



Designation: A 755/A 755M – 01

Standard Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products¹

This standard is issued under the fixed designation A 755/A 755M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This specification covers steel sheet metallic coated by the hot-dip process and coil-coated with organic films for exterior exposed building products. Sheet of this designation is furnished in coils, cut lengths, and formed cut lengths. Building products include corrugated and various types of roll and brake-formed configurations.

1.2 The substrate is available in several different metallic-coated steel sheet products as enumerated in 4.1, depending on the requirements of the purchaser.

1.3 Coating systems supplied under this specification consist of a primer coat covered by various types and thicknesses of top coats. The combination of primer and top coat is classed as either a two-coat thin-film system or as a two-coat (or more) thick-film system. Typical top-coating materials are: polyester, silicone polyester, acrylic, fluoropolymer, plastisol, or polyurethane.

1.4 This specification is applicable to orders in either inch-pound units (as A 755) or SI units [as A 755M]. Values in inch-pound units and SI units are not necessarily equivalent. Within the text, SI units are shown in brackets. Each system shall be used independently of each other.

1.5 Unless the order specifies the “M” designation (SI units) the product shall be furnished to inch-pound units.

1.6 The text of this specification references notes and footnotes that provide explanatory material. These notes and footnotes, excluding those in tables and figures, shall not be considered as requirements of this specification.

1.7 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

- A 463/A 463M Specification for Steel Sheet, Aluminum-Coated, by the Hot-Dip Process²
- A 653/A653M Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process²
- A 792/A792M Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process²
- A 875/A875M Specification for Steel Sheet, Zinc-5 % Aluminum Alloy Coated by the Hot-Dip Process²
- A 902 Terminology Relating to Metallic Coated Steel Products²
- A 924/A 924M Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process²
- B 117 Practice for Salt Spray (Fog) Testing³
- D 522 Test Methods for Mandrel Bend Test of Attached Organic Coatings⁴
- D 523 Test Method for Specular Gloss⁴
- D 659 Method for Evaluating Degree of Chalking of Exterior Paints⁵
- D 714 Test Method for Evaluating Degree of Blistering of Paints⁴
- D 822 Practice for Conducting Tests on Paint and Related Coatings and Materials Using Filtered Open-Flame Carbon-Arc Light and Water Exposure Apparatus⁴
- D 870 Practice for Testing Water Resistance of Coatings Using Water Immersion⁴
- D 1654 Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments⁴
- D 1735 Practice for Testing Water Resistance of Coatings Using Water Fog Apparatus⁴
- D 2244 Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates⁴

¹ This specification is under the jurisdiction of ASTM Committee A05 on Metallic-Coated Iron and Steel Products and is the direct responsibility of Subcommittee A05.11 on Sheet Specifications.

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² Annual Book of ASTM Standards, Vol 01.06.

³ Annual Book of ASTM Standards, Vol 03.02.

⁴ Annual Book of ASTM Standards, Vol 06.01.

⁵ Discontinued. See 1990 Annual Book of ASTM Standards, Vol 06.01.



D 2247 Practice for Testing Water Resistance of Coatings in 100 % Relative Humidity⁴
D 3363 Test Method for Film Hardness by Pencil Test⁴
2.2 *National Coil Coaters Association (NCCA) Standards:*⁶
NCCA II-4 Test Method for Measurement of Dry Film Thickness of Paint, Varnish, Lacquer, and Related Products—Film Thickness of 0.3 Mil or Greater
NCCA II-10 Specification for Measurement of Adhesion and Flexibility by the Wedge Bend
NCCA II-12 Specification for Determination of Relative Pencil Hardness
NCCA II-13 Specification for Microscopic Determination of Coating Thickness
NCCA II-18 Specification for Evaluation of Solvent Resistance by Solvent Rub Test
NCCA II-19 Standard “T” Bend Test Method
NCCA II-23 Test Method for Determination of Adhesion and Flexibility by the Draw Method
NCCA III-1 Standard Method for Water Immersion Test of Organic Coatings on Metallic Surfaces
NCCA III-2 Standard Method of Salt Spray (Fog) Testing
NCCA III-3 Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments
NCCA III-4 Standard Method for Water Fog Testing of Organic Coatings
NCCA III-6 Standard Method for Condensation-Humidity Testing of Organic Coatings on Metallic Surfaces
NCCA III-7 Standard Method for “Dew-Cycle” Accelerated Weatherometer Testing
NCCA III-8 Standard Method for Measuring Chalk Resistance of Exterior Coil Coatings

3. Terminology

3.1 Definitions:

3.1.1 *Substrate*—For definitions of terms relating to the substrate, see Terminology A 902.

