



# TruDurance

Architectural Powder Coatings

# User's Guide

AAMA 2603 9000 Series

AAMA 2604 10000 Series

AAMA 2605 11000 Series



# Table of Contents

<b>Chapter 1</b> Company Information .....	2
TCI Powder Coatings.....	2
RPM International.....	3
RPM Brands .....	4
<b>Chapter 2</b> Product Range and Descriptions .....	5
Product Range and Descriptions .....	5
Specification Comparison Chart.....	6
AAMA 2603-15 Description, Properties, & General Data Sheet .....	7
AAMA 2604-13 Description, Properties, & General Data Sheet .....	8
AAMA 2605-13 Description, Properties, & General Data Sheet .....	9
AAMA 2604 Independent Test Results .....	10-13
AAMA 2605 Independent Test Results .....	14 - 15
Storage Life Expectations .....	16
<b>Chapter 3</b> Maintenance .....	17
Maintenance & Corrosion .....	17 - 18
<b>Chapter 4</b> Specification Information.....	19
<b>Chapter 5</b> Technical Information .....	20
Sealants, Caulks And Mastics.....	20 - 24
Finish Repair Procedure.....	25 - 26
<b>Chapter 6</b> Approved Applicator Program .....	27
Approved Applicator Program Details .....	27 - 28



## TCI Powder Coatings

Our commitment to quality and service has helped us become an industry leader in powder coatings. Based in Ellaville, Georgia with a manufacturing facility in Canada and R&D Technology center in Jacksonville, Florida, our employees are committed to living up to our ISO Certification which we earned in 1997.

TCI has developed products to meet specific customer requirements for many years and as a result has developed extensive capabilities in the powder coating industry. We constantly strive to use only the best raw materials in the most beneficial way, develop new raw materials for demanding applications, and improve our manufacturing process. Our main priority is to develop, manufacture, and ship products that meet our customers' specifications and arrive on time.

**TCI is one of the Top 6 Powder Manufacturers in the US.**

**Certified to ISO 9001:2015**

**TCI Powder Coatings has been manufacturing powder coatings since 1987 and is a proud subsidiary of RPM since 1996. As an industry leader, we dedicate ourselves to developing innovative thermoset powder coatings and providing unparalleled service that delivers value to our customers.**

**TCI offers a full range of organic powder chemistries and innovative custom formulations. In addition, we offer custom color matching, complete small batch production, and internal metallic bonding capabilities.**





## RPM International - A World Leader in Specialty Coatings and Sealants

RPM International Inc., founded in 1947 is a multi-national holding company with subsidiaries that manufacture and market various specialty chemical product lines including high-quality specialty paints, protective coatings, roofing systems, sealants and adhesives for the maintenance and improvement needs of industrial and consumer markets.

Balance is a key factor behind RPM's long-standing success – a balance between its industrial and consumer segments, supported by a diverse product mix primarily focused on maintenance and repair; a balance in its growth strategy, between its internal growth initiatives and a fine-tuned acquisition program; and a growing balance in the geographic markets it serves.

RPM's nearly 50 businesses are balanced between its industrial and consumer units. Industrial products include roofing systems, sealants, corrosion control coatings, flooring coatings, specialty chemicals and recreational marine coatings. Consumer products include various paints, coatings, sealants and adhesives, and are used by professionals and do-it-yourselfers for home maintenance and improvement, automotive repair and maintenance, and by hobbyists. Together they represent a diverse portfolio of more than 800 distinct name brand products that sell to a wide variety of end-use markets helping to smooth the ebbs and flows of economic cycles. As a part of RPM, TCI benefits from this marketing balance providing stability for the long term.



## RPM Global Manufacturing Footprint

## Consumer Division 32%



- **Rust-Oleum:** No. 1 brand recognition and market share position in the U.S. and Canada in the rust-preventative, decorative, specialty and professional segments of the small-project paint category
- **DAP:** No. 1 brand recognition and market share position in North America for home improvement latex caulks and sealants and patch and repair products
- **Varathane:** No. 1 position in the Canadian clear wood finishes market, with strong and growing brand positioning in the U.S. market
- **Zinsser:** A leader in brand recognition and market share position in the U.S. market for specialty primers and sealers and wallcovering sundries.

\*Rankings based on market share

## Industrial Division 68%



- **Tremco:** No. 1 in the North American high-end institutional roofing market and No. 2 in the North American sealants market
- **Stonhard:** No. 1 global supplier of industrial, high-performance polymer flooring systems
- **Carboline:** No. 1 U.S. supplier and a leading global supplier of industrial, high-performance corrosion control coatings
- **Day-Glo:** No. 1 globally in the market for fluorescent colorants
- **Dryvit:** No. 1 North American supplier of exterior insulating finishing systems
- **illbruck:** Leading European supplier of high-performance sealants and window and door installation systems for the construction industry



## Product Range & Descriptions

TCI has developed product technologies which meet the AAMA Specifications 2603-15, 2604-13, and 2605-13. Each product category offers choices in color, gloss, and cure responses that are characteristic to the technology. The performance requirements for the application will determine which technology to specify.

As a general guide, residential and some commercial applications specify AAMA 2603-15. Commercial and architectural developments specify AAMA 2604-13 and AAMA 2605-13. Monumental and prestigious commercial projects specify AAMA 2605-13.

The weathering requirement of AAMA Specification 2603-15 permits the utilization of standard durable and (SD) super durable polyesters, including colors formulated with high performance organic pigments.

Products developed for meeting AAMA 2604-13 are formulated with select SD polyesters. Product color selection and pigmentation is more limited than 2603-15.

Products developed for meeting AAMA 2605-15 are formulated with thermoset fluoropolymer. The color selection available for these products is limited to inorganic pigmentations.

The following chart compares products specifications allowing a quick overview of AAMA specification requirements.



