



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

1200 New Jersey Avenue, SE.
Washington, DC 20590

May 8, 2008

In Reply Refer To: HSSD/WZ-270

Mr. Matthew C. Nobe
Traffic Products Manager
Grimco, Inc.
1585 Fencorp Drive
Fenton, MO 63026

Dear Mr. Nobe:

Thank you for your correspondence requesting the Federal Highway Administration's (FHWA) acceptance of Max-Metal 3 mm and 4 mm thick sign substrate. Accompanying your letter were product specification certificates and samples of the substrate. You requested acceptance of Max-Metal 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 samples of the Max-Metal sign substrate to the FHWA and a copy of the product specifications. The Max-Metal test data are enclosed. The Max-Metal sign substrate is a brand name of aluminum laminate material. The material properties of the 3 mm and 4 mm Max-Metal substrate are nearly identical and considered to be equivalent to other previously accepted 2 mm, 3 mm, and 4 mm aluminum laminate sign substrates. Our records indicate that 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 Max-Metal 3 mm and 4 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.

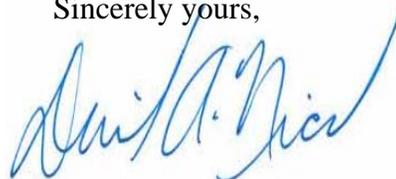
Please note the following standard provisions that apply to FHWA letters of acceptance:

- This acceptance is limited to the crashworthiness characteristics of the device 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/system 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/system being marketed is significantly different from the version that was crash tested, we reserve the right to modify or revoke our 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 it will meet the crashworthiness requirements of the FHWA and the NCHRP Report 350.
- To prevent misunderstanding by others, this letter of acceptance is designated as number WZ-270 and shall not be reproduced except in full. This letter and the test documentation upon which it is based are public information. All such letters and documentation may be reviewed at our office upon request.
- The Max-Metal substrates are patented products and considered proprietary. If proprietary devices/systems 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/system for which the applicant is not the patent holder. The acceptance letter is limited to the crashworthiness characteristics of the candidate device/system, 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,



David A. Nicol, P.E.
Director, Office of Safety Design
Office of Safety

Enclosures

Test Report

Testing item	Standard	Result
Unit weight	ATSM D792	t3mm=4.6kg/m ² t4mm=5.5kg/m ²
Outdoor temperature resistance	ATSM D1654	No abnormality
Thermal expansion	ATSM D696	$3.0 \times 10^{-5} \square^{-1}$
Thermal deformation temperature	ATSM D648	115□
Thermal conduction	ATSM 976	0.102kcal/m.hr□
Flexural rigidity	ATSM C393	14.0×10^5
Impact resistance	ATSM D732	1650kgf
Adhesive strength	ATSM D903	0.74kgf/mm
Sound-insulating rate	ATSM E413	29dB
Flexural Elasticity	ATSM D790	4055kg/m m ²
Shear resistance	ATSM D732	2.6kgf/m m ²
Minimum bending radius	ATSM D790	□300mm
Fire propagation	ATSM E84	Qualified
Smoke developed	ATSM E84	<45
Wind-pressure resistance	ATSM E330	Passed
Properties against water	ATSM E331	Passed
Properties against air	ATSM E283	Passed



MAX-metal

Aluminum Composite Material

MAX-metal aluminum composite material (ACM) is comprised of two sheets of .015 aluminum with a baked enamel finish bonded to a high density polyethylene (HDPE) core. Available in 3 mm and 6 mm thicknesses.



Features:

- Panels are lightweight (.75 lbs SF), highly durable and strong.
- Panel faces are protected by a peel-off protective liner
- Easily sheered to form sign blanks
- Panels meet the fireproofing requirement specified in building code for ASTM E-84
- Panels are coated with fluoro-carbon (PVDF) resin to withstand extreme weather conditions.
- Inexpensive alternative to aluminum



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