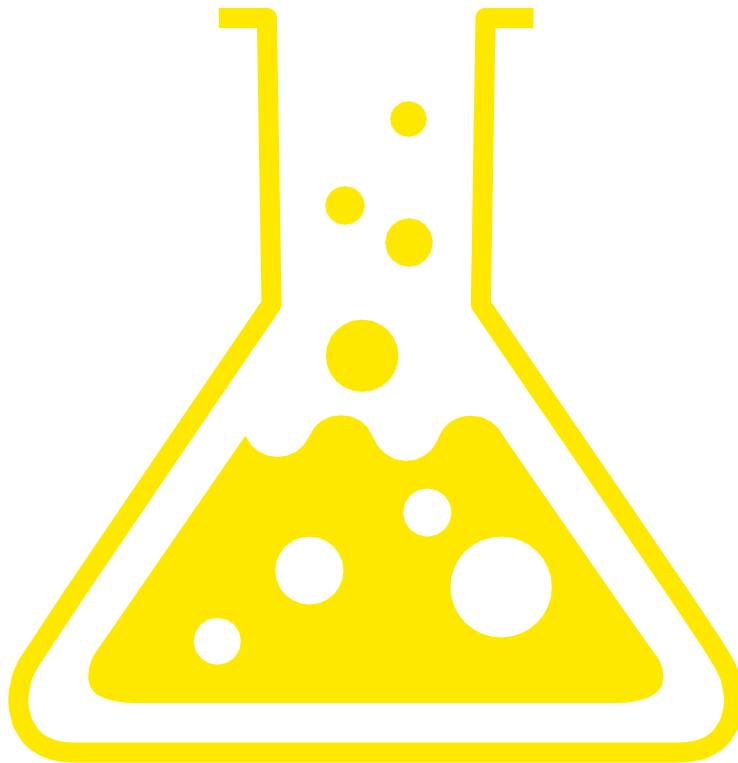


Test Reports

AAMA2603 Certified Laboratory Test Report
+ Extract of Interpon D1000 Florida Weathering Data



AAMA2603-20 Laboratory Testing for representative products:
Interpon code:GM2007

Subject: **Project 23843 - Final Report for Architectural Marketing**

Product	GM2007
Testing Requested	Sec. 8.1 Color Evaluation — ASTM E1331-15 Sec. 8.2 Gloss — ASTM D523-14 Sec. 8.3 Dry Film Hardness — ASTM D3363-05(2011)e1 Sec. 8.4 Film Adhesion — ASTM D3359-09e2 Sec. 8.5 Impact — ASTM D2794-93 (2010) Sec. 8.7 Chemical Resistance — AAMA 2603-15 Sec. 8.8.1 Humidity — ASTM D2247-15 Sec. 8.8.2 Salt Spray — ASTM B117-16 Sec. 8.9 South Florida Weather Exposure — ASTM G7/G7M-13
Specifications Requested	AAMA 2603-15 (D1010 Testing)

Sec. 8.1 Color Evaluation Testing (ASTM E1331-15)

Equipment Used	X-rite i5, Hunter, D65 illumination, spectral component included, 10° observer
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Color Evaluation Results

Panel ID	Film Thickness	L*	a*	b*
23843 - 1	2.4-2.9 mils	32.39	0.33	1.01
23843 - 2	2.4-2.6 mils	32.25	0.36	1.06

Sec. 8.2 Gloss Testing (ASTM D523-14)

Equipment Used	Byk-Gardener Multi-Tri Gloss meter
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Gloss Results

Panel ID	Film Thickness	20° Gloss	60° Gloss	85° Gloss
23843 - 1	2.4-2.9 mils	2.7	16.5	23.6
23843 - 2	2.4-2.6 mils	2.8	17.0	23.9

Sec. 8.3 Dry Film Hardness Testing (ASTM D3363-05(2011)e1)

Equipment Used	Berol Turquoise Pencils
Requirements	No rupture of film at H

Dry Film Hardness Results

Panel ID	Film Thickness	Visual Observation	Results
23843 - 1	2.4-2.9 mils	No rupture of film at H	Pass
23843 - 2	2.4-2.6 mils	No rupture of film at H	Pass

Sec. 8.4 Film Adhesion Testing (ASTM D3359-09e2)

Description of Method	Dry Adhesion - 2mm Crosshatch Wet Adhesion - 2mm Crosshatch plus 24 hour water immersion at 38°C Boiling Water Adhesion - 2mm Crosshatch plus 20 minute boiling water immersion
Tape Used	Elcometer 99
Requirements	No loss of adhesion (0% loss)