## Specification Comparison Chart

Test Parameter	9000 Series AAMA 2603-15	10000 Series AAMA 2604-13	11000 Series AAMA 2605-13
	1-Year	5-Year	10-Year
Pretreatment	Multi stage cleaning and pretreatment system	Multi stage cleaning and pretreatment system, chrome and non-chrome	Multi stage cleaning and pretreatment system, chrome and non-chrome
Pretreatment Coating Weight	None specified	Chrome 30mg/ft <sup>2</sup> minimum	Chrome 40mg/ft <sup>2</sup> minimum
Film Thickness	2-4 mils	2-4 mils	2-4 mils
Repairability	See film touch up and repair procedures		
Sealant Compatibility	Meet performance requirements of AAMA 800 sealant specification		
Hardness	H-2H	H-2H	H
	Values represent TCI product characteristics		
Dry Adhesion	No loss of adhesion		
Wet Adhesion	No loss of adhesion		
Boiling Water Adhesion	No loss of adhesion		
Impact Resistance	No film removal on min. 3 mm deformation		
Abrasion Resistance	N/A	Abrasion coefficient ≥ 20 min	Abrasion coefficient ≥ 40 min
Muratic Acid	No change after 15 minute spot test		
Mortar Resistance	No adhesion loss or appearance change after 24 hour pat test		
Nitric Acid Resistance	N/A	5 DE max color change after 30 min. vapor exposure	
Detergent	No change or adhesion loss after 72 hour immersion		
Window Cleaner	N/A	No change or adhesion loss after 24 hour spot test	
Humidity Resistance	1,500 hours: no more than "few" blisters size 8, figure #4 ASTM D 714	3,000 hours: no more than "few" blisters size 8, figure #4 ASTM D 714	4,000 hours: no more than "few" blisters size 8, figure #4 ASTM D 714
Salt Spray Resistance	1,500 hours of salt solution: minimum rating of 7 on scribe or cut edges: minimum blister rating of 8 in the field (ASTM D 1654) ASTM D 714	3,000 hours of salt solution: minimum rating of 7 on scribe or cut edges: minimum blister rating of 8 in the field (ASTM D 1654)	2000 hours of cyclic corrosion per ASTM G85, Annex 5: minimum rating of 7 on scribe or cut edges: Minimum blister rating of 8 in the field (ASTM D 1654)
Outdoor Resistance	1 year south Florida: maintain film integrity; no adhesion loss slight chalking or fading	5 years south Florida: maintain film integrity; 5 DE (Hunter) maximum color change; chalking (ASTM D 4214) ≤ 8; gloss retention ≥ 30%; erosion resistance less than 10% film loss	10 years south Florida: maintain film integrity; 5 DE (Hunter) maximum color change; chalking (ASTM D 4214) ≤ 8; gloss retention ≥ 50%; erosion resistance less than 10% film loss

\* Warranties vary with formula and are available for TCI certified applicators.

## AAMA 2603-15 Description And Properties

The weathering performance requirement of this AAMA specification, 7.8.1.1, can be met by most standard durable polyester or super durable polyester products. Polyesters can be cured with TGIC or Primid . The weathering requirement (one year South Florida exposure) is moderate and makes available an almost unlimited selection of colors, for example; high chroma colors in a range of yellows, oranges and reds.

Products are offered in a variety of surface textures and a wide range of gloss and bake schedules. Metallics and pearlescents are available and can be used with or without a clear topcoat. Clear topcoats will help guard against aluminum oxidation in environments where oxidizing cleaners or chemicals are used, or can be present. Custom formulas can be developed for unique performance properties or application requirements.

## AAMA 2603-15 General Data Sheet

### Powder Properties:

- Particle size: optimized according to formula characteristics.
- Specific Gravity: 1.2-1.7
- Storage and Shelf Life: see TCI Product Storage Requirements.
- Cure Schedule (metal Temperature): 10 min./400°F

### Film Properties:

- Gloss: 5% - 95%
- Film Thickness: 2-4 mils. Certain environments may require heavier mil thickness for better barriers to corrosive conditions. Textures require heavier films due to the variable film topography.
- Hardness: H-2H

### Resistance Properties:

Resistance properties can be influenced by stability of aluminum alloy, substrate preparation, film thickness and degree of cure. To achieve best results the aluminum substrate should be mill finish architectural grade, prepared according to sb 5.4 of AAMA 2603-15, film thickness 2-4 mils and the product cured completely.

TEST	AAMA 2603-13 METHOD	RESULT
Dry Adhesion:	7.4.1.2	No Film Removal
Wet Adhesion	7.4.1.3	No Film Removal
Impact	7.5.1	No Film Removal
Chemical resistance	7.6	
Muriatic Acid	7.6.1.1	No visual change
Mortar Resistance	7.6.2.1	No visual change
Detergent Resistance	7.6.3.1	No visual change
Humidity	7.7.1.1	Pass 1500 hours
Salt Spray	7.7.2.1	Pass 1500 hours
Weathering	7.8.1.1	One year South Florida



## AAMA 2604-13 10000 Series Description and Properties

The weathering requirements of this specification require super durable polyesters and selected high performance pigments. Color selection is more limited due to the weathering limitations of high chroma pigments. Products are available in a variety of surface appearances. There is a wide latitude in gloss and cure schedule. Aluminum metallics are available with a clear topcoat sometimes required for appearance stability. Pearlescents can be used without a clear topcoat, but for improved appearance stability a clear topcoat is

### AAMA 2604-13 General Data Sheet

**Powder Properties:**

- Particle size: optimized according to formula characteristics.
- Specific Gravity: 1.2-1.7
- Storage and Shelf Life: see TCI Product Storage Requirements.
- Cure Schedule (metal temperature): 12 min./400°F

**Film Properties:**

- Gloss: 30% - 90%+
- Film Thickness: 2-4 mils. Certain environments may require heavier mil thickness for better barriers to corrosive conditions. Textures require heavier films due to the variable film topography.
- Hardness: F-2H

**Resistance Properties:** Resistance properties can be influenced by stability of aluminum alloy, substrate preparation, film thickness and degree of cure. To achieve best results the aluminum substrate should be mill finish architectural grade, prepared according to 7.0 of AAMA 2604-13, film thickness 2-4 mils and the product cured completely.

