



Designation: A 792/A 792M – 02

Standard Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process¹

This standard is issued under the fixed designation A 792/A 792M; 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 55 % aluminum-zinc alloy-coated steel sheet in coils and cut lengths.

1.2 This product is intended for applications requiring corrosion resistance or heat resistance, or both.

1.3 The product is produced in a number of designations, types, and grades which are designed to be compatible with differing application requirements.

1.4 Product furnished under this specification shall conform to the applicable requirements of the latest issue of Specification A 924 /A 924M, unless otherwise provided herein.

1.5 This specification is applicable to orders in either inch-pound units (as A 792) or SI units (as A 792M). Values in inch-pound and SI units are not necessarily equivalent. Within the text, SI units are shown in brackets. Each system shall be used independent of the other.

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

1.7 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.

1.8 *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 90/A 90M Test Method for Weight [Mass] of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings²

A 568/A 568M Specification for Steel, Sheet, Carbon, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled,

General Requirements for³

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

E 517 Test Method for Plastic Strain Ratio r for Sheet Metal⁴

E 646 Test Method for Tensile Strain-Hardening Exponents (n -Values) of Metallic Sheet Materials⁴

3. Terminology

3.1 *Definitions*—See Terminology A 902 for definitions of general terminology relating to metallic-coated hot-dip products.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *regular spangle*—the unaltered 55 % aluminum-zinc (Al-Zn) crystal structure that occurs during normal solidification of a hot-dip coated steel sheet.

3.2.2 *high temperature steel*—a product intended for use in elevated temperature applications.

4. Classification

4.1 The material is available in several designations, as follows:

4.1.1 *Commercial Steel*—CS Types A, B, and C,

4.1.2 *Forming Steel*—FS,

4.1.3 *Drawing Steel*—DS,

4.1.4 *High Temperature Steel*—HTS, and

4.1.5 *Structural Steel*—SS.

4.2 Structural steel is available in several grades based on yield strengths and tensile strength.

4.3 The product is available in several coating weights [masses] with the coating designation in accordance with Table 1.

5. Ordering Information

5.1 55 % aluminum-zinc alloy-coated steel sheet in coils and cut lengths is produced to thickness requirements expressed to 0.001 in. [0.01 mm]. The thickness of the sheet

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² *Annual Book of ASTM Standards*, Vol 01.06.

³ *Annual Book of ASTM Standards*, Vol 01.03.

⁴ *Annual Book of ASTM Standards*, Vol 03.01.

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TABLE 1 Weight [Mass] of Coating Requirements^A

NOTE 1— The coating thickness may be estimated from the coating weight [mass] by using Table X1.1.

Coating Designation	Minimum Requirements	
	Triple-Spot Test	Single-Spot Test
	Inch-Pound Units	
Coating Designation	Total Both Sides, oz/ft ²	Total Both Sides, oz/ft ²
AZ50	0.50	0.43
AZ55	0.55	0.50
AZ60	0.60	0.52
Coating Designation	Minimum Requirements	
	Triple-Spot Test	Single-Spot Test
	SI Units	
Coating Designation	Total Both Sides, g/m ²	Total Both Sides, g/m ²
AZM150	150	130
AZM165	165	150
AZM180	180	155

^A The coating designation number is the term by which this product is specified. Because of the many variables and changing conditions that are characteristic of continuous hot-dip coating lines, the weight [mass] of the coating is not always evenly divided between the two surfaces of a sheet, nor is the coating evenly distributed from edge to edge. However, it can normally be expected that not less than 40 % of the single-spot test limit will be found on either surface.

includes the base metal and the coating.

5.2 Orders for product to this specification shall include the following information, as necessary, to adequately describe the desired product.

5.2.1 Name of product (steel sheet, 55 % aluminum-zinc alloy coated),

5.2.2 Designation of sheet steel {CS (Type A, B, or C), FS, DS, HTS, or SS}.

5.2.2.1 When a CS type is not specified, Type B will be furnished.

5.2.3 Strength grade as required for Structural Steel,

5.2.4 ASTM designation number and year of issue, such as A 792 – ____ for inch-pound units or A 792M – ____ for SI units,

5.2.5 Coating designation,

5.2.6 Chemically treated or not chemically treated,

5.2.7 Oiled or not oiled,

5.2.8 Dimensions (show thickness, width, flatness requirements (if appropriate), and length (if cut length)). The purchaser shall specify the appropriate table of thickness tolerances in Specification A 924/A 924M that applies to the order, that is, the table of thickness tolerances for 3/8-in. [10-mm] edge distance, or the table of thickness tolerances for 1-in. [25-mm] edge distance.

