

 MITSUBISHI CHEMICAL COMPOSITES AMERICA, INC.

ALPOLIC[®]
METAL COMPOSITE MATERIALS

Your Design | Perfected

WE UNDERSTAND

TECHNICAL

TECHNICAL BROCHURE

ALPOLIC®/PE TECHNICAL INFORMATION

IMPACT RESISTANCE BY DUPONT METHOD

		ALPOLIC®/PE		
		DENT DEPTH (x10 ⁻² IN)		
STEEL BALL	HEIGHT	3MM .118"	4MM .157"	6MM .236"
1.10 lb	20 in	6.30	5.51	3.15
2.20 lb	12 in	7.87	6.69	3.93
2.20 lb	20 in	10.23	9.05	5.90

BOND INTEGRITY

			ALPOLIC®/PE		
			TOTAL THICKNESS		
PROPERTY	UNIT	ASTM	3MM .118"	4MM .157"	6MM .236"
Vertical Pull	psi	C-297	1906	1806	1664
Drum Peel	in-lb/in	D-1781	33.6	33.6	33.6
Flatwise Shear	psi	C-273	1259	1225	1195

ENGINEERING PROPERTIES

			ALPOLIC®/PE		
			TOTAL THICKNESS		
PROPERTY	UNIT	ASTM	3MM .118"	4MM .157"	6MM .236"
Aluminum Thickness	in	-	.020	.020	.020
Specific Gravity	-	-	1.52	1.38	1.23
Weight	lbs/ft ²	-	0.93	1.12	1.50
Coefficient of Expansion	in/in/°F	D-696	13x10 ⁻⁶	13x10 ⁻⁶	13x10 ⁻⁶
Thermal Conductance	BTU/hr/°F/ft ²	C-1363	12.29	10.75	8.53
Tensile Yield Strength	psi	E-8	8321	6429	4466
Tensile Strength	psi	E-8	8747	6913	4978
Elongation	%	E-8	12.1	13.5	17.3
Flexural Elasticity	psi	C-393	7110x10 ³	5770x10 ³	4220x10 ³
Flexural Stiffness	psi	C-393	1.04x10 ⁹	1.99x10 ⁹	4.98x10 ⁹
Punching Shear Resistance					
Maximum Load	lbs	D-732	1847	1920	2121
Shear Resistance	psi	D-732	4950	4025	2816
Deflection Temperature	°F	D-648	231.8	231.8	231.8
Sound Transmission Coefficient	STC#	E-90	25	26	26

SURFACE TREATMENTS

Standard ALPOLIC®/PE with a polyethylene core is available in the following finishes: FEVE (LUMIFLON™) with a wide color and gloss range and PVDF, both fluoropolymer finishes tested to meet AAMA 2605, polyester, and class 1 anodized. Other available ALPOLIC® finishes include Stone and Timber Series and Reflective Finishes (RF).

STANDARD PANEL SIZES

50" x 146"	62" x 146"
50" x 196"	62" x 196"

RANGE OF SIZES

Width 32.5" – 62" (826mm – 1575mm)
Length 6' – 24' 2" (1829mm – 7315mm)

PRODUCT TOLERANCE

Width:	± 0.08" (2mm)
Length:	± 0.16" (4mm)
Thickness:	3mm: ± 0.008" (0.2mm)
	4mm: ± 0.008" (0.2mm)
	6mm: ± 0.012" (0.3mm)
Bow:	maximum 0.5% of length and/or width
Squareness Maximum	0.2" (5mm)

ALPOLIC®/PE material is trimmed and squared with cut edges to offer the best panel edge conditions in the industry

FIRE PERFORMANCE

Standard ALPOLIC®/PE with a polyethylene core has been tested by independent testing laboratories using the following nationally recognized fire tests.