TEST	AAMA 2604-13 METHOD	RESULT
Dry Adhesion	8.4.1.1	No Film Removal
Wet Adhesion	8.4.1.3	No Film Removal
Boiling Water Adhesion	8.4.1.4	No Film Removal
Impact	8.5.1	No Film Removal
Abrasion Resistance	8.7	ACV 20 min.
Chemical Resistance		
Muriatic Acid	8.7.1	No visual change
Mortar Resistance	8.7.2	No visual change
Nitric Acid resistance	8.7.3	< 5 DE color change
Detergent Resistance	8.7.4	No visual change
Window Cleaner	8.7.5	No visual change or adhesion loss
Humidity Resistance	8.8.1	Pass 3000 hours
Salt Spray Resistance	8.8.2	Pass 3000 hours
Weathering	8.9	
Color Retention	8.9.1.2	Max 5 DE
Chalk Resistance	8.9.1.3	< No. 8. ASTM D 4214
Gloss Retention	8.9.1.4	>30% gloss retention
Erosion Resistance	8.9.1.5	<10% film loss

## AAMA 2605-13 11000 Series Description And Properties

TCI utilizes a thermosetting fluoropolymer to meet the demanding weathering and resistance requirements of this specification. Color selection is limited by the pigments that can perform at this level of durability. Aluminum metallics and pearlescents finishes are available with a clear topcoat.

### AAMA 2605-13 General Data Sheet

#### Powder Properties:

Particle Size: optimized according to formula characteristics.

Specific Gravity: 1.2-1.7

Storage and Shelf Life: see TCI Product Storage Requirements.

Cure Schedule: (metal temperature): 12 min./400°F

#### Film Properties:

Gloss: 35% - 80%

Film Thickness: 2-4 mils. Certain environments may require heavier mil thickness to provide a better barrier to corrosive conditions which can be met with a primer recommended for the specific application. Textures require heavier films due to the variable film topography.

Hardness: Pass F

Resistance Properties: Resistance properties can be influenced by stability of aluminum alloy, substrate preparation, film thickness and degree of cure. To achieve best results the aluminum substrate should be mill finish architectural grade, prepared according to sb 7.0 of AAMA 2605-13, film thickness 2-4 mils and the product cured completely.

TEST	AAMA 2605-13 METHOD	RESULT
Dry Adhesion	8.4.1.1	No Film Removal
Wet Adhesion	8.4.1.3	No Film Removal
Boiling Water Adhesion	8.4.1.4	No Film Removal
Impact	8.5.1	No Film Removal
Abrasion Resistance	8.7	ACV 40 min.
Chemical Resistance		
Muriatic Acid	8.7.1	No Visual Change
Mortar Resistance	8.7.2	No Visual Change
Nitric Acid Resistance	8.7.3	< 5 DE color change
Detergent Resistance	8.7.4	No Visual Change
Window Cleaner	8.7.5	No Visual Change
Humidity Resistance	8.8.1	Pass 4000 hrs.
Cyclic Corrosion Testing	8.8.2	Pass 2000 hrs G-85 A-5
Weathering	8.9	
Color Retention	8.9.1.2	Max 5 DE
Chalk Resistance	8.9.1.3	< No. 8 colors, No. 6 whites ASTM D 4214
Gloss Retention	8.9.1.4	> 50% Gloss Retention
Erosion Resistance	8.9.1.5	< 10% film Loss

AAMA 2604-13 Independent Test Results

## DALLAS LABORATORIES, INC.

Consultants and Technologists  
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AMERICAN SOCIETY OF METALS

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AMERICAN NATIONAL STANDARDS INSTITUTE  
AMERICAN SOCIETY FOR QUALITY CONTROL  
REGISTRATION OF SOCIETIES FOR COATINGS TECHNOLOGY

Submitted by: TCI Powder Coatings  
734 Dixon Drive  
Ellaville, GA 31808

Date: July 31, 2015

Report No.: 47877-2  
P.O. No.: A65463

**REPORT**

**Sample:**  
Organic Coated aluminum extrusions  
Coating: 10010-923702604 (C-10234835) Ref #150941  
Production Date: unknown  
Cure: unknown  
Pre-treatment: unknown  
Drawing: 4x8 aluminum panels

**A. PROCEDURE**  
Submitted sample was tested for informational purposes according to AAMA 2604-13, "Voluntary Specification, Performance Requirements and Test procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels," Section 8.1 through 8.8.2 with the following results:

**B. REPORT**

<u>Test</u>	<u>Results</u>	<u>AAMA 2604-13 Specification Requirements</u>
8.1 Color Uniformity	Standard	Standard
8.2 Specular Gloss	3.9	As reported
8.3 Dry Film Hardness	Pass F	F hardness and no film rupture
8.4 Film Adhesion		
8.4.1.1 Dry	Pass	No Loss of Adhesion
8.4.1.2 Wet	Pass	No Loss of Adhesion
8.4.1.3 Boiling Water	Pass	No removal of film from substrate
8.5 Impact Resistance	Pass	No removal of film from substrate

THE ANALYSIS OF THE ABOVE SAMPLE OR SAMPLES DO NOT IMPLY AN ENDORSEMENT. THIS REPORT OR ANY PART THEREOF MAY NOT BE REPRODUCED OR USED FOR ADVERTISING PURPOSES WITHOUT OUR EXPRESS WRITTEN CONSENT.

TCI Powder Coatings  
 July 31, 2015  
 Page 2 – Report No. 47887-2

<u>Test</u>	<u>Results</u>	<u>AAMA 2604-13 Specification Requirements</u>
8.6 Abrasion Resistance	Pass (> ACV 20)	ACV 20 minimum
8.7 Chemical Resistance		
8.7.1 Muriatic Acid	Pass	No Blistering or Visible Change
8.7.2 Mortar	Pass	No Blistering or Visible Change
8.7.3 Nitric Acid	Pass (Delta E = 0.23)	Hunter Delta E=5 maximum
8.7.4 Detergent	Pass	No Film Adhesion Loss or Visible Change
8.7.5 Window Cleaner Resistance	Pass	No blistering or noticeable change in appearance and no film loss
8.7 Corrosion Resistance		
8.8.1 Humidity	Pass (No Blisters)	Not greater than Few & No. 8
8.8.2 Salt spray Scribe Field	Pass 7 10	7 Minimum rating 8 Minimum rating

Date Testing Started: 3/20/15

Date Testing Completed: 7/29/15

Date Test Report Expires: N/A

Sampled by: N/A

Testing Conducting At: Dallas Laboratories, Inc., 1323 Wall St., Dallas, Texas 75215.

The test results indicate that the sample tested for informational purposes is in compliance with all of the performance requirements of AAMA 2604-13 for High Performance Organic Coatings on Aluminum Extrusions and Panels, except for section 8.9 WEATHERING which must be furnished by the coating supplier for full compliance to AAMA 2604-13 as specified by AAMA.

DALLAS LABORATORIES, INC.



