



Hangzhou Ifo
Quality Testing
Co., Ltd.

Test Report

Referred to: AAMA 2603-22, Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels

Client: CIVRO Building Technology (Guangdong) Co., Ltd
No.3 Guandi Area, Fanhu, Leping, Sanshui Central Technology Park, Sanshui District, Foshan City, Guangdong, China

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The expanded measurement uncertainty is not taken into account in the conformity assessment unless otherwise agreed. Irrespectively, the measurement uncertainty is stated if possible.

Prepared by:  _____ **Reviewed by:**  _____

Approved by:  _____ **Date :** 2026-03-20 _____

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1 FORMULATION

The Institute was instructed by the client to perform the powder coating and all necessary tests acc. to AAMA 2603-22, Chapter 8.1 to 8.7.2.

1.1 Status and type of samples/sampling

<u>Label / No.:</u>	<u>Number:</u>	<u>Material / Surface:</u>
Test panel (140 x 70 x 1.0 mm)	50 pieces	Aluminum / ED coating Coating: Matte Electrodeposition Coating Color: Brown

The preparation of the aluminum samples was performed as follows:

Aluminium Profile: Aluminium Profile, EN AW-6063
(140 mm x 70 mm x 1.0 mm)

Pretreatment: Alternative Pretreatment: Anodic oxide film

Coating System: Supplier: Tian Jin AL-ONE Tech. Dev. Co., Ltd.
Product: Matte Electrodeposition Coating
Colors: Brown

Coater: Company: CIVRO Building Technology (Guangdong) Co., Ltd
Coating date: 2026-01-06

Date testing started: 2026-01-14
Date testing completed: 2026-03-19



2 TEST RESULTS

2.1 AAMA 2603-22, Chapter 8.1 – Color Uniformity

2.1.1 Procedure according to AAMA 2603-22, Chapter 8.1.2

- Check random samples visually under a uniform light source. Viewing should be done at multiple angles.

2.1.2 Requirements according to AAMA 2603-22, Chapter 8.1.3 and Results

- Color uniformity maximum deviation is $2 \Delta E$.

Sample:

Results:

Sample 1	0.25
Sample 2	0.35
Sample 3	0.42



2.2 AAMA 2603-22, Chapter 8.2 – Specular Gloss

2.2.1 Procedure according to AAMA 2603-22, Chapter 8.2.2

- Gloss measurement according to ASTM D 523 using a 60-degree gloss meter
- Samples must meet minimum dry film thickness requirements

2.2.2 Requirements according to AAMA 2603-22, Chapter 8.2.3 and Results

- Gloss values shall be within ± 5 units of the manufacturer's specification

<u>Sample:</u>	<u>Manufacturer's gloss specification:</u>	<u>Gloss value (60°):</u>	<u>Dry film thickness:</u>
Sample 1	8 GU	7 GU	70 μ m
Sample 2		7 GU	72 μ m
Sample 3		8 GU	73 μ m

2.3 AAMA 2603-22, Chapter 8.3 – Dry Film Hardness

2.3.1 Procedure according to AAMA 2603-22, Chapter 8.3.2

- Pencil hardness test according to ASTM D 3363

2.3.2 Requirements according to AAMA 2603-22, Chapter 8.3.3 and Results

- Grade H minimum hardness: No rupture of film according to ASTM D 3363

<u>Sample:</u>	<u>Results:</u>
Sample 1	Grade H: No rupture of film
Sample 2	Grade H: No rupture of film
Sample 3	Grade H: No rupture of film



2.4 AAMA 2603-22, Chapter 8.4 – Film Adhesion

2.4.1 Procedure according to AAMA 2603-22, Chapter 8.4.2

- Dry Adhesion and Tape Pull-Off according to AAMA 2603-22, Chapter 8.4.2.1
- Boiling Water Adhesion according to AAMA 2603-22, Chapter 8.4.2.2
- Wet Adhesion according to AAMA 2603-22, Chapter 8.4.2.3

2.4.2 Requirements according to AAMA 2603-22, Chapter 8.4.3 and Results

- Classification per ASTM D 3359:
 - Method A: X-Cut (if coating thickness > 125 µm): Level 4A or better
 - Method B: Cross-Cut (if coating thickness ≤ 125 µm): Level 4B or better