Dry Adhesion Results

Panel ID	Film Thickness	Visual Observation	Results
23843 - 1	2.4-2.9 mils	0% Loss of Adhesion	Pass
23843 - 2	2.4-2.6 mils	0% Loss of Adhesion	Pass

Wet Adhesion Results			
Panel ID	Film Thickness	Visual Observation	Results
23843 - 3	2.9-3.2 mils	0% Loss of Adhesion	Pass
23843 - 4	2.2-2.3 mils	0% Loss of Adhesion	Pass

Boiling Water Adhesion Results			
Panel ID	Film Thickness	Visual Observation	Results
23843 - 5	2.3-2.8 mils	0% Loss of Adhesion	Pass
23843 - 6	2.9-3.2 mils	0% Loss of Adhesion	Pass

Sec. 8.5 Impact Testing (ASTM D2794-93 (2010))	
Description of Method	Impact with sufficient force to deform the sample a minimum of 3mm. Perform tape pull on the deform area and observe for adhesion loss.
Equipment Used	Gardner Impact Tester, 5/8" indenter, 4 lb. weight
Tape Used	Elcometer 99
Requirements	No removal of film from substrate

Impact Results			
Panel ID	Film Thickness	Visual Observation	Results
23843 - 7	1.95-2.3 mils	No removal of film from substrate	Pass
23843 - 8	2.0-2.3 mils	No removal of film from substrate	Pass

Sec. 8.7 Chemical Resistance Testing (AAMA 2603-15)	
Chemicals Used	Muriatic Acid, Mortar, and Detergent
Muriatic Acid Requirements	No blistering and no visual change in appearance
Mortar Requirements	No loss of film adhesion or visual change in appearance
Detergent Requirements	No loss of adhesion, blistering, or significant visual change in appearance

Muriatic Acid Resistance Results			
Panel ID	Film Thickness	Visual Observation	Results
23843 - 9	2.3-2.6 mils	No blistering or change in appearance	Pass
23843 - 10	2.2-2.4 mils	No blistering or change in appearance	Pass

Mortar Resistance Results			
Panel ID	Film Thickness	Visual Observation	Results
23843 - 11	2.4-2.6 mils	No loss of film adhesion or change in appearance	Pass
23843 - 12	2.1-2.6 mils	No loss of film adhesion or change in appearance	Pass

Detergent Resistance Results			
Panel ID	Film Thickness	Visual Observation	Results
23843 - 13	2.4-2.6 mils	No loss of adhesion, blistering, or change in appearance	Pass
23843 - 14	2.3-2.6 mils	No loss of adhesion, blistering, or change in appearance	Pass

Sec. 8.8.1 Humidity Testing (ASTM D2247-15)	
Test Duration	1512 Hours
Frequency of Evaluation	504 Hours
Type of Scribe	None
Method of Evaluation	Visual
Blister Evaluation	ASTM D714-02 (2009)
Requirements	Blister Failure - > Few #8

Humidity Results			
Panel ID	Film Thickness	Blister Rating	Results
23843 - 15	1.85-2.3 mils	No Change (10)	Pass
23843 - 16	2.1-2.4 mils	No Change (10)	Pass

Sec. 8.8.2 Salt Spray Testing (ASTM B117-16)	
Test Duration	1512 Hours
Frequency of Evaluation	504 Hours
Type of Scribe	Vertical
Method of Evaluation	Elcometer 99 Tape
Blister Evaluation	ASTM D714-02 (2009)
Requirements	Undercut Failure - < Rating of 7 Blister Failure - > Rating of 8 (>3%)

Salt Spray Results				
Panel ID	Film Thickness	Undercut Rating	Blister Rating	Results
23843 - 17	2.1-2.4 mils	No Change (10)	No Change (10)	Pass
23843 - 18	2.2-2.5 mils	No Change (10)	No Change (10)	Pass

Sec. 8.9 South Florida Weather Exposure Testing (ASTM G7/G7M-13)	
Test Duration	1 Year
Description of Method	Expose samples at 45 degree angle facing South
Requirements	No checking, crazing or loss of adhesion after taping and only a slight chalking and slight fading

