 ⁻⁶ per oC
Fire Safety	Tunnel Test	ASTM E84	Tested in a tunnel furnace; flame spread and smoke are measured over 10 minutes.	Sample passed the test with Flame Spread Index = 10; Smoke Developed Index = 200; Class A.
	Surface Burning Characteristics of Building Materials	CAN/ULC S102	Tunnel test measuring flame-spread index and smoke developed index against reference materials.	The panel received the Flame Spread Rating = 0 & Smoke Developed Classification = 40.
	Non-Combustibility in Building Materials	CAN / ULC S114	Small specimens are inserted into a preheated furnace; temperature rise and flaming determine non-combustibility.	The Cladify material passed the test requirements. The observations were, there was no visible smoke or flame. The sample did not have a maximum temperature rise of more than 36 °C on the indicating thermocouple. The sample did not lose more than 20% of their original mass.
	Evaluation of Fire Propagation Characteristics of Exterior wall assemblies.	NFPA 285	A two-story wall mockup is exposed to a simulated window fire; vertical and lateral flame spread are observed.	Passed.
	Standard Method Fire Test of Exterior Wall Assemblies	CAN/ULC S134	A full-scale wall assembly is exposed to a large base fire; vertical and lateral flame spread across the cladding is assessed.	Passed.
	Standard Methods of Fire Endurance Tests of Building Construction Materials	ASTM E119 / CAN/ULC S101	Assemblies are subjected to a standard time-temperature curve; resistance to heat, flame, and structural failure is timed.	<u>LITE, CladiShield & Claditized:</u> 1 hour fire exposure; Passed. <u>CladiFab:</u> 15 minute stay in place; Passed, No openings found.

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	Combustibility Parameters (Cone Calorimeter)	CAN/ULC S135	A specimen is exposed to radiant heat; heat release rate, ignition time, and smoke output are measured.	Combined average total heat release was not more than 3MJ/m ² (1.7 MJ/m ²) and the combined average total smoke extinction area was not more than 1.0 m ² (0.7 m ²) for all layers of the material. This meets the requirements as listed in the National Building Code of Canada 2015 for section 3.1.5.1.

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