Sample:

Results:

Sample 1	Adhesion classification: Level 5B
Sample 2	Adhesion classification: Level 5B
Sample 3	Adhesion classification: Level 5B

2.5 AAMA 2603-22, Chapter 8.5 – Impact Resistance

2.5.1 Procedure according to AAMA 2603-22, Chapter 8.5.2

- Impact testing according to AAMA 2603-22, Chapter 8.5.2

2.5.2 Requirements according to AAMA 2603-22, Chapter 8.5.3 and Results

- No removal of film from substrate

Sample:

Results:

Sample 1	No removal of film
Sample 2	No removal of film
Sample 3	No removal of film



Detergent Resistance requirements according to AAMA 2603-22, Chapter 8.6.3:

Sample:

Results:

Sample 1	No loss of adhesion of the film, no blistering, no significant visual change in appearance
Sample 2	No loss of adhesion of the film, no blistering, no significant visual change in appearance
Sample 3	No loss of adhesion of the film, no blistering, no significant visual change in appearance

2.7 AAMA 2603-22, Chapter 8.7 – Corrosion Resistance

2.7.1 AAMA 2603-22, Chapter 8.7.1 – Humidity Resistance

2.7.1.1 Procedure according to AAMA 2603-22, Chapter 8.7.1.2

- Constant humidity test for 1,500 h according to ASTM D 2247

2.7.1.2 Requirements according to AAMA 2603-22, Chapter 8.7.1.3 and Results

- No formation of blisters to extent greater than “Few” blisters Size No. 8, as shown in ASTM D 714, Figure No. 4

- Sample: Results:

Sample 1	No blisters
Sample 2	No blisters
Sample 3	No blisters



2.7.2 AAMA 2603-22, Chapter 8.7.2 – Cyclic Corrosion test

2.7.2.1 Procedure according to AAMA 2603-22, Chapter 8.7.2.2

- Cyclic Corrosion test for 1000 h according to ASTM G85 Annex A5, dilute electrolyte cyclic fog/dry test using a 0.05% sodium chloride with 0.35% ammonium sulfate solution

2.7.2.2 Requirements according to AAMA 2603-22, Chapter 8.7.2.3 and Results

- Minimum rating of 7 on scribe or cut edges
- Minimum blister rating of 8 within the test specimen field

Sample:

Results:

Sample 1	Rating of failure at scribe: 10 Rating of unscribed areas: 10
Sample 2	Rating of failure at scribe: 10 Rating of unscribed areas: 10
Sample 3	Rating of failure at scribe: 10 Rating of unscribed areas: 10

3 RESULTS

The samples fulfill the requirements acc. to AAMA 2603-22, Chapter 8.1 up to 8.7.2.