5.2.9 Coil size requirements (specify maximum outside diameter (OD), acceptable inside diameter (ID), and maximum weight [mass]),

5.2.10 Packaging,

5.2.11 Certification, if required, and heat analysis and mechanical property report,

5.2.12 Application (show part identification and description), and

5.2.13 Special requirements (if any).

5.2.13.1 If required, the product may be ordered to a specified base metal thickness. See Supplementary Requirement S1.

NOTE 1—Typical ordering descriptions are as follows:

Steel sheet, 55 % aluminum-zinc alloy-coated, Forming Steel (FS), ASTM A 792 – ____, coating designation AZ55, chemical treatment, no oil, minimum 0.035 by 36 in. by coil, 48-in. maximum OD, 24-in. ID, 10 000-lb maximum, for muffler wrappers.

Steel sheet, 55 % aluminum-zinc alloy-coated, Commercial Steel (CS Type A), ASTM A 792M – ____, coating designation AZM150, chemical treatment, no oil, minimum 0.90 by 900 mm by coil, 1200-mm maximum OD, 600-mm ID, 4500-kg maximum, for building panels.

6. Chemical Composition

6.1 Base Metal:

6.1.1 The heat analysis of the base metal shall conform to the requirements of Table 2 for CS (Types A, B, and C), FS, DS, HTS, Table 3 for SS.

6.1.2 Include each of the elements listed in Tables 2 and 3 in the report of heat analysis. When the amount of copper, nickel, chromium, or molybdenum is less than 0.02 %, report the analysis either as <0.02 % or the actual determined value. When the amount of vanadium, titanium, or columbium is less than 0.008 %, report the analysis either as <0.008 % or the actual determined value.

6.2 *Coating Composition*—The 55 % aluminum-zinc alloy coating composition, by weight, is nominally 55 % aluminum, 1.6 % silicon, and the balance zinc.

7. Mechanical Properties

7.1 Structural Steel sheet shall conform to the mechanical property requirements of Table 4 for the grade specified.

7.2 The typical mechanical properties for CS (Types A, B, and C), FS, DS, and HTS are listed in Table 5. These typical mechanical properties are nonmandatory. They are intended solely to provide the purchaser with as much information as

TABLE 2 Chemical Requirements^A

Composition, %—Heat Analysis Element, Maximum, Unless Otherwise Shown													
Designation	C	Mn	P	S	Al	Cu	Ni	Cr	Mo	V	Cb	Ti ^B	N
CS Type A ^{C,D,E}	0.10	0.60	0.030	0.035	...	0.20	0.20	0.15	0.06	0.008	0.008	0.025	...
CS Type B ^{C,F}	0.02 to 0.15	0.60	0.030	0.035	...	0.20	0.20	0.15	0.06	0.008	0.008	0.025	...
CS Type C ^{C,D,E}	0.08	0.60	0.10	0.035	...	0.20	0.20	0.15	0.06	0.008	0.008	0.025	...
FS ^{C,G}	0.02 to 0.10	0.50	0.020	0.030	...	0.20	0.20	0.15	0.06	0.008	0.008	0.025	...
DS ^{D,E}	0.06	0.50	0.020	0.025	0.01, min	0.20	0.20	0.15	0.06	0.008	0.008	0.025	...
HTS ^C	0.02 to 0.15	0.60	0.040, min	0.035	...	0.20	0.20	0.15	0.06	0.008	0.008	0.025	...

^A Where an ellipsis (. . .) appears in the table, there is no requirement, but the analysis result shall be reported.

^B For steels containing more than 0.02% carbon, titanium is permitted to 0.025% provided the ratio of % titanium to % nitrogen does not exceed 3.4.

^C When a deoxidized steel is required for the application, the purchaser has the option to order CS, FS, and HTS to a minimum of 0.01 % total aluminum.

^D Steel is permitted to be furnished as a vacuum degassed or chemically stabilized steel, or both, at producer's option.

^E For carbon levels less than or equal to 0.02%, vanadium, columbium, or titanium, or combinations thereof are permitted to be used as stabilizing elements at producer's option. In such cases, the applicable limit for vanadium and columbium shall be 0.10% max. and the limit for titanium shall be 0.15% max.

^F For CS, specify Type B to avoid carbon levels below 0.02 %.

^G Shall not be furnished as a stabilized steel.