

 MITSUBISHI CHEMICAL COMPOSITES AMERICA, INC.

ALPOLIC®
MATERIALS

Let's Build

SUSTAINABILITY BROCHURE

WE UNDERSTAND

ENVIRONMENTAL

WE UNDERSTAND ECOLOGICAL

SUSTAINABILITY AND ALPOLIC® MATERIALS.

ALPOLIC® aluminum composite materials (ACM) have been widely used for building projects worldwide for more than four decades. In the U.S., ALPOLIC® materials have been in use since the early 1980s and have been produced domestically since 1991.

Lightweight and rigid with a variety of durable finishes, ALPOLIC® materials are a superior choice for building cladding options from architectural to corporate identity and signage. In addition to the original ALPOLIC®/PE polyethylene-core ACM, the current product lineup includes ALPOLIC®/fr, with exceptional fire-retardant qualities, and metal composite materials (MCM) such as copper, stainless steel, titanium and zinc.

All ALPOLIC® materials are designed, manufactured and supplied with sustainability in mind. When you choose ALPOLIC® products, you choose to reduce your environmental footprint through:

- *More efficient manufacturing, with less waste*
- *High recycled-material content*
- *The opportunity to build with greater thermal efficiency and solar reflectance*
- *Negligible VOCs and other potentially harmful compounds*
- *Rigidity and finish durability to provide for decades of service*
- *Easy end-of-life recycling, with virtually 100% recovery*

Together, we can create a better world. Let's build.





Mitsubishi Chemical Composites America | ALPOLIC® Materials
Corporate Headquarters, Chesapeake, Virginia

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ALPOLIC® is committed to efficient manufacturing by maximizing the use of recycled materials while maintaining the highest standards of product quality

SET A GOAL

OUR SUSTAINABILITY PROGRAM

Mitsubishi Chemical Composites America, Inc. (MCCA) is committed to managing its business activities and products in a sustainable and environmentally responsible manner. To this end, MCCA is an active member of the U.S. Green Building Council and Canada Green Building Council, working with our customers to support LEED certification of projects incorporating our building panel products. MCCA maintains an ongoing sustainability program to increase the post- and pre-consumer recycled material content of our products, to reduce the raw materials used in our manufacturing process through increased yields and efficiencies, and to increase the percentage of recycling of plant waste.

OBJECTIVES AND GOALS

1. OBJECTIVE: Reduce the use of virgin materials while continually striving to increase the use of recycled materials.
GOAL: Maintain a minimum of 50% recycled materials for the PE core product line.
2. OBJECTIVE: Recycle plastic, wood, paper and metal waste in the production facility.
GOAL: Implement policy and practices to capture, re-purpose or recycle all segregable facility materials.
3. OBJECTIVE: Reduce process raw material usage for each product line.
GOAL: Track process yields verses yearly budget standards, identifying opportunities to implement process or capital improvement.



Eiichi Sato, President
Mitsubishi Chemical Composites America, Inc.
January 1, 2015

OPTIMAL

WHY ALPOLIC® IS AN ENVIRONMENTALLY FRIENDLY BUILDING MATERIAL.

1. HIGH PANEL STRENGTH USING LESS ALUMINUM

ALPOLIC® materials are often used as an alternative to solid aluminum panels because they achieve equivalent rigidity using only one-third to one-fourth the amount of aluminum. This principle also holds true for ALPOLIC® MCM products composed of copper, stainless steel, titanium and zinc, (see Table 1, later in this brochure.)

2. DURABLE AND INNOVATIVE FINISHES

ALPOLIC® materials are finished with Lumiflon® FEVE fluoropolymer resin as standard. This finish is known for its durability, featuring long-lasting color and gloss. Selected ALPOLIC® material finishes that feature high solar reflectance, also known as “cool” colors, increase the energy efficiency of your building and may contribute to earning LEED Credits ID 1.1—1.4.

(More information later in this brochure.)

3. USE OF RECYCLED CONTENT AS RAW MATERIAL

ALPOLIC® products are manufactured using recycled materials. This may contribute to earning LEED Credits MR 4.1 and 4.2. (More information later in this brochure.)

4. HEAT TRANSMISSION EFFECT

When ALPOLIC® materials are used for building envelopes, an air pocket is formed between the structural wall and ALPOLIC® panels. This can increase the building’s thermal insulation (see Table 2, later in this brochure.)

5. FIRE SAFETY

ALPOLIC®/fr is a fire-retardant material that is ideal for applications where non-combustible construction is required.