Karan W. Jones, Vice President

Analyst: GF  
 KWJ/js

# DALLAS LABORATORIES, INC.

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AMERICAN SOCIETY FOR QUALITY CONTROL  
FEDERATION OF SOCIETIES FOR COATINGS TECHNOLOGY

Submitted by: TCI Powder Coatings  
734 Dixon Dr.  
Ellaville, GA 31806

Date: March 6, 2015

Attn: Tony Myrick

Report No.: 47486-1  
P.O. No.: A66717

## REPORT

### Sample:

Coated aluminum extrusions  
Paint: 10012-91616  
Production Date: unknown  
Cure: unknown  
Pre-treatment: unknown  
Drawing: unknown

### A. PROCEDURE

Submitted sample was tested for informational purposes according to AAMA 2604-13, "Voluntary Specification, Performance Requirements and Test procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels," Section 8.1 through 8.8.2 with the following results:

### B. REPORT

<u>Test</u>	<u>Results</u>	<u>AAMA 2604-13 Specification Requirements</u>
8.1 Color Uniformity	Standard	Standard
8.2 Specular Gloss	4.4	As reported
8.3 Dry Film Hardness	Pass F	F hardness and no film rupture
8.4 Film Adhesion		
8.4.1.1 Dry	Pass	No Loss of Adhesion
8.4.1.2 Wet	Pass	No Loss of Adhesion
8.4.1.3 Boiling Water	Pass	No removal of film from substrate
8.5 Impact Resistance	Pass	No removal of film from substrate

THE ANALYSIS OF THE ABOVE SAMPLE OR SAMPLES DO NOT IMPLY AN ENDORSEMENT. THIS REPORT OR ANY PART THEREOF MAY NOT BE REPRODUCED OR USED FOR ADVERTISING PURPOSES WITHOUT OUR EXPRESS WRITTEN CONSENT.

TCI Powder Coatings  
 February 13, 2015  
 Page 2 – Report #47486-1

<u>Test</u>	<u>Results</u>	<u>AAMA 2604-13 Specification Requirements</u>
8.6 Abrasion Resistance	Pass (> ACV 20)	ACV 20 minimum
8.7 Chemical Resistance		
8.7.1 Muriatic Acid	Pass	No Blistering or Visible Change
8.7.2 Mortar	Pass	No Blistering or Visible Change
8.7.3 Nitric Acid	Pass (Delta E = 0.18)	Hunter Delta E=5 maximum
8.7.4 Detergent	Pass	No Film Adhesion Loss or
8.7.5 Window Cleaner Resistance	Pass	No blistering or noticeable change in appearance and no film loss
8.7 Corrosion Resistance		
8.8.1 Humidity	Pass (No Blisters)	Not greater than Few & No. 8
8.8.2 Salt spray	Pass	
Scribe	9	7 Minimum rating
Field	10	8 Minimum rating

Date Testing Started: 10/21/14

Date Testing Completed: 3/6/15

Date Test Report Expires: N/A

Sampled by: N/A

Testing Conducting At: Dallas Laboratories, Inc., 1323 Wall St., Dallas, Texas 75215.

The test results indicate that the sample tested is in compliance with all of the performance requirements of AAMA 2604-13 for High Performance Organic Coatings on Aluminum Extrusions and Panels, except for section 8.9 WEATHERING which must be furnished by the coating supplier for full compliance to AAMA 2604-13 as specified by AAMA.

DALLAS LABORATORIES, INC.



Kevan W. Jones, Vice President

Analyst: GF  
 KWJ/je

AAMA 2605-13 Independent Test Results

## DALLAS LABORATORIES, INC.

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Chemical and Petroleum Chemists

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AMERICAN SOCIETY FOR QUALITY CONTROL  
FEDERATION OF SOCIETIES FOR COATING TECHNOLOGY

Submitted by: TCI Powder Coatings  
9655 Florida Mining Blvd W #311  
Jacksonville, FL 32257

Date: August 13, 2016

Attn: Jack Slade

Report No.: 47801  
P.O. No.: A67417

**REPORT**

**Sample:**

Organic Coated aluminum extrusions  
Coating: 11000 Series JS-1787-3  
Production Date: unknown  
Cure: unknown  
Pre-treatment: unknown  
Drawing: Panels

**A. PROCEDURE**

Submitted sample was tested for informational purposes according to AAMA 2605-13, "Voluntary Specification, Performance Requirements and Test procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels," Section 8.1 through 8.8.2, with the following results:

**B. REPORT**

<u>Test</u>	<u>Results</u>	<u>AAMA 2605-13 Specification Requirements</u>
8.1 Color Uniformity	Standard	Standard
8.2 Specular Gloss	31.9	As reported
8.3 Dry Film Hardness	Pass F	F hardness and no film rupture
8.4 Film Adhesion	Pass	
8.4.1.1 Dry	None	No removal of film from substrate
8.4.1.2 Wat	None	No removal of film from substrate
8.4.1.3 Boiling Water	None	No removal of film from Substrate

THE ANALYSIS OF THE ABOVE SAMPLE OR SAMPLES DO NOT IMPLY AN ENDORSEMENT. THIS REPORT OR ANY PART THEREOF MAY NOT BE REPRODUCED OR USED FOR ADVERTISING PURPOSES WITHOUT OUR EXPRESS WRITTEN CONSENT.

TCI Powder Coatings  
 August 13, 2016  
 Page 2 – Report No. 47801

<u>Test</u>	<u>Results</u>	<u>AAMA 2605-13 Specification Requirements</u>
8.5 Impact Resistance	Pass None	No removal of film from substrate
8.6 Abrasion Resistance	Pass	ACV 40 minimum
8.7 Chemical Resistance	Pass	
8.7.1 Muriatic Acid	None	No Blistering or Visible Change
8.7.2 Mortar	None	No Blistering or Visible Change
8.7.3 Nitric Acid	Pass (Delta E = 0.11)	Hunter, Delta E = 5 maximum
8.7.4 Detergent	None	No Film Adhesion Loss or Visible Change
8.7.5 Window Cleaner Resistance	None	No blistering or noticeable change in appearance and no film loss
8.8 Corrosion Resistance	Pass	
8.7.1 Humidity	(No Blisters)	Not greater than Few & No. 8
8.8.2 Salt spray	Pass	
Scribe	9	7 Minimum rating
Field	10	8 Minimum rating

Date Testing Started: 2/24/15

Date Testing Completed: 8/13/15

Date Test Report Expires: N/A

Sampled by: N/A

Testing Conducted at: Dallas Laboratories, Inc., 1323 Wall St., Dallas, TX 75215

The test results indicate that the sample tested for informational purposes is in compliance with all of the performance requirements of AAMA 2605-13 for Superior Performing Organic Coatings on Aluminum Extrusions and Panels, except for section 8.9 WEATHERING which must be furnished by the by the coating supplier for full compliance to AAMA 2605-13 as specified by AAMA.