3.1.2 Coatings:

3.1.2.1 *acrylic, n*—a polymer based on resins prepared from a combination of acrylic and methacrylic esters, acrylic and methacrylic acids, and styrene; they contain one or more functional groups such as amide, hydroxy, or carboxy and form thermosetting systems on baking by cross-linking with themselves, or amino or epoxy resins.

3.1.2.2 *conversion coating, n*—a chemical treatment, normally applied to a metal surface prior to final finishing, which is designed to react with and modify the metal to produce a surface suitable for painting.

3.1.2.3 *epoxy, n*—polymers based on epoxy resins, which are the reaction product of epichlorohydrin and biphenol-A and are cross-linked with amino or urea-formaldehyde resins to form thermosetting systems on baking.

3.1.2.4 *fluorocarbon, n*—polymers based on fluorocarbon resins made by the polymerization of vinyl fluoride monomer (PVF) or vinylidene fluoride monomer (PVF₂); these resins are

formulated into coatings by dispersion of finely divided particles in dispersants and diluents and form thermosetting systems on baking.

3.1.2.5 *plastisol, n*—a dispersion of finely divided vinyl resin in plasticizers; during the baking process, the resin particles are solvated by the plasticizer and fuse into a continuous film.

3.1.2.6 *polyester, n*—a polymer based on the condensation products of polybasic acids and diols (dihydric alcohols), also called oil-alkyds; they are modified by the addition reaction of monomers such as styrene or acrylic esters; polyester resins are cross-linked with amino resins to form thermosetting systems on baking.

3.1.2.7 *polyurethane, n*—a polymer produced by the addition reaction of an acrylic polyol or polyester polyol with an isocyanate-containing compound to produce thermosetting systems on baking.

3.1.2.8 *primer, n*—the first complete layer of paint of a coating system applied to an uncoated surface; the type of primer varies with the type of surface and its condition, the intended purpose, and the coating system being used.

3.1.2.9 *silicone polyester, n*—a polymer which is the reaction product between an organo-siloxane intermediate and an alkyd resin, or a cold blend of a silicone resin and a compatible alkyd resin; these resins are cross-linked with amino resins to form thermosetting systems on baking.

3.1.3 Coating Characteristics:

3.1.3.1 *chalking, v*—the formation on a pigmented coating of a friable powder evolved from the film itself at or just beneath the surface.

3.1.3.2 *fade, v*—a loss in color intensity experienced by pigmented organic coatings over time, generally due to the effect of ultraviolet radiation.

3.1.3.3 *gloss, n*—the luster, shininess, or reflecting ability of a surface.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *bottom side, n*—the side of prepainted sheet opposite the exposed weathering side.

3.2.2 *coil coating, v*—a continuous process by which paint and other coatings are applied and baked onto a moving strip of steel sheet.

3.2.3 *Discussion*—Rolls are used to pick up, meter, and deposit the liquid coating onto the moving strip and are also used to support the strip through the line. The product of this process is called prepainted steel sheet.

3.2.4 *mil, n*—a unit of length equal to 0.001 in. [25.4 μm], used for describing the thickness of paint coatings.

3.2.5 *paint, n*—of coil coating, an organic liquid, pigmented/nonpigmented, which is converted to a solid film by baking.

3.2.6 *roll former, n*—an apparatus that forms a continuous strip of metal into various shapes by a series of contoured steel rolls.

3.2.7 *top side, n*—the side of the prepainted sheet which is exposed to weathering.

3.2.8 *washcoat, n*—a thin organic coating, usually a polyester, applied to the back or unexposed side of prepainted sheet (also known as a backercoat).

⁶ Available from the National Coil Coaters Assn., 401 North Michigan Ave., Chicago, IL 60611-4267.