ALPOLIC® material production is ISO 9001:2008 certified. Our production is periodically audited by third parties for consecutive qualification.



New England Biolabs Boston, Massachusetts, ALPOLIC®/PE in Copper Natural Metal Finish

Bahrain World Trade Center, Manama, Bahrain
ALPOLIC®/fr in Custom White and Champagne Metallic Finishes



INFLUENTI

WE'RE BRINGING TRANSPARENCY TO THE BUILDING PRODUCTS INDUSTRY.

Product transparency matters. We believe in providing all the information you need to evaluate the potential impacts of building products on environmental and human well-being.

That's why we offer the industry's first series of Product Transparency Declarations (PTDs) – and why we're actively working in committee to help formalize PTDs as an American Society for Testing and Materials or ASTM industry standard.

We also offer an Environmental Product Declaration (EPD) that lists general industry information about building materials, but our PTDs go much further. Based on highly recognized environmental guidelines, our PTDs provide full disclosure of ACM/MCM product components and their impacts. These documents evaluate ALPOLIC® materials in light of the guidelines established by:

- The Impact Assessment Research Centre (IARC)
- The National Toxicology Program of the U.S. Department of Health and Human Services
- The Occupational Safety and Health Administration (OSHA)
- The California Proposition 65 list of chemicals known to cause cancer, birth defects or other reproductive harm
- The EU Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) list of substances of very high concern
- The U.S. Environmental Protection Agency (EPA) Toxic Release Inventory Program for persistent bioaccumulative toxic chemicals

PTDs disclose known chemical components of our products as a service for specifiers and building owners who care about the health and well-being of building occupants, as well as to provide information on VOC emissions from finished building materials and other sustainability and environmental facts.

You can find PTDs for ALPOLIC® materials in the Technical Resources section of our website. Use them to make informed choices. And support the adoption of PTDs industry-wide for true product transparency that fosters healthier, more sustainable buildings and communities.

The image shows the letters 'AL' in a large, light blue, sans-serif font. The 'A' is on the left and the 'L' is on the right, both rendered in a consistent color and style.

APPROVAL

**WE ARE A MEMBER OF BOTH THE U.S. GREEN BUILDING COUNCIL
AND CANADIAN GREEN BUILDING COUNCIL.**

Mitsubishi Chemical Composites America, Inc. is a member of both the U.S. Green Building Council and Canada Green Building Council and actively supports environmental responsibility. The raw materials used in the ALPOLIC® panel products have been selected to maximize the use of recycled content. The coating and laminating lines are designed to make the most efficient use of energy and to comply with all regulations and codes relating to environmental quality.



**WE HAVE CONTRIBUTED TO THE REVIEW AND APPROVAL OF
THE LEED 2.2 STANDARD FOR NEW CONSTRUCTION.**







THE USE OF ALPOLIC® MATERIALS MAY CONTRIBUTE TO THE FOLLOWING LEED CREDITS:



1. HIGHLY DURABLE OR INNOVATIVE FINISHES: LEED CREDITS ID 1.1 – 1.4

ALPOLIC® materials are finished with Lumiflon® FEVE fluoropolymer resin as standard, a finish known for its durability. The long-lasting color and gloss help reduce long-term maintenance costs and material consumption. In addition, the finish is applied using a continuous coil coating process, giving ALPOLIC® materials a look that is consistent as well as durable. No competing polyester coating offers the lasting performance of Lumiflon® FEVE (see Figure 1).



In addition, solar reflectance can be improved by selecting an appropriate finish, increasing the energy efficiency of the building. Colors with Solar Reflectance Index (SRI) values of 29 or greater meet the requirements established by the Cool Roof Rating Council (CRRC) for steep roofs. The majority of our architectural standard colors meet this “cool” standard. The SRI values for our standard architectural colors and the LRV (Light Reflectance Value) are noted on the ALPOLIC® Color Chart to assist in making an informed decision. To download the Color Chart, visit www.alpolic-americas.com/colorchart.



For these reasons, ALPOLIC® materials may help your building earn LEED Credits ID 1.1 – 1.4. For details, visit www.alpolic-americas.com/en/LEED.

FIGURE 1: COMPARISON OF DURABILITY BETWEEN HIGH-PERFORMANCE POLYESTER AND LUMIFLON® FEVE FLUOROPOLYMER COATINGS



2. RECYCLED CONTENT: LEED CREDITS MR 4.1 AND 4.2

Virgin aluminum requires a large amount of electricity for smelting. However, approximately 70 percent of virgin aluminum is recovered and reused. This recycled aluminum uses only five percent of the electricity required for virgin aluminum. We use 3105 aluminum alloy in ALPOLIC® materials. This alloy contains high levels of recycled content.

