Designation: A 599/A 599M – 99

Standard Specification for Tin Mill Products, Electrolytic Tin-Coated, Cold-Rolled Sheet[1]

This standard is issued under the fixed designation A 599/A 599M; 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 cold-rolled steel sheet in coils or in cut lengths, tin-coated by electrodeposition. The product is commonly known as electrolytic tin-coated sheet, and is for applications that need good solderability, good surface appearance, and a degree of corrosion resistance. Tin-coated sheet is produced to various designations of tin coating, as outlined in Table 1.

1.1.1 Electrolytic tin-coated sheet is customarily available as commercial steel (CS); drawing steel (DS); deep drawing steel (DDS); extra deep drawing steel (EDDS), and structural steel (SS). The tin coating is available as unmelted or melted.

1.2 *Limitations*—This specification is applicable to orders in either inch-pound units (as A 599), which is supplied in thicknesses from 0.015 in. to 0.033 in., or SI units [as A 599M], which is supplied in thicknesses from 0.38 mm to 0.84 mm. For thicknesses lighter than 0.015 in. [0.38 mm], refer to A 624 [A 624M].

1.3 Unless the order shows the "M" designation [SI units], the product shall be furnished to inch-pound units. The values stated in either inch-pound or SI units are to be regarded as standard. Within the text, the SI units are shown in brackets. The values stated in each system are not exact equivalents; therefore, each system must be used independently of the other. Combining values from the two systems may result in nonconformance with this specification.

2. Referenced Documents

2.1 *ASTM Standards:*

A 366/A 366M Specification for Commercial Steel (CS) Sheet, Carbon (0.15 Maximum Percent) Cold-Rolled[2]

A 568/A 568M Specification for Steel, Sheet, Carbon, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for[2]

A 611 Specification for Structural Steel (SS), Sheet, Carbon, Cold-Rolled[2]

A 620/A 620M Specification for Drawing Steel (DS), Sheet, Carbon, Cold-Rolled[2]

TABLE 1 Electrolytic Tin-Coated Sheets Coating Weight [Mass]

NOTE 1—Listed below are the commonly produced coating weights [mass] upon agreement between the producer and the purchaser. Other combinations of coatings may be specified and the appropriate minimum average test values[A] apply.

Designation No.	Nominal Tin Coating Weight [Mass] (Each Surface) lb/base box (g/m^2)[B]	Minimum Average Coating Weight [Mass] (Each Surface Test Value) lb/base box (g/m^2)[B,C]
5 (0.6/0.6)	0.025/0.025 (0.6/0.6)	0.02/0.02 (0.5/0.5)
10 (1.1/1.1)	0.05/0.05 (1.1/1.1)	0.04/0.04 (0.9/0.9)
15 (1.7/1.7)	0.075/0.075 (1.7/1.7)	0.06/0.06 (1.4/1.4)
20 (2.2/2.2)	0.10/0.10 (2.2/2.2)	0.08/0.08 (1.8/1.8)
25 (2.8/2.8)	0.125/0.125 (2.8/2.8)	0.11/0.11 (2.5/2.5)
50 (5.6/5.6)	0.25/0.25 (5.6/5.6)	0.23/0.23 (5.2/5.2)
75 (8.4/8.4)	0.375/0.375 (8.4/8.4)	0.35/0.35 (7.8/7.8)
100 (11.2/11.2)	0.50/0.50 (11.2/11.2)	0.45/0.45 (10.1/10.1)

[A] Refer to Specifications A 623 and A 623M.
[B] A base box is defined as a unit of area equivalent to 112 sheets 14 in. by 20 in. or 31 360 $in.^2$ (refer to Specification A 623).
[C] The minimum single spot value shall not be less than 80 % of the minimum average tin coating weight [mass] (see 8.1 and 8.2).

A 623 Specification for Tin Mill Products, General Requirements[3]

A 623M Specification for Tin Mill Products, General Requirements (Metric)[3]

A 624/A 624M Specification for Tin Mill Products, Electrolytic Tinplate, Single-Reduced[3]

A 630 Test Methods for Determination of Tin Coating Weights for Hot-Dip and Electrolytic Tin Plate[3]

A 700 Practices for Packaging, Marking, and Loading Methods for Steel Products for Domestic Shipment[4]

A 963/A 963M Specification for Deep Drawing Steel (DDS), Sheet, Carbon, Cold-Rolled[2]

A 969/A 969M Specification for Extra Deep Drawing Steel (EDDS) Sheet, Carbon, Cold-Rolled[2]

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *chemical treatment*—a passivating chemical treatment, normally applied to the tinned surface to stabilize the surface to control tin oxide formation and growth. Sodium dichromate is most commonly used. Without such treatment,

[1] This specification is under the jurisdiction of ASTM Committee A-1 on Steel, Stainless Steel, and Related Alloys and is the direct responsibility of Subcommittee A01.20 on Tin Mill Products.

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[2] *Annual Book of ASTM Standards*, Vol 01.03.

[3] *Annual Book of ASTM Standards*, Vol 01.06.

[4] *Annual Book of ASTM Standards*, Vol 01.05.