Designation: A1063/A1063M – 25

Standard Specification for Steel Sheet, Twin-Roll Cast, Zinc-Coated (Galvanized) by the Hot-Dip Process[1]

This standard is issued under the fixed designation A1063/A1063M; 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.

1. Scope*

1.1 This specification covers steel sheet, produced by the Twin-Roll Cast process (see Appendix X2) and zinc-coated (galvanized) by the hot-dip process in coils and cut lengths.

NOTE 1—See Appendix X2 for a description of the Twin-Roll Cast process.

1.2 The product is produced in various zinc coating weights [masses] or coating designations as shown in Table 1.

1.3 Product furnished under this specification shall conform to the applicable requirements of the latest issue of Specification A924/A924M unless otherwise provided herein.

1.4 The product is available in a number of designations, grades, and classes and in the two following general categories that are designed to be compatible with different application requirements.

1.4.1 Steels with mandatory chemical requirements and typical mechanical properties.

1.4.2 Steels with mandatory chemical requirements and mandatory mechanical properties.

1.5 This material is available in the following sizes:

1.5.1 *Thickness*—up to 0.078 in. [2.0 mm].

1.5.2 *Width*—up to 79 in. [2000 mm].

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 *Units*—This specification is applicable to orders in either inch-pound units (as A1063) or SI units (as A1063M). 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 independently of the other.

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

1.9 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.10 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

A90/A90M Test Method for Weight [Mass] of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings

A370 Test Methods and Definitions for Mechanical Testing of Steel Products

A568/A568M Specification for Steel, Sheet, Carbon, Structural, and High-Strength Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for

A653/A653M Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

A902 Terminology Relating to Metallic Coated Steel Products

A924/A924M Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process

A1122/A1122M Test Method for Bend Testing of Metallic-Coated Steel Sheet to Evaluate Coating Adhesion

B6 Specification for Zinc

B852 Specification for Continuous Galvanizing Grade (CGG) Zinc Alloys for Hot-Dip Galvanizing of Sheet Steel

3. Terminology

3.1 *Definitions*—See Terminology A902 for definitions of general terminology relating to metallic-coated hot-dip products.

[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] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at www.astm.org/contact. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

***A Summary of Changes section appears at the end of this standard**

TABLE 1 Weight [Mass] of Coating Requirements (Total Both Sides)[A,B]

NOTE 1—Use the information provided in 8.1.2 to obtain the approximate coating thickness from the coating weight [mass].

Coating Designation	Minimum Requirement	
	Inch-Pound Units	
	Triple-Spot Test (TST) oz/ft^2	Single-Spot Test (SST) oz/ft^2
G01	0.01	0.01
G30	0.30	0.25
G40	0.40	0.30
G60	0.60	0.50
G90	0.90	0.80
G100	1.00	0.90
G115	1.15	1.00
G140	1.40	1.20
G165	1.65	1.40
G185	1.85	1.60
	SI Units	
	Triple-Spot Test (TST) g/m^2	Single-Spot Test (SST) g/m^2
Z03	3	3
Z90	90	75
Z120	120	90
Z180	180	150
Z275	275	235
Z305	305	275
Z350	350	300
Z450	450	385
Z500	500	425
Z550	550	475
Z600	600	510

[A] The coating designation is the term by which the minimum triple spot, total both sides coating weight [mass] is specified. Because of the many variables and changing conditions that are characteristic of continuous hot-dip coating lines, the zinc coating is not always evenly divided between the two surfaces of a coated sheet, nor is it always evenly distributed from edge to edge. However, minimum single-spot coating weight [mass] on any one side is normally not less than 40 % of the single-spot total both sides requirement.

[B] As it is an established fact that the atmospheric corrosion resistance of zinc coated sheet products is a direct function of coating thickness (weight [mass]), the selection of thinner (lighter) coating designations will result in almost linearly reduced corrosion performance of the coating. For example, heavier galvanized coatings perform adequately in bold atmospheric exposure whereas the lighter coatings are often further coated with paint or a similar barrier coating for increased corrosion resistance. Because of this relationship, products carrying the statement "meets ASTM A1063/A1063M requirements" should also specify the particular coating designation.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *differentially coated, n*—galvanized steel sheet having a specified "coating designation" on one surface and a significantly lighter specified "coating designation" on the other surface.

3.2.1.1 *Discussion*—The single side relationship of either specified "coating designation" is the same as shown in the note of Table 1 regarding uniformity of coating.

3.2.2 *high strength low alloy steel, n*—a specific group of sheet steels whose strength is achieved through the use of microalloying elements such as niobium, vanadium, titanium, and molybdenum resulting in improved formability and weldability than is obtained from conventional carbon-manganese steels.

3.2.3 *minimized spangle, n*—the finish produced on hot-dip zinc-coated steel sheet in which the grain pattern is visible to the unaided eye, and is typically smaller and less distinct than the pattern visible on regular spangle.

3.2.3.1 *Discussion*—This finish is produced by one of two methods: either (*1*) the zinc crystal growth has been started but arrested by special production practices during solidification of the zinc, or (*2*) the zinc crystal growth is inhibited by a combination of coating-bath chemistry plus cooling during solidification of the zinc. Minimized spangle is normally produced in coating designations G90 [Z275] and lighter. Subject to agreement of the producer, it is permissible for a user to specify limits on minimized spangle size.

3.2.4 *regular spangle, n*—the finish produced on hot-dip zinc-coated steel sheet in which the zinc crystal structure is visible to the unaided eye.

3.2.4.1 *Discussion*—Solidification of the zinc coating is typically uncontrolled, which produces the variable grain size associated with this finish and is not subject to size limits. Refer to Terminology A902 for a general definition of the term spangle.

3.2.5 *spangle-free, n*—the uniform finish of small, equiaxed grains produced on hot-dip zinc-coated steel sheet in which the visual spangle pattern, especially the surface variations created by spangle formation, is difficult to discern with the unaided eye.

3.2.5.1 *Discussion*—This finish is produced when the zinc crystal growth is inhibited by a combination of coating-bath chemistry, or cooling, or both, during solidification of the zinc.

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 Structural steel (SS), and

4.1.3 High strength low alloy steel (HSLAS).