4 IMAGE DOCUMENTATION

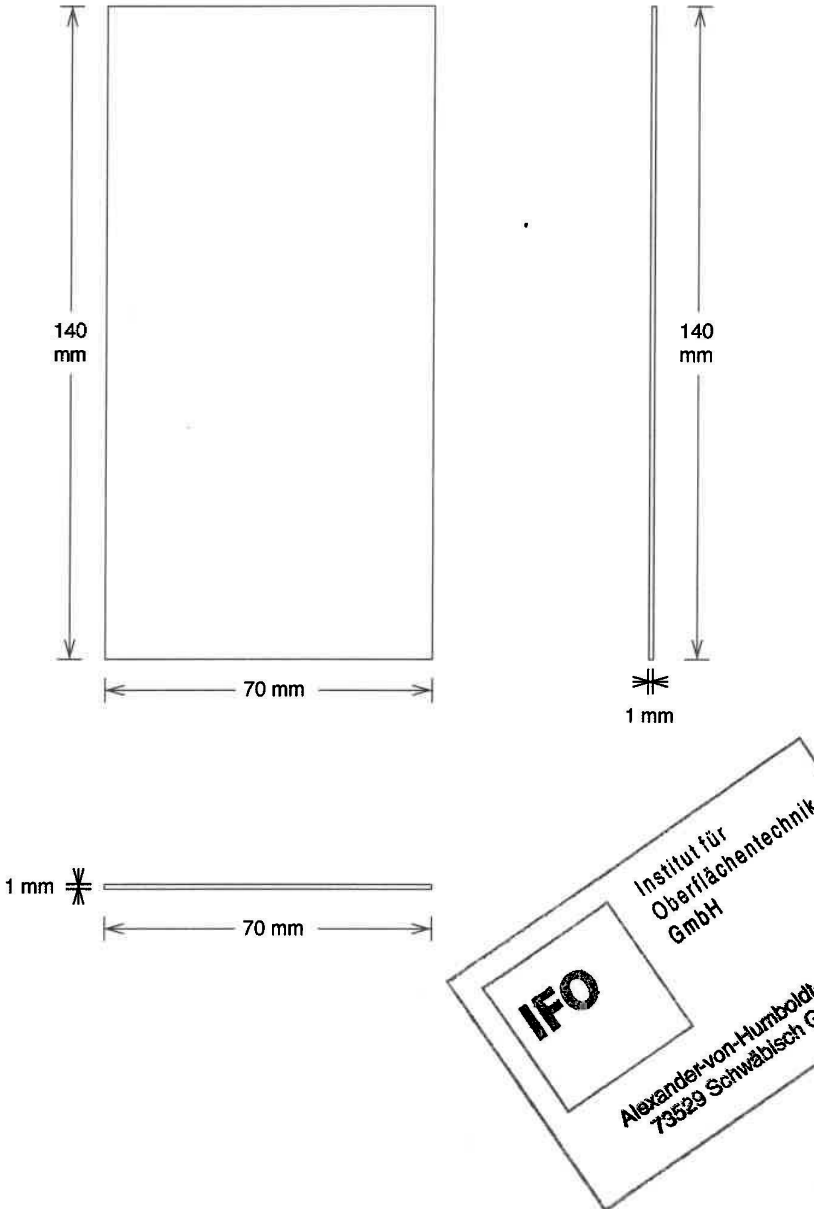
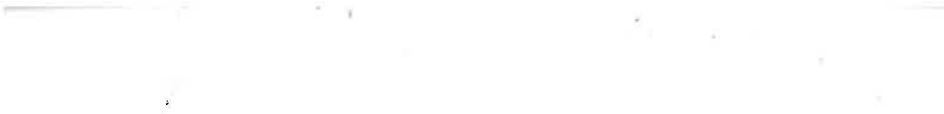


Figure 1 – Sample Drawing



Figure 2 – Samples for Color Uniformity and Specular Gloss and Dry Film Hardness test
(see Ch. 2.1 and 2.2: Tests acc. to AAMA 2603-22, Ch. 8.1&8.2&8.3)

