



# Standard Specification for Steel Sheet, as Cold-Reduced, for Conversion to Annealed Cold-Rolled Steel Sheet, and Hot Dip Metallic-Coated Steel Sheet<sup>1</sup>

This standard is issued under the fixed designation A1092; 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 the requirements for as cold-reduced, steel sheet in coils intended for conversion into cold-rolled steel sheet on continuous annealing lines, and metallic-coated steel sheet on continuous hot-dip coating lines.

1.2 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

## 2. Referenced Documents

### 2.1 ASTM Standards:

- A308/A308M Specification for Steel Sheet, Terne (Lead-Tin Alloy) Coated by the Hot-Dip Process
- A463/A463M Specification for Steel Sheet, Aluminum-Coated, by the Hot-Dip Process
- 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
- A792/A792M Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process
- A875/A875M Specification for Steel Sheet, Zinc-5 % Aluminum Alloy-Coated by the Hot-Dip Process
- A924/A924M Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process
- A929/A929M Specification for Steel Sheet, Metallic-Coated by the Hot-Dip Process for Corrugated Steel Pipe
- A1008/A1008M Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable

A1046/A1046M Specification for Steel Sheet, Zinc-Aluminum-Magnesium Alloy-Coated by the Hot-Dip Process

A1063/A1063M Specification for Steel Sheet, Twin-Roll Cast, Zinc-Coated (Galvanized) by the Hot-Dip Process

A1079 Specification for Steel Sheet, Complex Phase (CP), Dual Phase (DP) and Transformation Induced Plasticity (TRIP), Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

A1088 Specification for Steel, Sheet, Cold-Rolled, Complex Phase (CP), Dual Phase (DP) and Transformation Induced Plasticity (TRIP)

## 3. Terminology

3.1 *as cold-reduced steel sheet, n*—an as-rolled product intended for conversion to annealed cold-rolled steel sheet product, or hot-dip metallic-coated steel sheet product.

3.1.1 *Discussion*—As a result of the high degree of cold reduction as cold-reduced steel sheet exhibits high tensile strength with very minimal ductility.

## 4. Classification

4.1 The material is in a semi-finished form intended for conversion to cold-rolled steel sheet, or hot-dip metallic-coated sheet steel whose designations are described in the following specifications:

4.1.1 A308/A308M Specification for Steel Sheet, Terne (Lead-Tin Alloy) Coated by the Hot-Dip Process,

4.1.2 A463/A463M Specification for Steel Sheet, Aluminum-coated, by the Hot-Dip Process,

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

4.1.4 A792/A792M Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process,

4.1.5 A875/A875M Specification for Steel Sheet, Zinc-5 % Aluminum Alloy-Coated by the Hot-Dip Process,

4.1.6 A929/A929M Specification for Steel Sheet, Metallic-Coated by the Hot-Dip Process for Corrugated Steel Pipe,

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee A01 on Steel, Stainless Steel and Related Alloys and is the direct responsibility of Subcommittee A01.19 on Steel Sheet and Strip.

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4.1.7 **A1008/A1008M** Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable,

4.1.8 **A1046/A1046M** Specification for Steel Sheet, Zinc-Aluminum-Magnesium Alloy-Coated by the Hot-Dip Process,

4.1.9 **A1063/A1063M** Specification for Steel Sheet, Twin-Roll Cast, Zinc-Coated (Galvanized) by the Hot-Dip Process,

4.1.10 **A1079** Specification for Steel Sheet, Complex Phase (CP), Dual Phase (DP) and Transformation Induced Plasticity (TRIP), Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process, and

4.1.11 **A1088** Standard Specification for Steel, Sheet, Cold-Rolled, Complex Phase (CP), Dual Phase (DP) and Transformation Induced Plasticity (TRIP).

## 5. Ordering Information

5.1 As cold-reduced steel sheet in coils is produced to thickness requirements expressed to 0.001 in. (0.01 mm). Consult the producer for the option of ordering thickness to 0.0001 in. (0.001 mm).

NOTE 1—When ordered to thicknesses of 0.0001 in. (0.001 mm) the Specification **A568/A568M** thickness tolerances expressed to 0.001 in. (0.01 mm) remain in effect.