*Testing was performed by Q-Lab

1 Year South Florida Weather Exposure Results			
Sample ID	Film Thickness	Observations	Results
23843 - 19	1.95-2.4 mils	No checking, crazing or loss of adhesion; slight fading	Pass
23843 - 20	2.1-2.6 mils	No checking, crazing or loss of adhesion; slight fading	Pass
23843 - 21	2.4-2.8 mils	No checking, crazing or loss of adhesion; slight fading	Pass
23843 - 22	2.4-2.6 mils	No checking, crazing or loss of adhesion; slight fading	Pass
23843 - 23	2.7-2.7 mils	No checking, crazing or loss of adhesion; slight fading	Pass
23843 - 24	2.1-2.6 mils	No checking, crazing or loss of adhesion; slight fading	Pass

*Testing was performed by Q-Lab

AAMA2603-20 Laboratory Testing for representative products: Interpon code: GN2097

Subject: **Project 23845 - Final Report for Architectural Marketing**

Product	GN2097
Testing Requested	<i>Sec. 8.1 Color Evaluation</i> — ASTM E1331-15 <i>Sec. 8.2 Gloss</i> — ASTM D523-14 <i>Sec. 8.3 Dry Film Hardness</i> — ASTM D3363-05(2011)e1 <i>Sec. 8.4 Film Adhesion</i> — ASTM D3359-09e2 <i>Sec. 8.5 Impact</i> — ASTM D2794-93 (2010) <i>Sec. 8.7 Chemical Resistance</i> — AAMA 2603-15 <i>Sec. 8.8.1 Humidity</i> — ASTM D2247-15 <i>Sec. 8.8.2 Salt Spray</i> — ASTM B117-16 <i>Sec. 8.9 South Florida Weather Exposure</i> — ASTM G7/G7M-13
Specifications Requested	AAMA 2603-15 (D1010 Testing)

Sec. 8.1 Color Evaluation Testing (ASTM E1331-15)	
Equipment Used	X-rite i5, Hunter, D65 illumination, spectral component included, 10° observer

Color Evaluation Results				
Panel ID	Film Thickness	L*	a*	b*
23845 - 1	2.4-2.5 mils	25.68	0.13	-0.45
23845 - 2	2.8-3.1 mils	25.46	0.18	-0.35

Sec. 8.2 Gloss Testing (ASTM D523-14)	
Equipment Used	Byk-Gardener Multi-Tri Gloss meter

Gloss Results				
Panel ID	Film Thickness	20° Gloss	60° Gloss	85° Gloss
23845 - 1	2.4-2.5 mils	3.9	23.1	31.1
23845 - 2	2.8-3.1 mils	3.7	22.6	30.9

Sec. 8.3 Dry Film Hardness Testing (ASTM D3363-05(2011)e1)	
Equipment Used	Berol Turquoise Pencils
Requirements	No rupture of film at H

Dry Film Hardness Results			
Panel ID	Film Thickness	Visual Observation	Results
23845 - 1	2.4-2.5 mils	No rupture of film at H	Pass
23845 - 2	2.8-3.1 mils	No rupture of film at H	Pass

Sec. 8.4 Film Adhesion Testing (ASTM D3359-09e2)	
Description of Method	Dry Adhesion - 2mm Crosshatch
	Wet Adhesion - 2mm Crosshatch plus 24 hour water immersion at 38°C
	Boiling Water Adhesion - 2mm Crosshatch plus 20 minute boiling water immersion
Tape Used	Elcometer 99
Requirements	No loss of adhesion (0% loss)

Dry Adhesion Results			
Panel ID	Film Thickness	Visual Observation	Results
23845 - 1	2.4-2.5 mils	0% Loss of Adhesion	Pass
23845 - 2	2.8-3.1 mils	0% Loss of Adhesion	Pass

Wet Adhesion Results			
Panel ID	Film Thickness	Visual Observation	Results
23845 - 3	2.4-2.8 mils	0% Loss of Adhesion	Pass
23845 - 4	2.3-2.5 mils	0% Loss of Adhesion	Pass

Boiling Water Adhesion Results			
Panel ID	Film Thickness	Visual Observation	Results
23845 - 5	2.5-2.7 mils	0% Loss of Adhesion	Pass
23845 - 6	2.9-3.5 mils	0% Loss of Adhesion	Pass

Sec. 8.5 Impact Testing (ASTM D2794-93 (2010))	
Description of Method	Impact with sufficient force to deform the sample a minimum of 3mm. Perform tape pull on the deform area and observe for adhesion loss.
Equipment Used	Gardner Impact Tester, 5/8" indenter, 4 lb. weight
Tape Used	Elcometer 99
Requirements	No removal of film from substrate