DALLAS LABORATORIES, INC.



Kevin W. Jones, Vice President

Analyst: GF  
 KWJ: js



## Product Storage Requirements And Storage Life Expectations

These comments apply to uncured powder coatings as sold. Product storage life depends upon the storage conditions. When stored properly, the storage life should be more than six months from receipt. Experience has shown that many products can remain useful for periods of up to several years. Proper storage requirements include keeping product at temperatures less than 80°F (26.7°C) with the relative humidity in the 40% - 60% range. Store product in a cool, dry, well ventilated area away from heat, ignition sources, and direct sunlight. Keep containers tightly closed. Protect from physical damage. Do not expose product to damp or wet conditions. Avoid contaminating product during storage and use. Following these guidelines will optimize product storage life and application performance. Generally, older product is often usable if it displays good fluidization. Agglomeration and chunking indicate the product has deteriorated. Questionable product should be application/performance tested to confirm acceptability before use.



## Maintenance

Aluminum surfaces coated with TCI architectural coating products need to be maintained properly to optimize the appearance and performance of the coating during the product service life. Proper coating maintenance is needed to keep coating warranty protection in force. Coating maintenance involves regular monitoring, cleaning, and damage repair. Surface cleaning removes accumulated materials that can affect the appearance and/or undermine the integrity of the coating. Preventing corrosion of the aluminum substrate is key to preserving coating integrity in the field.

## Corrosion

Chemical and electrochemical reactions are involved in the corrosion of metals. Strongly acidic and base materials can be highly corrosive to aluminum. Aluminum also corrodes rapidly when exposed to seawater. Surface compositional variation, stresses, and morphological structure are factors leading to contiguous areas on a metal surface with different electrode potentials. In the presence of a conductive solution (electrolyte) these areas function as the anode and cathode in a galvanic cell. In this situation the anode will corrode because it has the lower potential. Two dissimilar metals with different electrical potential behave similarly. The anodic metal with the lower potential corrodes. This behavior can be observed on multi-metal assemblies, for example when fasteners with a higher potential are used on aluminum the aluminum will corrode around the fastener.

For the protection of aluminum the coating must have good barrier characteristics with regard to water, salt

and other corrosive chemicals. The coating must also have sufficient wet adhesion to resist the displacement forces of water which permeates the film profile.

For coatings to obtain good wet adhesion the substrate must be prepared prior to application of the coating. The powder coating, of course, has to be applied and cured as prescribed by TCI. Properly prepared substrate is (1) free of dirt, grit, oils and other soils, salts, and oxidation products, and (2) pretreated with a proven chrome or non-chrome pretreatment system.



## Maintenance

Powder coated architectural aluminum surfaces must be properly maintained in service to keep the powder coating product performance warranty valid. An effective preventive maintenance program is the responsibility of the warrantee. Program effectiveness depends on cleaning the coated surface often enough to keep it substantially free of harmful agents. Regular cleaning will increase coating longevity. The required cleaning frequency is determined by the types and amounts of corrosive materials actually accumulating on the coated aluminum. Coated surfaces in the field must be inspected often until a satisfactory cleaning schedule is established for the application. For coastal installations the cleaning frequency may need to be as often as once a month. Furthermore, significant events like storms may necessitate unscheduled cleanings.

AAMA Specification 609 & 610-02 Cleaning and Maintenance Guide for Architecturally Finished Aluminum gives detailed information on methods, equipment and materials applicable for cleaning and maintenance and can be found at [www.aamanetstore.org](http://www.aamanetstore.org).

Maintenance program effectiveness also depends on prompt damage repair and repair from mechanical processes during installation or post processing of coated parts. Damage to the coating which exposes the substrate eliminates the barrier protection the intact coating provides. Resistance to

corrosion at the damaged area is then dependant only on the coating metal/interface and wet adhesion properties. Any areas damaged during transportation, installation or service use should be repaired according to procedures found in the repair section of the TCI AAMA User's Guide.

Maintenance activities need to begin as part of the installation process. Construction soils should be removed as soon as possible, and any film damage should be repaired promptly. The types and accumulation rates of any corrosive materials should be documented and used for developing the cleaning frequency schedule. Minimum required maintenance cleaning is once a year (twice a year in high exposure environments) with documentation of dates, cleaning agents used and method of application.

Methods for cleaning the coating depend on the characteristics any of surface soil. Use water and mild soap or detergent with a soft brush or sponge for light surface soils. For medium to heavy soils a mild solvent, such as mineral spirits, can be used for removal of grease, sealants or caulking compounds. Spot testing should be performed first to insure there is no coating damage or staining from cleaning materials. Aggressive cleaners can be used only sparingly after spot testing. Strong solvents, abrasive cleaners or hard pads and brushes can cause film damage.

It is preferable for cleaning and repair procedures to be performed when coated surfaces are not hot from sun exposure. Avoid rundown of cleaning materials to other



## Specification Information

There are different levels of performance of architectural grade powder coatings and it is very important to specify the correct grade of TCI powder coatings to meet requirements of any architectural application. The selected powder grade must be applied by a TCI certified applicator.

**The following includes important components that should be included in an architectural specification.**

1. The AAMA standard required.
2. Aluminum alloy to be coated.
3. Powder coating manufacturer and address:  
TCI Powder Coatings, PO Box 13, Ellaville, GA 31806;
4. TCI product code.
5. Maintenance recommendations.
6. Protection of coating during installation.
7. Tender information: Powder manufacturer, powder product number and description, and approved applicator name and address.



## Sealants, Caulks And Mastics

Sealant products required for post processing and assembly of powder coated aluminum can be selected from the Tremco line of architectural products. Included are sealants, application instructions, and representative product data sheets. Tremco samples, technical literature and selection guide can be ordered from Tremco at [www.tremcosealants.com/commercial/order/asp](http://www.tremcosealants.com/commercial/order/asp).