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

5.2.1 Name of product (steel sheet, as cold-reduced),

5.2.2 Dimensions (show thickness, minimum or nominal, width),

5.2.3 Surface finish (if required),

5.2.4 ASTM designation number and year of issue, as A1092-XX for inch-pound units or A1092M-XX for SI units,

5.2.5 Coil size requirements (specify the minimum and maximum outside diameter (OD), the acceptable inside diameter (ID), and maximum coil weight [mass]),

5.2.6 As cold-reduced mill edge or slit edge. If edge is not specified, the as cold-reduced edge will be furnished,

5.2.7 Packaging, and

5.2.8 Certification, if required, for heat analysis.

5.3 Identify the applicable cold-reduced steel sheet, or hot-dip metallic-coated steel sheet product specification (see 4.1), and the intended product steel sheet designation [CS (Types A, B, and C), (DS Type A and B), DS, FS (Types A and B), DDS (Types A and C), EDDS, SS, HSLAS, HSLAS-F, SHS, BHS, CP, DP or TRIP] and coating weight designation to describe the required chemical requirements.

5.4 Special requirements (if any).

5.4.1 When the purchaser requires the thickness tolerances for  $\frac{3}{8}$  in. minimum edge distance this requirement shall be specified on the purchase order or contract (see Specifications **A568/A568M** or **A924/A924M** as applicable).

## 6. Chemical Composition

6.1 The chemical composition shall conform to the requirements of the intended designation in the individual metallic-coated sheet and cold-rolled specification to which the product will be converted, namely Specifications **A308/A308M**, **A463/**

**A463M**, **A653/A653M**, **A792/A792M**, **A875/A875M**, **A929/A929M**, **A1008/A1008M**, **A1046/A1046M**, **A1063/A1063M**, **A1079**, or **A1088**.

6.2 See Specification **A568/A568M** for chemical analysis procedures for cold-rolled product, and Specification **A924/A924M** for chemical analysis procedures of metallic-coated product.

6.3 Nonstandard chemical compositions shall be as agreed between producer and purchaser.

6.4 The producer of the as cold-reduced product is responsible to meet all chemical requirements as agreed to and specified on the purchase order.

## 7. Mechanical Properties

7.1 The cold-rolled sheet and hot-dip metallic coating facilities are responsible to meet all mechanical property and formability requirements as well as all other requirements specified by the applicable final product specifications.

## 8. Dimensions, Mass, and Permissible Variations

8.1 *Thickness:*

8.1.1 Thickness of the as cold-reduced product shall meet the requirements of Specification **A568/A568M**.

8.1.2 Thickness of the coated product shall meet the requirements of Specification **A924/A924M**.

8.1.3 The amount of material removed from the head and tail ends of coils are subject to negotiation between the producer and purchaser.

8.1.4 Requirements for the amount of crown in the as cold-reduced steel sheet are subject to negotiation between producer and purchaser.

NOTE 2—To avoid flatness distortion resulting from edge ridging during coiling of coated product, particularly in the case of thin sheet, the purchaser of the cold-rolled sheet may require a minimum amount of increased centerline thickness (positive crown) to be rolled into the sheet.

## 9. Flatness

9.1 The steel sheet shall have a maximum flatness as agreed to by the producer and purchaser.

## 10. Width

10.1 Width tolerance shall be as defined in Specification **A568/A568M**. Exceptions shall be as agreed to by the purchaser and the supplier.

## 11. Coil Size

11.1 *Inside Diameter*—The minimum and maximum inside coil diameter shall be as agreed to by the producer and purchaser.

11.2 *Outside Diameter*—The minimum and maximum outside coil diameter shall be as agreed to by the producer and purchaser.

11.3 *Coil Weight*—The coil weight shall be as agreed to by the producer and purchaser.

## 12. Finish and Condition

12.1 *Finish*—The finish shall be as agreed to between the producer and purchaser.

12.2 *Surface Quality*—The surface quality shall meet the requirements of the intended finished product.

12.3 *Edges*—The edge condition is available as cold-reduced edge or slit edge.

### **13. Coil Condition**

13.1 The coils shall be free from damage beyond that which is normally removed at the entry end of a hot-dip metallic-coating line.

13.2 The as rolled edges shall be free from cutouts, sawtooth, cracks, and tab protrusions.

13.3 Telescoping shall be limited to a maximum of 1 in. (25 mm) per side.

### **14. Packaging**

14.1 Each coil shall be banded and packaged as agreed to between the producer and purchaser.

### **15. Marking**

15.1 Marking shall be as agreed to between the producer and purchaser.

### **16. Keywords**

16.1 as cold reduced steel sheet; carbon steel sheet; cold-rolled steel sheet; steel sheet; metallic-coated

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