Impact Results			
Panel ID	Film Thickness	Visual Observation	Results
23845 - 7	2.1-2.5 mils	No removal of film from substrate	Pass
23845 - 8	2.3-2.5 mils	No removal of film from substrate	Pass

Sec. 8.7 Chemical Resistance Testing (AAMA 2603-15)	
Chemicals Used	Muriatic Acid, Mortar, and Detergent
Muriatic Acid Requirements	No blistering and no visual change in appearance
Mortar Requirements	No loss of film adhesion or visual change in appearance
Detergent Requirements	No loss of adhesion, blistering, or significant visual change in appearance

Muriatic Acid Resistance Results			
Panel ID	Film Thickness	Visual Observation	Results
23845 - 9	2.8-3.1 mils	No blistering or change in appearance	Pass
23845 - 10	2.8-3.0 mils	No blistering or change in appearance	Pass

Mortar Resistance Results			
Panel ID	Film Thickness	Visual Observation	Results
23845 - 11	2.4-2.8 mils	No loss of film adhesion or change in appearance	Pass
23845 - 12	2.5-2.7 mils	No loss of film adhesion or change in appearance	Pass

Detergent Resistance Results			
Panel ID	Film Thickness	Visual Observation	Results
23845 - 13	2.4-2.6 mils	No loss of adhesion, blistering, or change in appearance	Pass
23845 - 14	2.4-2.8 mils	No loss of adhesion, blistering, or change in appearance	Pass

Sec. 8.8.1 Humidity Testing (ASTM D2247-15)	
Test Duration	1512 Hours
Frequency of Evaluation	504 Hours
Type of Scribe	None
Method of Evaluation	Visual
Blister Evaluation	ASTM D714-02 (2009)
Requirements	Blister Failure - > Few #8

Humidity Results			
Panel ID	Film Thickness	Blister Rating	Results
23845 - 15	2.9-3.2 mils	Few #8	Pass
23845 - 16	2.3-2.6 mils	No Change (10)	Pass

Sec. 8.8.2 Salt Spray Testing (ASTM B117-16)	
Test Duration	1512 Hours
Frequency of Evaluation	504 Hours
Type of Scribe	Vertical
Method of Evaluation	Elcometer 99 Tape
Blister Evaluation	ASTM D714-02 (2009)
Requirements	Undercut Failure - < Rating of 7
	Blister Failure - > Rating of 8 (>3%)

Salt Spray Results				
Panel ID	Film Thickness	Undercut Rating	Blister Rating	Results
23845 - 17	2.6-2.8 mils	No Change (10)	No Change (10)	Pass
23845 - 18	2.3-3.0 mils	No Change (10)	No Change (10)	Pass

Sec. 8.9 South Florida Weather Exposure Testing (ASTM G7/G7M-13)	
Test Duration	1 Year
Description of Method	Expose samples at 45 degree angle facing South
Requirements	No checking, crazing or loss of adhesion after taping and only a slight chalking and slight fading

*Testing was performed by Q-Lab

1 Year South Florida Weather Exposure Results			
Sample ID	Film Thickness	Observations	Results
23845 - 19	2.6-3.0 mils	No checking, crazing or loss of adhesion; slight fading	Pass
23845 - 20	2.8-2.9 mils	No checking, crazing or loss of adhesion; slight fading	Pass
23845 - 21	2.5-2.6 mils	No checking, crazing or loss of adhesion; slight fading	Pass
23845 - 22	2.5-2.6 mils	No checking, crazing or loss of adhesion; slight fading	Pass
23845 - 23	2.6-2.8 mils	No checking, crazing or loss of adhesion; slight fading	Pass
23845 - 24	2.6-2.9 mils	No checking, crazing or loss of adhesion; slight fading	Pass

*Testing was performed by Q-Lab

Appendix: Extract of Florida Weathering Data

AAMA2603-20 South Florida Exposure

Weathering exposure of coatings in Southern Florida(at a 45°angle facing south) is one of the requirements in AAMA2603-20. After 1 years of exposure in accordance with ASTM G7/G7M, coating should maintain its film integrity, color and gloss retention, chalking resistance properties.

There shall be no checking, crazing or loss of adhesion after taping and only slight chalking and slight fading.