While the exact percentage of recycled content can vary from coil to coil, the typical values of 3105 alloy are:

- Post-consumer recycled content: 12.5%
- Pre-consumer recycled content: 64.2%
- Virgin metal content: 23.3%

In addition, ALPOLIC® materials are extremely rigid, achieving the same panel strength as solid aluminum sheet using only one-third to one-fourth the amount of aluminum (see Figure 2 and Table 1). For details, visit www.alpolic-americas.com/en/LEED.

FIGURE 2

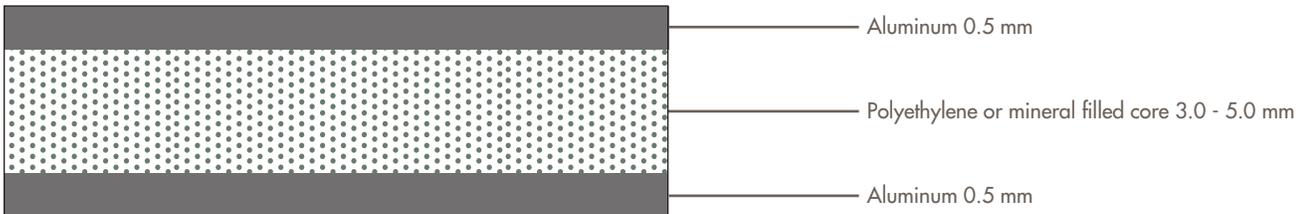


TABLE 1: COMPARISON OF RIGIDITY BETWEEN ALPOLIC® PRODUCTS AND SOLID METAL SHEETS

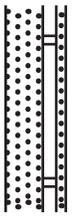
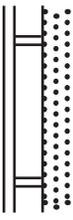
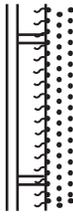
ALPOLIC® Products	Total Metal Thickness in ALPOLIC® Products	Metal Thickness with Equivalent Rigidity	Metal Amount Required for ALPOLIC® Products
ALPOLIC® 3 mm	Aluminum 1.0 mm	Aluminum 2.7 mm	37%
ALPOLIC® 4 mm	Aluminum 1.0 mm	Aluminum 3.3 mm	30%
ALPOLIC® 6 mm	Aluminum 1.0 mm	Aluminum 4.5 mm	22%
ALPOLIC® /fr 4 mm	Aluminum 1.0 mm	Aluminum 3.3 mm	30%
ALPOLIC® /fr 6 mm	Aluminum 1.0 mm	Aluminum 4.5 mm	22%
MCM Copper 4 mm	Copper 0.8 mm	Copper 3.2 mm	25%
MCM Stainless Steel 4 mm	Stainless Steel 0.8 mm	Stainless Steel 3.2 mm	25%
MCM Titanium 4 mm	Titanium 0.8 mm	Titanium 3.2 m	25%

THERMAL

When ALPOLIC® materials are used for a building's envelope, the layer of air created between the ALPOLIC® panels and the structural wall can increase the building's thermal insulation. Table 2 shows some of the calculated results.

ALPOLIC® materials are tested, rated and periodically audited for compliance with building and fire codes. ALPOLIC®/fr, in particular, is specially designed and rated as an ideal material for applications that require noncombustible construction.

TABLE 2: HEAT TRANSMISSION THROUGH EXTERNAL WALL

RC Wall Only		ALPOLIC® Cladding		ALPOLIC® + Insulation	
out	in	out	in	out	in
	RC wall (100) Air space (50) Gypsum board (12)		ALPOLIC® (4) Air space (100) RC wall (100) Air space (50) Gypsum board (12)		ALPOLIC® (4) Air space (75) Glass wool (25) RC wall (100) Air space (50) Gypsum board (12)
2.5 W/m²•K		2.1 W/m²•K		0.92 W/m²•K	

Wall system, wall component and its thickness in mm Calculated U-value

University of New Mexico Gallup Technology Center, Gallup, New Mexico ALPOLIC®/PE in Copper Natural Metal Finish



REDUCE, REUSE AND RECYCLE WITH OPERATION ENCORE

Operation Encore makes it easy for you to recycle ALPOLIC® materials when buildings are renovated and re-clad. ALPOLIC® materials are virtually 100 percent recyclable, and through Operation Encore we'll accept used materials, separate them, and place the components in the appropriate industry recycling streams.



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.

Let's build.

