



Designation: A635/A635M – 22

Standard Specification for Steel, Sheet and Strip, Heavy-Thickness Coils, Hot-Rolled, Alloy, Carbon, Structural, High-Strength Low-Alloy, and High-Strength Low-Alloy with Improved Formability, General Requirements for¹

This standard is issued under the fixed designation A635/A635M; 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 U.S. Department of Defense.

1. Scope*

1.1 This specification covers the general requirements for hot-rolled, heavy-thickness sheet and strip in coils.

1.2 It applies to Specifications [A414/A414M](#), [A424/A424M](#), [A1018/A1018M](#), and [A1031/A1031M](#).

1.3 This material is available only in coils described as follows:

Size Limits, Coils Only

Product	Width, in. [mm]	Thickness, in. [mm]
Strip	over 8 to 12, incl [over 200 through 300]	0.230 to 1.000, incl [from 6.0 through 25]
Sheet	All Widths ^A All Widths	0.230 to 1.000, incl [from 6.0 through 25]

^A Hot-rolled heavy thickness sheet in coils less than 12 in. [300 mm] and less in width must have slit edges. Hot-rolled heavy thickness coils 12 in. [300 mm] and wider with mill edge is considered hot-rolled heavy thickness strip.

NOTE 1—The changes in width limits with the publication of A635/A635M – 06a result in a change in tensile testing direction for material from 0.180 in. [4.5 mm] to 0.230 in. exclusive [6.0 mm exclusive] over 48 in. [1200 mm] wide, as that material is now covered by Specification [A568/A568M](#) – 06a. The purchaser is advised to discuss this change with the supplier.

1.4 In case of any conflict in requirements, the requirements of the individual material specification shall prevail over those of this general specification.

1.5 For the purposes of determining conformance with this and the appropriate product specifications referenced in [1.2](#), measured values, calculated values, and observed values shall

be rounded to the nearest unit in the right hand place of figures used in expressing the limiting values in accordance with the rounding method of Practice [E29](#).

1.5.1 Ordered values, identified in tables, specified such as over 30 through 48, or 30 exclusive to 48 inclusive, covers all ordered values specified as 30.1, 30.01, 30.001, etc., up to and including 48.000 etc., but does not cover ordered values specified as 30.000 etc. or less, nor does it cover ordered values specified as 48.1, 48.01, 48.001, etc., in accordance with the absolute method of Practice [E29](#).

1.6 [Annex A1](#) lists permissible variations in dimensions and mass (see [Note 2](#)) in SI [metric] units. The values listed are not exact conversions of the values listed in the inch-pound tables, but instead are rounded or rationalized values. Conformance to [Annex A1](#) is mandatory when the “M” specification is used.

NOTE 2—The term *weight* is used when inch-pound units are the standard. However, under SI, the preferred term is *mass*.

1.7 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

1.8 This specification and the applicable material specifications are expressed in both inch-pound units and SI units. However, unless the order specifies the applicable “M” specification designation (SI units), the material shall be furnished to inch-pound units.

1.9 *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.*

¹ This specification 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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*A Summary of Changes section appears at the end of this standard



2. Referenced Documents

2.1 ASTM Standards:²

A370 Test Methods and Definitions for Mechanical Testing of Steel Products

A414/A414M Specification for Steel, Sheet, Carbon, and High-Strength, Low-Alloy for Pressure Vessels

A424/A424M Specification for Steel, Sheet, for Porcelain Enameling

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

A700 Guide for Packaging, Marking, and Loading Methods for Steel Products for Shipment

A751 Test Methods and Practices for Chemical Analysis of Steel Products

A941 Terminology Relating to Steel, Stainless Steel, Related Alloys, and Ferroalloys

A1018/A1018M Specification for Steel, Sheet and Strip, Heavy-Thickness Coils, Hot-Rolled, Carbon, Commercial, Drawing, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength

A1031/A1031M Specification for Steel, Sheet and Strip, Heavy-Thickness Coils, Alloy, Drawing Steel and Structural Steel, Hot-Rolled

A1073/A1073M Practice for Using Hand Micrometers to Measure the Thickness of Uncoated Steel Sheet and Nonmetallic and Metallic-Coated Steel Sheet

E11 Specification for Woven Wire Test Sieve Cloth and Test Sieves

E29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications

2.2 Federal Standards:³

Fed. Std. No. 123 Marking for Shipment (Civil Agencies)

2.3 Military Standards:³

MIL-STD-129 Marking for Shipment and Storage

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 Steel Types:

3.1.2 *carbon steel, n*—the designation for steel when no minimum content is specified or required for aluminum, chromium, cobalt, columbium, molybdenum, nickel, titanium, tungsten, vanadium, zirconium, or any element added to obtain a desired alloying effect; when the specified minimum for copper does not exceed 0.40 %; or when the maximum content specified for any of the following elements does not exceed the percentages noted: manganese 1.65, silicon 0.60, or copper 0.60.

3.1.2.1 *Discussion*—In all carbon steels small quantities of certain residual elements unavoidably retained from raw ma-

terials are sometimes found which are not specified or required, such as copper, nickel, molybdenum, chromium, and so forth. These elements are considered as incidental and are not normally determined or reported.

3.1.3 *high-strength, low-alloy steel, n*—a specific group of steels in which higher strength, and in some cases additional resistance to atmospheric corrosion or improved formability, are obtained by moderate amounts of one or more alloying elements.

3.2 Product Types:

3.3 *hot-rolled sheet and strip, n*—manufactured by hot rolling slabs in a continuous mill to the required thickness; however, the product classification of sheet and strip is based on a combination of thickness and width (see Specifications **A414/A414M**, **A424/A424M**, **A1018/A1018M**, and **A1031/A1031M**).

3.4 *steel manufacturer, n*—the organization that directly controls, or is responsible for, the melting and refining of steel and the conversion of that steel into semifinished steel products known as slabs either through continuous casting, conventional or compact, or ingot casting and subsequent conversion of the ingots to slabs, and for one or more additional operations such as testing, marking, loading for shipment, and certification.

3.5 *hot roll manufacturer, n*—the organization that directly controls, or is responsible for, the conversion of steel slabs, by hot rolling into coils, and for one or more additional operations such as leveling, cutting to length, testing, inspection, blanking, slitting, pickling, cold rolling, heat treating, coating, packaging, marking, loading for shipment, and certification.

3.6 *coil processor, n*—the organization that directly controls, or is responsible for, operations involved in processing the coil such as leveling, cutting to length, testing, inspection, blanking, slitting, pickling, cold rolling, heat treating, coating, packaging, marking, loading for shipment, and certification.

3.6.1 *Discussion*—The processing operations need not be controlled by the organization that hot rolls the slab into a coil. If only one organization controls or is responsible (or both) for the hot rolling and processing operations, that organization is termed the hot roll manufacturer. If more than one organization controls or is responsible (or both) for hot rolling and processing operations, the organization that controls and is responsible for the hot rolling is termed the manufacturer and the organization or organizations controlling and responsible for the processing operations is/are termed the coil processor or coil processors.

3.7 Refer to Terminology **A941** for additional definitions of terms used in this standard.

4. Index of Tables, Dimensions, and Allowances

4.1 See the following table:

Index of Tables for Dimensions, Tolerances, and Allowances		
Dimensions	Table No.	
	Inch-Pound Units	SI Units
Camber Sheet	5	A1.4

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from Standardization Documents Order Desk, DODSSP, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098, <http://www.dodssp.daps.mil>.