



U.S. Department
of Transportation
**Federal Highway
Administration**

April 10, 2007

400 Seventh St., S.W.
Washington, DC 20590

In Reply Refer To:
HSSD/WZ-254

Mr. Peter Nee
Dymalon, Inc.
9592 Deereco Road
Timonium, MD 21093

Dear Mr. Nee:

Thank you for your correspondence requesting the Federal Highway Administration's (FHWA) acceptance of Alucobest 2 mm and 3 mm thick sign substrate. Accompanying your letter were product specification certificates. You requested acceptance of Alucobest as a sign substrate for use with accepted sign stands on the National Highway System (NHS) under the provisions of the National Cooperative Highway Research Program (NCHRP) Report 350 "Recommended Procedures for the Safety Performance Evaluation of Highway Features."

Upon request, you provided a sample of the Alucobest sign substrate to the FHWA and a copy of the product specifications. The Alucobest sign substrate is a brand name of aluminum laminate material. The material properties of your 2 mm and 3 mm Alucobest substrate are nearly identical and considered to be equivalent to other previously accepted 2 mm and 3 mm aluminum laminate sign substrates. Our records indicate that 2 mm, 3 mm, and 4 mm aluminum laminate signs have been successfully crash tested on portable stands made by a number of manufacturers and are limited to use on the tested and accepted stands. Therefore, the FHWA accepts the use of Alucobest 2 mm and 3 mm aluminum laminate sign substrates for use on the NHS under the range of conditions that equivalent materials have been tested and accepted, when proposed by a State.

Please note the following standard provisions that apply to the FHWA letters of acceptance:

- This acceptance is limited to the crashworthiness characteristics of the devices and does not cover their structural features, nor conformity with the Manual on Uniform Traffic Control Devices.
- Any changes that may adversely influence the crashworthiness of the device will require a new acceptance letter.
- Should the FHWA discover that the qualification testing was flawed, that in-service performance reveals unacceptable safety problems, or that the device being marketed is



significantly different from the version that was crash tested, it reserves the right to modify or revoke its acceptance.

- You will be expected to supply potential users with sufficient information on design and installation requirements to ensure proper performance.
- You will be expected to certify to potential users that the hardware furnished has essentially the same chemistry, mechanical properties, and geometry as that submitted for acceptance, and that they will meet the crashworthiness requirements of the FHWA and the NCHRP Report 350.
- To prevent misunderstanding by others, this letter of acceptance, designated as number WZ-254, shall not be reproduced except in full. This letter, and the test documentation upon which this letter is based, is public information. All such letters and documentation may be reviewed at our office upon request.
- The Alucobest material is a patented product and considered proprietary. If proprietary devices are specified by a highway agency for use on Federal-aid projects, except exempt, non-NHS projects, they: (a) must be supplied through competitive bidding with equally suitable unpatented items; (b) the highway agency must certify that they are essential for synchronization with the existing highway facilities or that no equally suitable alternative exists; or (c) they must be used for research or for a distinctive type of construction on relatively short sections of road for experimental purposes. Our regulations concerning proprietary products are contained in Title 23, Code of Federal Regulations, Section 635.411.

This acceptance letter shall not be construed as authorization or consent by the FHWA to use, manufacture, or sell any patented device for which the applicant is not the patent holder. The acceptance letter is limited to the crashworthiness characteristics of the candidate device, and the FHWA is neither prepared nor required to become involved in issues concerning patent law. Patent issues, if any, are to be resolved by the applicant.

Sincerely yours,



John R. Baxter, P.E.
Director, Office of Safety Design
Office of Safety

Enclosure



General Properties

Property	Standard	Result
Unit weight	ASTM D792	13mm=4.6kg/m ² 14mm=5.5kg/m ²
Outdoor temperature resistance	ASTM D1654	No abnormality
Thermal expansion	ASTM D696	3.0 × 10 ⁻⁵ °C ⁻¹
Thermal deformation temperature	ASTM D648	115°C
Thermal conduction	ASTM 976	0.102kcal/m.hr°C
Flexural rigidity	ASTM C393	14.0 × 10 ³
Impact resistance	ASTM D732	1.650kgf
Adhesive strength	ASTM D903	0.74kgf/mm
Sound-insulating rate	ASTM E413	29 dB
Flexural Elasticity	ASTM D790	4055kg/mm ²
Shear resistance	ASTM D732	2.6kgf/mm ²
Minimum bending radius	ASTM D790	(LO)45mm (PO)70mm
Fire propagation	ASTM E84	Qualified
Smoke developed	ASTM E84	< 45
Wind-pressure resistance	ASTM E330	Passed
Properties against water	ASTM E331	Passed
Properties against air	ASTM E283	Passed

PVDF Coating Finish

Property	Standard	Result
Finish coat thickness	ISO 2360 (CNS 8406)	27.6 μm
Gloss	ASTM D532-89	20-45%
Pencil hardness	ASTM D3363-00	2H
Toughness	ASTM D4145-83	2T no rift
Adhesive force	ASTM 3359-97	4B
Impact resistance	ASTM D2794-93	> 100kg.cm
Abrasion resistance	ASTM D968-93	64.6L/ml
Mortar resistance	ASTM 605.2-91	24hrs No blister
Humidity resistance	ASTM D714-97	3000hrs No blister
	ASTM D2247-02	
Boiling-water resistance	ASTM D3359-B	Passed
Salt-spray resistance	ASTM B117-03	3000hrs No blister
Acid resistance	ASTM D1308-87	No Effect
	AAMA 605.2-91, TEST#7, 7.31	
Alkali resistance	ASTM D1308-87	Passed
Solvent resistance	ASTM D2248-73	Passed
	ECCA T5&NCCA NO.11-18	
Color retention	ASTM D2244-93	▲ E=0.34
Chalk resistance	ASTM D4214-99	No Chalking
Gloss retention	ASTM D2244-93	84.2%