**TREMCO**

**Spectrem® 3**

Non-Staining, Long Tooling Time, Low-Modulus Silicone Sealant



**Product Description:**

A general-purpose, low-modulus, high-performance, one-part, neutral-curing, non-staining, construction-grade silicone sealant.

**Basic Uses:**

Spectrem 3 has been formulated to offer exceptional physical properties, making it ideal for sealing dynamically moving joints associated with material having a high coefficient of linear expansion such as EIFS, aluminum curtain walls, metal panels and window perimeters. This patented formula has extended the tooling time at high temperatures. Spectrem 3 provides high performance capabilities and the unique ability to apply in bulk over a broad temperature range.

**Limitations:**

- Do not apply to damp or contaminated surfaces.
- Use with adequate ventilation.

**Packaging:**

1/12 gallon (300mL) cartridges, 20.3 oz. (600mL) sausages, 2 gallon (7.6 L) and 4.5 gallon (17 L) pails and 55 gallon (208.2 L) drums.

**Standard Colors:**

Aluminum Stone, Anodized Aluminum, Black, Bronze, Gray, Limestone, Off White, Precast White, White

**Applicable Standards:**

Conforms to ASTM C920 Type S, Grade NS, Class 50, use NT, G, M, A and O and CAN/CGSB-19.13-M87, U.S. Federal Specification TT-S-00230 Class A, and U.S. Federal Specification TT-S-001543A Class A, ASTM C1382, EIMA Test Method 300.01

**INSTALLATION**

**Joint Design:**

May be used in any joint designed in accordance with accepted architectural/engineering practices. Joint width should be 4 times anticipated movement, but not less than 1/4 inch (6.4mm) wide.

**Joint Dimensions:**

For joints 1/4 inch (6.4mm) to 1/2 inch (12.7mm) wide, the width to depth ratio should be equal. Joints 1/2 inch (12.7mm) wide or greater should have a depth of 1/2 inch

(12.7mm). Minimum joint size 1/4 inch by 1/4 inch (6.4mm by 6.4mm).

**Surface Preparation:**

For good adhesion, the joint interface must be sound, clean and dry. Depending on the substrates, the joint surface may require a thorough wire brushing, grinding, sand-blasting, solvent washing and/or primer.

**Tooling & Cleaning:**

Tooling is recommended immediately after application to ensure firm, intimate contact with the joint interface. Dry tooling is preferred. Cleaning can be accomplished with solvents such as IPA or MEK while sealant is in an uncured state.

**Joint Backing**

**Bond Breaking Tape:** Closed cell polyethylene backer rods are preferred as joint backing to control depth of sealant bead. Where depth of joint will prevent use of joint backing, an adhesive backed polyethylene tape should be installed to prevent three-sided adhesion. Joint backing must be dry at time of sealant application.

**SEALANT-WATERPROOFING & RESTORATION INSTITUTE**

Issued to: Tremco Incorporated  
Product: Spectrem 3 Silicone Sealant

C719: Pass  Ext: +50% Comp: 50%

Substrate: Aluminum, Mortar, Glass  
*(Mortar substrates primed with Tensil Silicone Porous Primer.)*

C861: Rating 2D

Validation Date: 3/30/07 - 3/29/12

No. 307-S3S312 Copyright © 2007

**SEALANT VALIDATION**  
[www.swrionline.org](http://www.swrionline.org)

**Application:**

Spectrem 3 is easy to apply with conventional caulking equipment. Fill joint completely and tool. At 75°F (23.9°C), 50% R.H. tooling time is 1 hour.

**Maintenance:**

Damaged sealant can be repaired. Consult your Tremco Distributor or Representative for repair procedures.

**Availability:**

Immediately available from your local Tremco Field Representative, Tremco Distributor or Tremco Warehouse.

**Warranty:**

Tremco warrants its Sealants to be free of defects in material. But makes no warranty as to appearance or color. Since method of application and on-site conditions are beyond our control and can affect performance, Tremco makes no other warranty, expressed or implied, including warranties of MERCHANTABILITY and FITNESS FOR A PARTICULAR PURPOSE, with respect to Sealants. Tremco's sole obligation shall be at, its option, to replace or to refund the purchase price of the quantity of Sealant proved to be defective and Tremco shall not be liable for any loss or damage.

<b>TYPICAL PHYSICAL PROPERTIES</b>		
<b>As Supplied:</b>		
ASTM C-679	Tooling Time	60 minutes
ASTM C-510 (TT-S-001543A)	Stain and Color change	None
ASTM C-719	Joint movement capability Extension Compression	±50%
<b>As Cured: After 14 days at 25°C (77°F) and 50% R.H.</b>		
ASTM C-661	Hardness; Shore "A" After 14 days at 25°C (77°F).	15
ASTM D-412	Tensile Strength at Max Elongation 100% Modulus	110-130 psi 30-35 psi
ASTM D-624	Tear Strength (die "C")	25-30 pli min.
ASTM C-794	Peel Strength Aluminum, Glass, Concrete Temperature Range	25-35 pli min. -40°F to +300°F
<p><b>NOTE:</b> The foregoing information is published as general information only. The listed properties and performance characteristics are approximate values and are not part of the product specification.</p>		

### Adhesion Characteristics:

Adhesion characteristics with and without Primer 10 have been evaluated for the following Tremco Sealants: Spectrem® 1, Spectrem® 2, Spectrem® 3/4, Proglaze® II, Proglaze® SSG, Tremsil® 600, Proglaze®, and Tremsil® 200

Sealants were tested on high gloss and reduced gloss AAMA 2605, high gloss and reduced gloss TGIC-Polyester AAMA 2604, and high gloss and reduced gloss non-TGIC-Polyester AAMA 2604.

Contact TCI for specific adhesion test results.

# TREMCO Application Instructions

## Tremco Sealants

### SURFACE PREPARATION

The sealant joint is no better than the surface to which it is attached.

All of the rules for joint preparation come down to a few words...it must be dry and clean.

### MASONRY

Concrete surfaces must be fully cured, clean and dry; curing aids and form release agents removed, if necessary, by sandblasting or grinding. Loose dust must be thoroughly brushed off.

If curing or form release agents have been used, run test to determine their effect on adhesion of sealant. Concrete surfaces are often wet, either from retained water or rain. Surface may appear dry and still contain too much moisture for a good bond. If this is the case, flame drying may be called for, or washing with water miscible solvents such as methyl ethyl ketone (MEK). A discussion of this problem will be found below in the section on handling of wet concrete joint.

