ALPOLIC®/fr TECHNICAL INFORMATION

New ALPOLIC®/fr offers the same flatness, rigidity, workability, formability and quality features of standard ALPOLIC®. ALPOLIC®/fr is curvable to a 6" radius and can be welded just like standard ALPOLIC® 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®, as well as Stone Series and Anodized, in sizes up to 62" wide and lengths greater than 20'.

Extensive fire performance laboratory testing by independent testing agencies in accordance with requirements set forth by BOCA, SBCCI, ICBO and 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 rated) 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
Smoke Developed:	6mm:	00

ASTM E162:
Flame spread index: 4mm: 0

ASTM E108 modified: Passed

ASTM 1929:

Flash:	4mm:	811°F
Ignition:	4mm:	837°F

UBC 26-9, intermediate scale multi story apparatus test: 4mm: passed; 6mm: passed

ASTM E119: 4mm: passed

UBC 26-3: (Corner Test) 4mm: passed

CAN/ULC S 134M: 4mm: passed

UBC 17-2, potential heat release: 4mm: <6000 BTU/ft²

Combustion gas toxicity per University of Pittsburgh: "No more toxic than wood."

Code Evaluation Reports:
1. BOCA Evaluation Services, Inc. – Research Report No. 97-17
2. SBCCI PST & ESI – Report No. 9816
3. ICBO Evaluation Service, Inc. – Evaluation Report ER - 4934
4. SFBC - South Florida Building Code Notice of Acceptance - NOA-00-0315.06 NOA-00-0315.07

City Evaluation
1. New York – MEA 142-97-E
2. Los Angeles – RR-25362

Impact resistance by Dupont method

		ALPOLIC® Dent depth (x10⁻³ in)	
Steel Ball	Height	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

			ALPOLIC® Total thickness
Property	Unit	ASTM	4mm .157"
Vertical Pull	psi	C-297	427
Drum Peel	in-lb/in	D-1781	27.6
Flatwise Shear	psi	C-273	949

Engineering properties

			ALPOLIC®/fr Total thickness	
Property	Unit	ASTM	4mm .157"	6mm .236"
Aluminum Thickness	in	—	.020	.020
Specific Gravity	—	—	1.90	1.81
Weight	lbs/ft²	—	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 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

Anodized

ALPOLIC® is available in clear and bronze class 1 anodized finishes and, when building codes require a fire rated cladding, ALPOLIC®/fr is available with anodized finish.

Stone Series

ALPOLIC® Stone Series offers unique design opportunities. Black, red, white and pink granite, as well as white marble patterns are available. ALPOLIC® Stone Series routs, bends, curves and performs just like standard ALPOLIC®. Excellent for use in renovations, to enhance entries or where the look of real stone is desired but, weight restrictions, budget restraints or intricate designs prevent the use of real stone. ALPOLIC®/fr is available with the Stone Series finish.

ALPOLIC® TECHNICAL INFORMATION

Impact resistance by Dupont method		ALPOLIC®		
		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®		
			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®		
			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 Modulus	psi	D-790	$7.11x10^6$	$5.77x10^6$	$4.22x10^6$
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

The technical information provided herein is intended to provide users and potential users with general product information; this information should not be used as specifications for Alpolic. Product specifications and product warranty are available upon request from Mitsubishi Chemical America. The use of Alpolic and all activities related thereto are the sole responsibility of the user. Always consult local building codes before use. Nothing contained herein is intended to or shall be construed as a warranty, express or implied, including, but not limited to, warranty of merchantability or fitness for a particular purpose, as to Alpolic. Alpolic is a registered trademark of Mitsubishi Chemical Corporation.

Surface Treatments:

Standard ALPOLIC® is available in the following finishes: MEGAFLON,® a fluorocarbon finish tested to meet the criteria of AAMA 2605, with a wide color and gloss range, Polyester and Class 1 Anodized. **Custom ALPOLIC®** includes A-LOOK® (mirror-like finish), Stone series, ALPOLIC®/fr (fire-rated core), ALPOLIC®CR (for cleanrooms) and Stainless steel,copper and titanium faced composites.

Standard panel sizes:

50" x 122"	62" x 122"
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® is supplied with cut edges.There is neither displacement of the aluminum sheet nor protrusion of the core.

Fire Performance:

Standard ALPOLIC® with 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
ASTM E162		
Flame spread index	6mm:	11
UL-94	3mm:	V-O rating

City Evaluations
1. Los Angeles – RR-25362

CODE Evaluation Reports
4. SFBC - South Florida Building Code
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