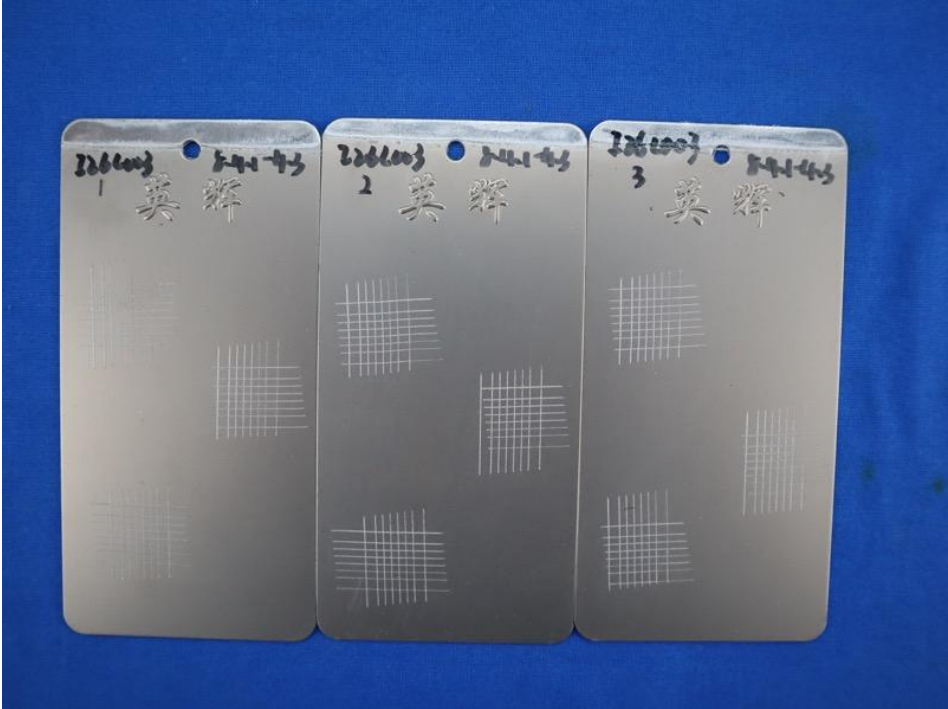


Figure 3 – Samples after Film Adhesion test
(see Ch. 2.4: Test acc. to AAMA 2603-22, Ch. 8.4)

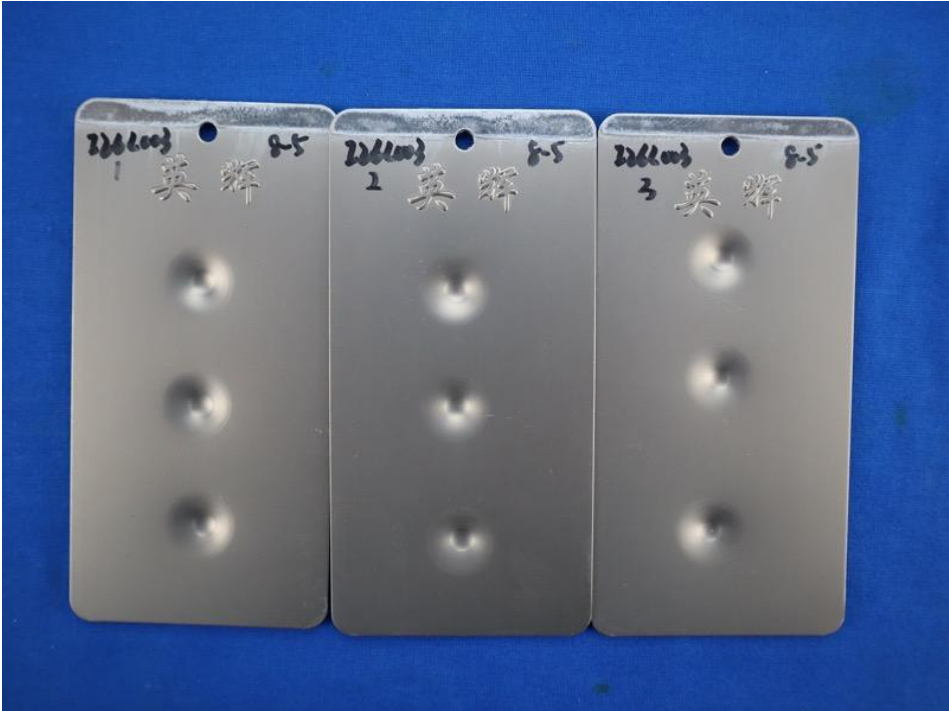


Figure 4 – Samples after Impact Resistance test
(see Ch. 2.5: Test acc. to AAMA 2603-22, Ch. 8.5)



Figure 5 – Samples after Muriatic Acid Resistance test
(see Ch. 2.6.1: Test acc. to AAMA 2603-22, Ch. 8.6.1)



Figure 6 – Samples after Mortar Resistance test
(see Ch. 2.6.2: Test acc. To AAMA 2603-22, Ch. 8.6.2)



Figure 7 – Samples after Detergent Resistance test
(see Ch. 2.6.3: Test acc. to AAMA 2603-22, Ch. 8.6.3)