### GLASS, PORCELAIN, TILE, ETC.

Excellent seals can be made to glass and other surfaces. Absolute cleanliness is needed.

Surfaces must be cleaned by a material such as methyl ethyl ketone, dried well, and then sealed. Protection from oil and fingerprints is important. Solvents used must be clean and free of oil.

### WOOD

Tremco Sealants will adhere well to new, dry wood. If surface has been painted, it must be cleaned. Woods such as oak contain oil which dries out very slowly. This type of wood may require use of primer. If wood is oil bearing, bond may develop slowly.

Wood in painted wood is of no more value than the bond of the paint to the wood. Sealants will adhere to paint, but if possible, paint should be scraped away to expose the wood.

### METAL

Seals can be made to steel, stainless steel, aluminum, brass or bronze, and most other metals.

The surface should be wire brushed and solvent cleaned. Protective varnishes should be removed unless they are very firmly adhered. Baked finishes are usually as good as clean metal, but must be oil and wax free.

Oxide films such as old aluminum, and some types of "rusted finish" steel, present some problems. Surfaces should be freed of all loose particles and cleaned as well as possible before priming. Grinding is preferred, if possible. Solvents such as paint thinner will remove grease and oil, but care must be taken to prevent redeposition from the solvent. It should be clean (not re-used) and applied liberally and wiped off with a clean rag.

The rough, clean surface from wire brushing is very good for adhesion. It should be solvent wiped but not polished.

Extreme care must be taken to expose clean metal on a metal-to-metal wall joint. These surfaces are usually dirty and since they are not directly exposed, a simple brushing is not enough. A cleaning tool which can apply some force should be used.

### BACKING MATERIALS

Since many joints are deeper than 1/2" (12.7 mm), (maximum usable depth for a sealant, usually 1/4" (6.4 mm) is all that is necessary), a backing or filler is needed to control sealant depth.

### APPLICATION

After joint is clean and dry, and the backing is properly placed, sealing can begin.

Sealants can be applied by gun or knife. Two considerations must be kept in mind:

- a. Fill opening from bottom up or out; entrapped air is not a sealant.
- b. Use some force to help the sealant wet the surface.

Sealed joint should not bulge out from excess material, but be slightly concave.



# TREMCO Application Instructions

Non-sag or standard type sealant will do a very poor job of "wetting" to a rough surface such as concrete unless some force is applied. Even under the best application conditions, the area of contact to concrete is probably less than 50%. Tooling will not be as effective on concrete as initial pressure since tooling cannot eliminate small surface bubbles.

Vertical joints must be backed to the proper depth and the sealant forced against the sides by some technique as described above. Freehand filling of unbacked vertical joints will lead to serious problems.

## WET OR FRESH CONCRETE JOINTS

Since Tremco Sealants are cured by moisture and the reaction of water or moisture vapor with this type of material is rather complex, a detailed consideration of joints in wet concrete is necessary, with the understanding, Tremco does not recommend applying sealants to wet surfaces.

The reaction of moisture with the active component of the uncured sealant can result in formation of the desired polymer by a reaction which leads to the simultaneous development of  $CO_2$  with the consequent formation of swelled and unsightly joints. This "blowing" reaction takes place at temperatures of 90°F (32°C) and above and is greatly dependent on the amount of water and sealant present. If large joints in wet porous concrete must be prepared, care must be taken to minimize these bubbles which cause an unsightly swelling of the joint. The quality of the polymer does not depend upon a gas-free cure.

Sealants cure primarily from the top down or from the outside in. Gas formation is greatly reduced if thickness of sealant is kept below 1/4" (6.4 mm). If sealant layer is 1/4" (6.4 mm) or less, much of the gas is diffused to the atmosphere. If joints are prepared as described, a minimum of difficulty will be encountered. Joints made under adverse conditions should be properly backed up so that minimum thickness of sealant is exposed to the concrete surface. If the joint must have physical strength or penetration resistance, a firm backing material can be used with no reduction in joint quality.

Various techniques for making laminated joints have

been developed for the construction of watertight and level expansion seals in concrete. These must be considered in terms of the specific job to be done.

If the concrete slab is partially sealed, either by a membrane below or a sealing coat on top, or both, special consideration must be given to the fact that an unusual pressure of water may be developed in the sealed slab.

## APPLICATION TEMPERATURE (WINTER WORK)

Water on surface to be sealed prevents the liquid from forming proper bond and interferes with proper adhesion of the sealant. At temperatures near or below freezing, an invisible film of ice is usually found on exposed surfaces. It is impossible to form a bond under these conditions.

When work must be done at temperatures below freezing, the most acceptable technique is flame drying of the joint and application of the material while temperature is still above 40°F (4°C). This presents complications since a long run preparation is not possible.

Heavy applications of water miscible solvent such as methyl ethyl ketone will assist in removal of ice and cold moisture. Of these solvents, methyl ethyl ketone is the only one acceptable in the case of Tremco Sealants.

Successful cold weather installations have been carried out and, while difficult, winter caulking is not impossible. Horizontal joints using self-leveling materials are easily made by following precautions and vertical joints with non-sag materials can be successfully constructed if care is taken.

## REPAIRS

Tremco Sealants will adhere to clean surfaces of similar material and damaged areas may be cut out and replaced. Primer is needed if new seal is to old sealant surface which has been cut clean.

When resealing joints which have been sealed by use of hydrocarbonaceous sealers such as asphalt or pitch, it is essential that all of this material be removed and a clean surface be exposed and primed.

Various types of minor repairs in seals can be repaired with Tremco Sealants; but these facts must be remembered: 1) All surfaces must be clean. 2) If narrow joints





# TREMCO Application Instructions

are filled, the possible large percentage expansion must be considered. 3) Pressure against the surfaces is necessary.

## STORAGE

All materials should be stored in a cool, dry location 60-80°F (15-27°C), prior to use.

Opened cans will probably set up unless closed promptly after material is removed, and sealed tightly.

The seals in Tremco Sealant cans and cartridges are the best available and will usually hold for long periods of time. The worst possible condition is cycling temperature which causes breathing action into any air space. Avoid exposure of the sealant at high temperatures. If five gallon or larger containers are used, they should be kept sealed by follower plates or other filling devices.

