Voluntary Specification for Corrosion Resistant Coatings on Carbon Steel Components Used in Windows, Doors and Skylights
TABLE OF CONTENTS

0.0 INTRODUCTION ..................................................................................................................................... 1
1.0 SCOPE .................................................................................................................................................... 1
2.0 SIGNIFICANCE AND USE ..................................................................................................................... 1
3.0 REFERENCED STANDARDS .................................................................................................................. 2
4.0 DEFINITIONS ......................................................................................................................................... 2
5.0 PERFORMANCE REQUIREMENTS ....................................................................................................... 2
6.0 TEST REPORT ....................................................................................................................................... 3
0.0 INTRODUCTION

0.1 The purpose of this specification is to establish the corrosion resistance of coatings on carbon steel components used in windows, doors, and skylights.

1.0 SCOPE

This specification covers requirements for corrosion resistant coatings on carbon steels used for hardware components in window, door, and skylight applications. The requirements are functional and are not intended to address aesthetics. Due to the diversity of corrosive environments that windows and doors are exposed to, this specification does not imply a specific service life.

Fasteners within hardware are included in the scope of this specification. Mounting fasteners (those that hold the hardware to the window, door, skylight product) are not included in the scope of this document.

1.1 Terminology

In this specification, “shall” is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with the specification; “shall be permitted to be” is used to express an option or that which is permissible within the limits of the specification; “should” is used to express a recommendation or that which is advised but not required; and “may” is used to express possibility or capability. Notes accompanying sections do not include requirements or alternative requirements; the purpose of a note accompanying a section is to separate explanatory or informative material from the text. Notes to tables and figures are considered part of the table or figure and shall be permitted to be written as requirements.

Section 0.0 and any Notes not attached to figures and tables are non-mandatory.

1.2 The primary units of measure in this document are metric. The values stated in SI units are to be regarded as the standard. The values given in parentheses are for reference only.

1.3 This document was developed in an open and consensus process and is maintained by representative members of FGIA as advisory information.

2.0 SIGNIFICANCE AND USE

2.1 To establish minimum levels of corrosion resistance of coatings for carbon steel components used in windows, doors and skylights.

2.2 Provide a standard method of evaluating corrosion resistance of coatings for carbon steel components.

2.3 Provide a means by which window, door and skylight manufacturers can specify corrosion resistant coatings for carbon steel components as required.
3.0 REFERENCED STANDARDS

3.1 References to the standards listed shall be to the edition indicated. Any undated reference to a code or standard appearing in the requirements of this standard shall be interpreted as referring to the latest edition of that code or standard.

3.2 AAMA, Fenestration and Glazing Industry Alliance (FGIA) Standards

AG-13, AAMA Glossary

3.3 ASTM International (ASTM)

ASTM B117-19, Standard Practice for Operating Salt Spray (Fog) Apparatus


ASTM B571-18, Standard Practice for Qualitative Adhesion Testing of Metallic Coatings

ASTM B663/B663M-16, Standard Specification for Silver-Tungsten Carbide Electrical Contact Material

ASTM D3359-17, Standard Test Methods for Measuring Adhesion by Tape Test

ASTM F1941, Standard Specification for Electrodeposited Coatings on Mechanical Fasteners, Inch and Metric

ASTM F2329, Standard Specification For Zinc Coating, Hot-Dip, Requirements For Application To Carbon And Alloy Steel Bolts, Screws, Washers, Nuts, And Special Threaded Fasteners


4.0 DEFINITIONS

Please refer to the most current AAMA Glossary for all definitions.

5.0 PERFORMANCE REQUIREMENTS

5.1 Adhesion

5.1.1 Metallic Coatings
The adhesion of the coating shall be such that when examined in accordance with any appropriate method described in ASTM B571, the coating shall not show separation from the steel component at the interface.

5.1.2 Nonmetallic Coatings

The adhesion of the coating shall be such that when examined in accordance with Method B of ASTM D3359, the coating shall achieve a rating of 3B or better.

5.2. Corrosion Resistance

5.2.1 The following coatings in Table 1 are acceptable if they comply with the indicated specification:

<table>
<thead>
<tr>
<th>Coating or Coating Material</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zinc Plating</td>
<td>ASTM B-633, Type II</td>
</tr>
<tr>
<td>Zinc Plating of threaded fasteners</td>
<td>ASTM F1941, Classification Code 8A (minimum)</td>
</tr>
<tr>
<td>Nickel &amp; Chrome Plating</td>
<td>ASTM B-456, Type SC3 (minimum)</td>
</tr>
</tbody>
</table>

Table 1: Corrosion Resistance Specification

5.2.2 Testing shall be conducted, for coatings other than those listed in 5.2.1, in accordance with ASTM B117. Parts shall withstand exposure for 300 hours without corrosion exceeding one spot visible to the unaided eye per one square inch of significant surface and without any spot larger than 1.6 mm (1/16 in) in diameter. Corrosion is defined as a breakdown of the base material, loss of adhesion of the coating or blistering of the coating. Significant surfaces are defined as surfaces openly visible and exposed once the component is installed (i.e. rotary operator components when in open or closed positions, bottom face and exposed portions of wheels of sliding door rollers, and all areas excluding mounting faces for friction hinges).

5.3 Galvanic Corrosion

ASTM G82 defines a Galvanic Series for predicting galvanic corrosion performance. Additional protective coatings, alternate fastener materials, or non-conductive isolation shall be used when the components are comprised of materials that are shown by Figures 1 and 2 of ASTM G82 to have a corrosion potential difference. If materials are known to have galvanic reaction potential, observe and document the steps taken to prevent components from a galvanic reaction.

6.0 TEST REPORT

6.1 The test report shall include the following:

6.1.1 Full description of samples tested (series, model, size, etc.).
6.1.1.1 Description of tested samples into one or more of the following categories:

- Coated test panels
- Component parts
- Functional assemblies cycled under load prior to ASTM B117 testing
- Other test configurations

6.1.2 Hardware Components manufacturer names.

6.1.3 Date(s) of test.

6.1.4 Name and identification of testing organization.

6.1.5 Photographs of test specimens before and after testing