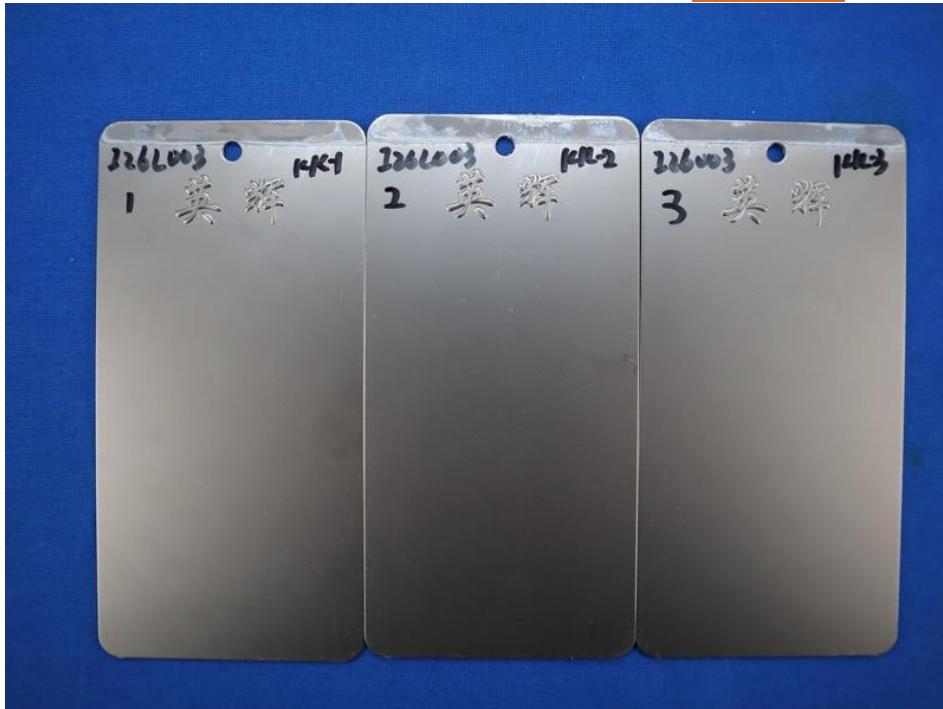


Figure 8 – Samples after Humidity Resistance test
(see Ch. 2.7.1: Test acc. to AAMA 2603-22, Ch. 8.7.1)

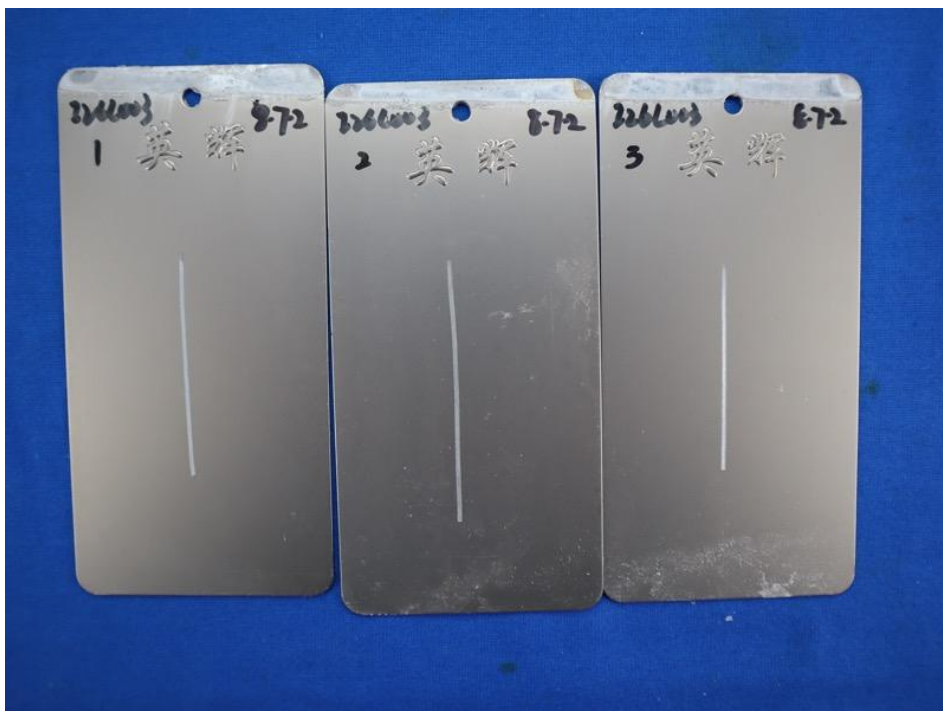


Figure 9 – Samples after Cyclic Corrosion test
(see Ch. 2.7.2: Test acc. to AAMA 2603-22, Ch. 8.7.2)

– End of Test Report –