



Requirements for Fiberglass Coatings Evolve

BY KEN BRENDEN

In early 2001, the first standard governing the use of fiberglass fenestration profiles, AAMA 305-2000 (updated in 2006), was released. By the end of 2003, AAMA established a Fiberglass Material Council (FMC) to further develop standards and promote fiberglass as a viable fenestration material.

Earmarked for future development are specifications for performance of exterior stained products and information on solar reflectivity of exterior façades.

Because the long-term durability of fiberglass profiles—more generically termed “fiber reinforced thermoset profiles”—depends largely on the applied coatings, the FMC embarked upon a project to develop specifications for factory-applied organic coatings, listed below.

Fiberglass Coatings Requirements

	AAMA 623-07	AAMA 624-07	AAMA 625-07
Minimum Initial Dry Film Thickness	20 microns (0.8 mil)	30 microns (1.2 mil)	30 microns (1.2 mil)
Color Uniformity	Consistent with specified range or numerical value		
Specular Gloss (per ASTM D 523)	Within ±5 units of manufacturer's recommended values		
Dry Film Hardness	No film rupture per ASTM D 3363 pencil test – grade H hardness lead pencil	No film rupture per ASTM D 3363 pencil test – grade F hardness lead pencil	
Film Adhesion	No film removal per ASTM D 3359, Method B (Method A for film thicknesses >125 microns)		
Dry adhesion	No film removal per ASTM D 3359 after 24-hr immersion in 100°F water		
Wet adhesion	N/A	No film removal per ASTM D 3359 after 20-min immersion in boiling water	
Boiling Water Adhesion			
Direct Impact	No removal of film from substrate		
Abrasion Resistance (minimum abrasion coefficient)	N/A	20	40
Chemical Resistance	No visual change after 10 min exposure to 10% solution		
Muriatic Acid	Easily removed after 24hr exposure at 100% humidity		
Mortar			
Nitric Acid	N/A	£5DE (Hunter) units color change after 30 min fume exposure	
Detergent Resistance	No loss of coating adhesion per ASTM D 2248		
Window Cleaner Resistance	N/A	No noticeable change after 24 hr exposure	
Humidity Resistance	No blistering after 1,500 hrs. high-humidity exposure	No blistering after 3,000 hrs. high-humidity exposure	No blistering after 4,000 hrs. high-humidity exposure
Cold Crack Cycle	No cracking or loss of adhesion after 15 cycles of humidity exposure (24 hr), room temperature (4 hr) then cold (-10°F)		
Oven Aging	No loss of adhesion after seven days at 140°F		
Weather Exposure	No checking, crazing, chalking or loss of adhesion after one year exposure in South Florida site	No checking, crazing, chalking (£8 for colors/£6 for whites per ASTM D 4214), loss of color retention (within ±5 Hunter units), loss of gloss <30%, loss of adhesion (per ASTM D 3359, Method B) and <10% film erosion after five years exposure in South Florida site or 1450 MJ TUVB accelerated exposure per ASTM G90	No checking, crazing, chalking (£8 for colors/£6 for whites per ASTM D 4214), loss of color retention (within ±5 Hunter units), loss of gloss <50%, loss of adhesion (per ASTM D 3359, Method B) and <10% film erosion after ten years exposure in South Florida site or 2900 MJ TUVB accelerated exposure per ASTM G90

Source: Data taken from AAMA 623-07, AAMA 624-07 and AAMA 625-07.

These define the capabilities and expectations for “good, better and best” levels of finishes for fiberglass fenestration profiles, addressing different performance needs for film integrity, exterior durability and general appearance for different applications and market needs.

Fiberglass Specifications

- AAMA 623-07, *Voluntary Specification, Performance Requirements and Test Procedures for **Organic Coatings** on Fiber Reinforced Thermoset Profiles*
- AAMA 624-07, *Voluntary Specification, Performance Requirements and Test Procedures for **High Performance Organic Coatings** on Fiber Reinforced Thermoset Profiles*
- AAMA 625-07, *Voluntary Specification, Performance Requirements and Test Procedures for **Superior Performance Organic Coatings** on Fiber Reinforced Thermoset Profiles*

The table (at left) summarizes the scope of the performance parameters and increasing performance requirements set forth by the three specifications.

Future Specification Activity

The FMC already is updating these specifications, focusing on clarification of chemical resistance testing, in response to inquiries from testing operations noting variances in results associated with different coating colors. AAMA 623 weathering exposure requirements also are being increased. Earmarked for future development are specifications for performance

of exterior stained products and information (possibly leading to a specification) on solar reflectivity of exterior façades, which has potential to address the urban “heat island effect” of various materials on vertical surfaces (perhaps similar to “cool roof” requirements).

As materials and performance requirements evolve, it is important that consensus groups such as

AAMA keep specifications up to date so the industry can stay on the cutting edge. **I**

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