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Metal finishing — Thermoset powder coatings for architectural applications of aluminium and aluminium alloys



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Australian Paint Manufacturers Federation
Bureau of Steel Manufacturers of Australia
CSIRO
Engineers Australia
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Materials Australia
National Painting and Decorating Institute
The Australasian Corrosion Association Incorporated

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Preface

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee MT-009, Metal Finishing, to supersede AS 3715:2002.

The objective of this document is to provide technical guidance for architects, engineers, fabricators, builders, owners, the surface coating industry, and all users of powder coatings applied on architectural aluminium and aluminium alloy products.

The major changes in this edition are as follows:

(a) Clarification of pretreatment and powder coating terms and definitions.

(b) Product selection and classification guide.

(c) New designation classification of different powder coatings.

(d) Powder coating systems suitability determined by atmospheric exposure.

(e) Guide to appearance criteria (acceptance/rejection).

(f) Updating advances in pretreatment requirements.

(g) Clarification of testing methods for conformance (normative).

The terms “normative” and “informative” are used in Standards to define the application of the appendices to which they apply. A “normative” appendix is an integral part of a Standard, whereas an “informative” appendix is only for information and guidance.

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Introduction

Thermoset powder coatings are used as both a functional (protective) and decorative finish and are available in a range of colours, gloss and textures. Advances in technologies and systems have necessitated a review and update of the specifications relevant for Australian conditions, which are some of the most aggressive in the world.

In developing this document, cognizance was taken of the following documents or specifications recognized as industry best practice, including:

(a) American Architectural Manufacturers Association (AAMA) in the US:

AAMA 2603 *Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminium Extrusions and Panels* (with Coil Coating Appendix)

AAMA 2604 *Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminium Extrusions and Panels* (with Coil Coating Appendix)

AAMA 2605 *Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminium Extrusions and Panels* (with Coil Coating Appendix)

(b) EN 12206-1, *Paints and varnishes, Coating of aluminium and aluminium alloys for architectural purposes. Part 1: Coatings prepared from thermosetting coating powder.*

(c) Qualicoat Specification. The requirements of this document are compatible with the quality plan and the quality assurance requirements contained in the Qualicoat Specification for a quality label for paint, lacquer and powder coatings on aluminium for architectural applications.

(d) Australasian Institute of Surface Finishing (AISF) Quali-Sure™ Accredited Powder Coater. The performance requirements of this Standard form the basis of undertaking work including —

(i) selection of an appropriate powder coating system suitable for the installed location;

(ii) the correct preparation of aluminium substrates;

(iii) application of and stoving of thermoset powder coatings; and

(iv) associated testing to verify conformance the AISF's Accredited Powder Coater program for architectural aluminium applications.

By following this document, all stakeholders can specify and obtain factory applied powder coatings that will provide and maintain a high level of performance in terms of film integrity, weatherability and appearance over the service life of the coating.

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NOTES

Australian Standard®

Metal finishing — Thermoset powder coatings for architectural applications of aluminium and aluminium alloys

1 Scope and general

1.1 Scope

This document sets out test procedures and specifies performance requirements for various types of thermoset powder coatings that are factory applied to aluminium and aluminium alloy substrates intended for architectural applications.

Non-architectural aluminium and all castings are covered by AS 4506.

This document applies to thermoset powder coatings for interior and exterior architectural uses.

NOTE 1 Appendix A contains advice and recommendations on information which should be supplied by the purchaser at the time of enquiry or order.

NOTE 2 Information on weathering performance of powder-coated aluminium products is given in Appendix B.

NOTE 3 Information on maintenance and repair of coatings is given in Appendix C.

NOTE 4 Advice on handling and temporary protection during transportation and installation is given in Appendix D.

1.2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document.

NOTE Documents referenced for informative purposes are listed in the Bibliography.

AS 1199, *Sampling procedures and tables for inspection by attributes (all parts)*

AS 1580.408.2, *Paints and related materials—Method of test, Method 408.2: Adhesion—Knife test*

AS 1580.408.4, *Paints and related materials—Methods of test, Method 408.4: Adhesion (crosscut)*

AS 1580.481.3, *Paints and related materials—Method of test, Method 481.3: Coatings—Exposed to weathering—Degree of corrosion of coated metal substrates*

AS 1580.483.1, *Paints and related materials – Methods of test, Method 483.1: Resistance to artificial weathering (Carbon-arc type instruments)*

AS 1627.6, *Metal finishing—Preparation and pretreatment of surfaces, Part 6: Chemical conversion treatment of metals*

AS 1745.1, *Outdoor weathering of plastics in the Australian environment, Part 1: Commercial products*

AS 2312.1, *Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings, Part 1: Paint coatings*

AS 2313.1.1, *Methods of test for single sided and double sided pressure-sensitive adhesive tape, Method 1.1: Adhesion – Peel adhesion*

AS 2331.3.2, *Method of test for metallic and relating coatings, Method 3.2: Corrosion and related property tests—Acetic acid salt spray test (ASS test)*

AS 2331.3.8, *Method of test for metallic and relating coatings, Method 3.8: Corrosion and related property tests—Humidity test—24 h cycle, damp heat*

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