

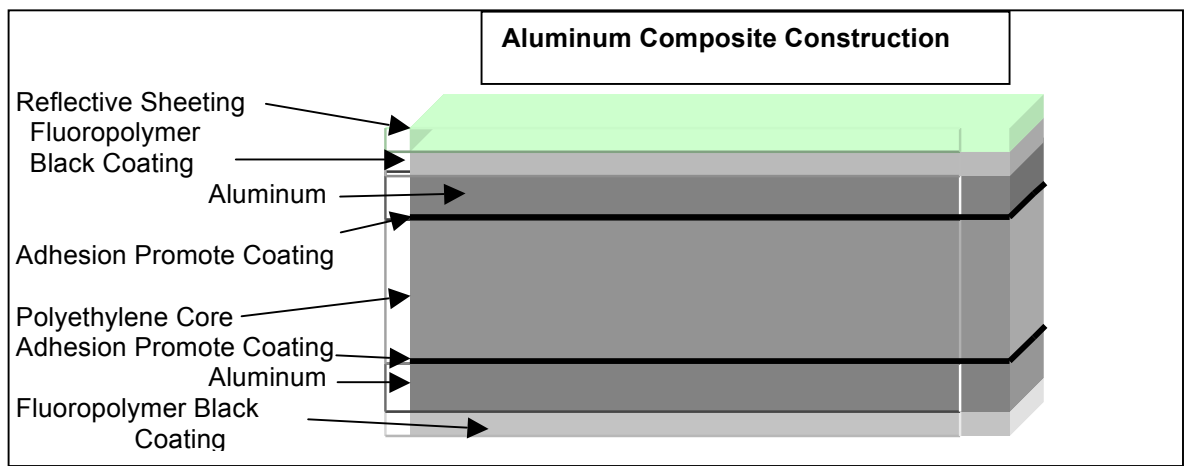
General

This specification covers the use of aluminum composite panels for permanent signal back plate applications as an alternative to conventional back plate substrates such as solid aluminum and plastic.

Technical

The composite sign material must be manufactured by bonding two skins of aluminum to an extruded polyethylene core utilizing a thermoset adhesive under tension and pressure in a continuous process. The polyethylene core must be pigmented with carbon black to prevent core edge deterioration from UV exposure. The resulting composite product should be light, exceptionally flat, strong, rigid, and resistant to breakage. It must fabricate similarly to aluminum and enable operations such as sawing, shearing, drilling, and punching. The exterior coating must be a fluoropolymer based paint that provides a surface quality that is suitable for the proper adhesion of reflective sheeting and expected life of 12 years. Documented evidence that the material is a suitable substrate by the reflective sheeting manufacturers must be provided. The interior of the aluminum skin must be coated with an epoxy chromate primer for added bonding strength with the polyethylene. The sign blank must be capable of being exposed to temperature ranges of -60 degrees F to +170 degrees F. The material must be available in a thickness of 2mm with the aluminum skin a minimum thickness of .010. The edges must be provided straight without displacement or projection of the core or skin.

Minimum Properties	2mm
<i>ASTM test procedures numbers are given in parentheses.</i>	
Aluminum Alloy	5052 H32
Aluminum Thickness, in.	.010
Sign Blank Thickness, in.	.079
Weight, lbs/sq. ft	.57
Bow--Maximum % of length or width	0.5
C. of Expansion (D696)-- in./in./°F	15x10 ⁻⁶
Flexural Stiffness(C393)-- psi	2.6x10 ⁸
Deformation Temperature (D648) -- degrees F	230
Avg. Tensile Strength (E8) -- psi	7487
Flexural Modulus (D790) - psi	4.22x10 ⁶
Punching Shear Resistance	
Average Load (D732) -- lbs	1258
Average Stress (D732) -- psi	4766
Bond Integrity	
Vertical Pull (C297) psi	1581
Drum Peel (D1781) in.-lb./in.	62.5
Flatwise Shear (C273) psi	1689
Durability years	12
Recyclability	100%



Wind Testing

This product shall have undergone documented wind testing with a minimum sustained velocity of 80 mph and gusts up to 108 mph. Video and digital image documentation and physical measurement of the substrate behavior under various wind loads must have been observed by an Independent Testing Agency. The back plate supplier may be required to provide the Test Date(s), the Name of the Facility, and the Name of the Independent Testing Agency.

Manufacturing Quality System

The aluminum composite manufacturing facility or facilities may be required to present documentation to show they are at least ISO 9001:2000 certified to produce the laminates specified herein.

Warranty

Warranty must be provided against defects, workmanship, and failures. See separate warranty documents.

Color Required

Standard dull black fluoropolymer coating both sides for meeting MUTCD back plate standard.

Packaging

Standard packaging for signal back plates to be 4-way skid or special wooden reinforced box/skid. Standard packaging quantity depends on size of order. Bulk packaging per request. All packaging per industry standards.

Technical Support/Training

Supplier must provide personal factory support, and training within 24 hours for product matters that relate to fabrication and application.

Samples

Non-returnable samples may be required at no expense to evaluate prior to an award.

Reflective Sheeting Requirements

Customer to specify type, location, and size of reflective sheeting to be used on the signal back plate. 3 inch wide 3M Type XI #4081 Fluorescent Yellow reflective sheeting located around the perimeter on the edge without a border is recommended.

Slitting One Piece Back Plate

For Field Installation on existing assemblies customer may request a back plate to be pre punched and slit and furnished with a matching pre punched four inch x four inch scab plate with serrated flange bolt/nut fastening hardware. Using approved VHB tape is an alternate assuming two pieces 1.5 inches wide x 4 inches long are utilized to make the splice connection.

Fabrication Details

Customer to provide signal geometry, sample signal head, or name of signal head manufacturer to determine contour of the cavity to fit the rear of the signal heads, to match the necessary mounting hole or slot dimensions, and to present the minimum corner radii desired. It is understood the minimum space between the outer signal head edge and outer edge of back plate is a minimum of 5 inches. Back Plate to be provide in multiple pieces when necessary.

January 27, 2015