ASTM E84

Flame spread:	3mm	05
	4mm	00
	6mm	00
Smoke developed:	3mm	15
	4mm	00
	6mm	10

ASTM E108 MODIFIED

	4mm	passed
	6mm	passed

ASTM D1929

Flash:	4mm	716°F
Ignition:	4mm	752°F

ASTM D635

Rate of burning:	4mm	Classified CC1
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ASTM E162

Flame spread:	4mm	0
UL-879		listed

UL-94	3mm	V-O rating
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CODE Evaluation Reports*

1. ICC ES
2. City of Los Angeles Report
3. Miami Dade Notice of Acceptance
4. Florida Building Code Approval
5. UL Approved

* Reports are available at:
www.alpolic-americas.com/documents

ALPOLIC®/fr TECHNICAL INFORMATION

IMPACT RESISTANCE BY DUPONT METHOD

STEEL BALL	HEIGHT	ALPOLIC®/fr	
		DENT DEPTH (x10 ⁻² IN)	
		4MM .157"	6MM .236"
1.10 lb	20 in	5.07	3.93
2.20 lb	12 in	5.47	4.72
2.20 lb	20 in	7.40	6.30

BOND INTEGRITY

PROPERTY	HEIGHT	ASTM	ALPOLIC®/fr	
			TOTAL THICKNESS	
			4MM .157"	6MM .236"
Vertical Pull	psi	C-297	427	
Drum Peel	in-lb/in	D-1781	27.6	
Flatwise Shear	psi	C-273	949	

ENGINEERING PROPERTIES

PROPERTY	UNIT	ASTM	ALPOLIC®/fr	
			TOTAL THICKNESS	
			4MM .157"	6MM .236"
Aluminum Thickness	in	-	.020	.020
Specific Gravity	-	-	1.90	1.81
Weight	lbs/ft ²	-	1.56	2.23
Coefficient of Expansion	in/in/°F	D-696	13x10 ⁻⁶	13x10 ⁻⁶
Tensile Yield Strength	psi	E-8	6344	3840
Tensile Strength	psi	E-8	7126	4266
Elongation	%	E-8	5.0	2.0
Flexural Elasticity	psi	C-393	5770x10 ³	4220x10 ³
Flexural Stiffness	psi	C-393	1.93x10 ⁹	4.98x10 ⁹
Punching Shear Resistance				
Maximum Load	lbs	D-732	2259	—
Shear Resistance	psi	D-732	4637	—
Deflection Temperature	°F	D-648	241.8	228.8

SURFACE TREATMENTS

ALPOLIC®/fr (fire-retardant) with a mineral filled core offers the same flatness, rigidity, workability, formability and quality features of standard ALPOLIC®/PE. ALPOLIC®/fr is curvable to a 6" radius and can be joined with hot melt adhesive to form complex shapes. In addition, ALPOLIC®/fr is available in the same full palette of bright, clean colors and gloss ranges as standard ALPOLIC®/PE, as well as Stone Series, Anodized and Natural Metals. Extensive fire performance laboratory testing by independent testing agencies in accordance with requirements set forth by IBC has established ALPOLIC®/fr approval on Type 1, 2, 3, 4 and 5 Construction throughout the United States and Canada when used as a wall cladding material.

FIRE PERFORMANCE

ALPOLIC®/fr (fire-retardant) has been tested by independent testing laboratories using the following nationally recognized fire tests.

ASTM E84

Flame spread:	4mm	00
Smoke Developed:	4mm	10
Flame spread:	6mm	00
Flame spread:	6mm	00

ASTM E162

Flame Spread:	4mm	0
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ASTM E108 MODIFIED

Passed

ASTM 1929

Flash:	4mm	811°F
Ignition:	4mm	837°F

NFPA 285, INTERMEDIATE SCALE MULTI STORY APPARATUS TEST:

4mm	passed
6mm	passed

ASTM E119

4mm	passed
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CAN/ULC S 134M

4mm	passed
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NFPA 259, POTENTIAL HEAT RELEASE

4mm	<6000 BTU/ft ²
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COMBUSTION GAS TOXICITY PER UNIVERSITY OF PITTSBURGH

"No more toxic than wood."

CODE EVALUATION REPORTS*

1. ICC ES
2. City of Los Angeles Report
3. Miami Dade Notice of Acceptance
4. Florida Building Code Approval
5. CAN/ULC S102 & S134
6. ASTM E84 & E119
7. NFPA 285

*Reports are available at:

www.alpolic-americas.com/documents

EFFECTUAL

Let us know how we can help you make your design idea a reality. Get more information, order finish samples and find a fabricator by calling 1-800-422-7270 or visiting alpolic-americas.com.

ALPOLIC®
METAL COMPOSITE MATERIALS

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Singapore Changi Airport Terminal 3, Singapore
ALPOLIC® /fr in Custom Metallic Finish