## TOOLING

The surface of a sealant joint may be tooled or smoothed in order to obtain a better appearance. This tooling also has a favorable effect on obtaining seating of the sealant against the walls of the cavity.

In order to obtain as smooth a surface as possible, the finishing tool should be wet with solvent. Because of the nature of the Tremco Sealants, this solvent must not be alcohol, but toluene or xylene is highly successful.

Taping sides of joint is recommended in any case where an extremely accurate match to the edge is desired. The tape can be removed without difficulty any time up to four hours after application of sealant.

## TECHNICAL SERVICE

Local Tremco representatives are available to instruct the applicator in the use of Tremco Sealants. It is our policy to assist in the initial use of our sealants whenever possible, since the outstanding properties of urethane sealants are best achieved by a full understanding of proper application techniques.

## CURING

Most Tremco Sealants are "one-part" materials. These urethane materials cure by reaction with the moisture

of the air. They cure fastest in hot, moist air, slowest in cold, dry air.

Under normal conditions, 40%-70%RH, and 50°-80°F (10°-20°C), the exposed surface of sealants will "skin" overnight and will cure in 48-72 hours. After this length of time, cure is complete; but adhesion is only partially developed. The adhesion bond does not achieve its maximum strength for two to four weeks. Samples tested after several hundred hours of weatherometer exposure have better adhesion than the originals.

The cure of one-part material is greatly affected by temperature and humidity. Under conditions of high temperature and high humidity, the cure may be extremely rapid. The most critical time is the second day, i.e; the time from 12-36 hours. If conditions are unfavorable, the cure will be too rapid after the skin has formed with resultant gas formation. If substrates are porous materials such as concrete or limestone, the excessive amount of moisture may accelerate curing still further with resultant swelling of the joints. The best solution to this is reduction in the amount of material present by use of a proper backing strip on top of the backing in horizontal joint.



## Finish Protection

Coated parts should be carefully packed and handled to prevent finish damage. Packaging tapes should not be applied directly to the painted surface. Parts should be separated by suitable packaging material to prevent finish abrasion during transportation. Use only low tack tapes for protective masking during installation or other processes. If adhesive remains after removal of the masking use nothing stronger than mineral spirits for removal. Contact tape supplier to insure masking tape will perform under the expected conditions, such as; duration of use, direct sunlight exposure, and service temperature.

## Finish Repair Procedure

While damage to the coating surface can detract from the visual appearance, damage to the substrate, or near the substrate, can eliminate or reduce the barrier protection that the intact coating provides. Resistance to corrosion at the damage-to-substrate area is then dependant only on the metal/coating interface and wet adhesion properties. Any areas damaged during transportation, installation, or service use should be repaired according to the following procedures.

### Materials:

#### Description

Acid Etch Primer

2 Component Epoxy Primer

Etch primer and epoxy primer  
for use on all products.

AAMA 2603-15, 2604-13\*,  
and 2605-13 topcoat:

2 Component Acrylic urethane  
topcoat

AAMA 2605-13 topcoat\*

2 component fluoropolymer  
topcoat

\*Use topcoats formulated to meet each AAMA specification.

Repair methods can be distinguished by the type of damage and determines the appropriate repair method:

1) cosmetic surface damage without exposure to the substrate, 2) coating damage that exposes the substrate.

**Repair Method #1: Cosmetic Surface Damage:** Clean surface with anti-silicone degreaser. Apply with lint free cloth and clean wipe with dry lint free cloth. Abrade all areas to be coated with 400-600 grit abrasive paper and remove sanding dust with lint free tack rag. Mask surrounding area to prevent overspray. Apply 3 coats of Acrylic urethane topcoat touch-up that has been matched for color and gloss to the existing coating.

**Repair Method #2: Areas Damaged Exposing The Substrate:** Clean surface with anti-silicone degreaser. Apply with lint free cloth and clean wipe with lint free cloth. Abrade bare substrate and surrounding area with 400-600 grit abrasive paper and remove sanding dust with lint free tack rag. Any oxidation of bare aluminum needs to be removed through sanding. Mask surrounding area to prevent overspray. Apply acid etch primer by brush to exposed aluminum only and allow to dry for specified period. Apply 2 component epoxy primer 1-2 coats, or to 3-4 wet mils, and allow specified dry time to topcoat. Apply 2 component topcoat 1-2 coats or to 3-4 wet mils.

Allow to dry, remove masking.



## Approved Applicator Program

Applicators receive a certification after a successful audit of the application system and the quality management system. Architectural coating appearance and longevity depends upon correct application combined with a quality management system to insure a high level of consistency. Upon certification the applicator will receive a warranty for the AAMA specification audited for. Coating properties that will be covered in the warranty are the weathering properties covered in each specification. For AAMA 2604-13 and 2605-13 the properties include; color retention, chalk resistance, gloss retention, erosion resistance. For AAMA 2603-15 the properties include checking, crazing, adhesion after taping, chalking and fading. The TCI AAMA warranty does not cover adhesion of the coating to the substrate because this property is dependant on the pretreatment, proper application and cure of the powder.



## Audit Description:

### Quality Management System

A quality system is necessary to achieve the level of quality required to pass the demanding AAMA specification on a consistent basis. Elements of a quality system which will be audited include:

- Presence and type of quality management system
- Document control
- Purchased material control
- Calibration
- Inspection and testing of coating properties
- Corrective action
- Non-conforming product
- Process control
- Identification and product traceability
- Storage, packaging, handling, shipping
- Internal audits, quality records and SPC
- Management review and involvement
- Continuous improvement

The TCI quality management team can assist applicators with program development or improvement in order to get certified.

## Application System

All components of the application system will be audited to insure that applied AAMA products will meet the performance requirements of each specification, including; substrate, pretreatment, application, curing and product testing.

The auditing process is performed by experienced field technicians who can provide recommendations when requested.

## Product And Process Testing

As part of the audit parts which are processed on the application system will be tested at TCI for corrosion performance according to the AAMA specification which the audit is for. Processed parts will also be tested for gloss, thickness, color, appearance, cure, dry adhesion, wet adhesion, and DI boiling water adhesion.

## Product Traceability

Production records and batch retain panels must be maintained for duration of warranty period. Information required includes: project name/ID, applicator name, application date, coating code and lot number, process QC records, coating QC records, line supervision signature and date. Retain panels must have similar cure profile as finished parts. Panels can be fastened to a representative part to insure similar curing profile.