Test results of representative products have been presented in following pages. Tests have been conducted by QLab. Sample ID versus specimen number information is provided below:

Sample ID	Specimen Number
23843-19	23843-4514
23843-20	23843-4515
23843-21	23843-4516
23843-22	23843-4517
23843-23	23843-4518
23843-24	23843-4519
23845-19	23845-4520
23845-20	23845-4521
23845-21	23845-4522
23845-22	23845-4523
23845-23	23845-4524
23845-24	23845-4525

Color Reports:



INSTRUMENTAL COLOR REPORT

Q-Lab Test Services

This inspection report contains only findings and results arrived at after employing the specific test procedures listed in the Test Confirmation. It does not constitute a recommendation for, endorsement of, or certification of the product or material tested. Q-Lab Test Services makes no warranty, expressed or implied, except that the test has been performed, and a report prepared, based upon the specimen or specimens furnished by the client. Extrapolation of data from the specimen or specimens relating to the batch or lot from which it was obtained may not correlate and should be interpreted accordingly with extreme caution. We assume no responsibility for variations in quality, composition, appearance, performance, or other feature of similar subject matter produced by other persons or under conditions over which we have no control. This report shall not be reproduced except in full without the written approval of Q-Lab Test Services.

CLIENT: Akzo Nobel Coatings
ADDRESS: 150 Columbia Street
Reading, PA 19601

TEST NO: MOR-416
REPORT NO: 1
DATE: 1 December 2017
DATE EXPOSED: 1 December 2016
DURATION: 12 Months
TYPE: Direct Inland, 45° South-Florida
SPECIMENS: 12 Painted metal panels

CONTENTS: Cover Sheet: Page 1
Report: Page 2

RADIATION LOG: TOTAL = 6,473.10 MJ/m²
TUVB = 322.17 MJ/m²

NOTES: Please refer to the legend on our website located at www.myweathertest.com for an explanation of the values and scales used in this report.

The bottom half of each specimen was washed with deionized water prior to evaluation.

Inspected By: Marie Jones *Marie Jones*

W = Washed UW = Unwashed

Approved By: Ana Garcia *Ana Garcia*

COLOR DATA INFORMATION:
INSTRUMENT: X-Rite Color i7 (d/8° sphere)
COLOR SCALE: Hunter L,a,b
ILLUMINANT: D85
OBSERVER: 10°
SPEC. IN/OUT: Included

TEST NO: MOR-416

REPORT NO: 1

DATE: 1 December 2017

Specimen ID	Original			Present			Difference			E	Delta	
	L	a	b	L	a	b	L	a	b		C	H
23843-4514-W	27.03	0.28	0.68	28.75	0.18	0.66	-0.28	-0.08	-0.02	0.29	-0.04	0.07
23843-4515-W	27.16	0.22	0.65	28.80	0.19	0.68	-0.36	-0.03	0.03	0.36	0.02	0.04
23843-4516-W	27.10	0.25	0.63	28.83	0.17	0.64	-0.27	-0.08	0.01	0.28	-0.02	0.08
23843-4517-W	27.13	0.23	0.64	28.82	0.22	0.65	-0.31	-0.01	0.01	0.31	0.01	0.01
23843-4518-W	27.05	0.25	0.66	28.73	0.19	0.65	-0.32	-0.06	-0.01	0.33	-0.03	0.05
23843-4519-W	27.08	0.22	0.64	28.88	0.21	0.67	-0.20	-0.01	0.03	0.20	0.03	0.02
23845-4520-W	21.88	0.14	-0.33	21.13	0.10	-0.40	-0.75	-0.04	-0.07	0.75	0.05	-0.06
23845-4521-W	21.95	0.11	-0.33	21.10	0.07	-0.40	-0.85	-0.04	-0.07	0.85	0.06	-0.06
23845-4522-W	21.86	0.13	-0.34	21.08	0.11	-0.36	-0.78	-0.02	-0.02	0.78	0.01	-0.03
23845-4523-W	21.89	0.15	-0.33	21.21	0.13	-0.35	-0.68	-0.02	-0.02	0.68	0.01	-0.03
23845-4524-W	21.96	0.12	-0.33	20.95	0.07	-0.37	-1.01	-0.05	-0.04	1.01	0.03	-0.06
23845-4525-W	21.47	0.18	-0.22	20.96	0.05	-0.33	-0.51	-0.13	-0.11	0.54	0.05	-0.16

Gloss Report:



INSPECTION REPORT

TEST NO: MOR-416

REPORT NO: 1

DATE: 1 December 2017

[illegible]