



Designation: B236/B236M – 23

Standard Specification for Aluminum Bars for Electrical Purposes (Bus Bars)¹

This standard is issued under the fixed designation B236/B236M; 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 Aluminum 1350 bar for electric conductors in the tempers shown in **Table 1**.

1.2 Aluminum and temper designations are in accordance with ANSI H35.1/H35.1(M). The equivalent Unified Numbering System designation is A91350 in accordance with Practice **E527**.

NOTE 1—For Alloy 6101 bus conductors, refer to Specification **B317/B317M**.

NOTE 2—Prior to 1975, Aluminum 1350 was designated as EC aluminum.

1.3 The values stated in either SI 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.

1.4 For acceptance criteria for inclusion of new aluminum and aluminum alloys in this specification, see **Annex A2**.

1.5 *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.*

1.6 *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 The following documents of the issue in effect on date of order acceptance form a part of this specification to the extent referenced herein:

2.2 ASTM Standards:²

- B193** Test Method for Resistivity of Electrical Conductor Materials
- B317/B317M** Specification for Aluminum-Alloy Extruded Bar, Rod, Tube, Pipe, Structural Profiles, and Profiles for Electrical Purposes (Bus Conductor)
- B557** Test Methods for Tension Testing Wrought and Cast Aluminum- and Magnesium-Alloy Products
- B557M** Test Methods for Tension Testing Wrought and Cast Aluminum- and Magnesium-Alloy Products (Metric)
- B660** Practices for Packaging/Packing of Aluminum and Magnesium Products
- B666/B666M** Practice for Identification Marking of Aluminum and Magnesium Products
- B881** Terminology Relating to Aluminum- and Magnesium-Alloy Products
- B985** Practice for Sampling Aluminum Ingots, Billets, Castings and Finished or Semi-Finished Wrought Aluminum Products for Compositional Analysis
- E29** Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications
- E290** Test Methods for Bend Testing of Material for Ductility
- E527** Practice for Numbering Metals and Alloys in the Unified Numbering System (UNS)
- E716** Practices for Sampling and Sample Preparation of Aluminum and Aluminum Alloys for Determination of Chemical Composition by Spark Atomic Emission Spectrometry
- E1004** Test Method for Determining Electrical Conductivity Using the Electromagnetic (Eddy Current) Method
- E1251** Test Method for Analysis of Aluminum and Aluminum Alloys by Spark Atomic Emission Spectrometry
- E3061** Test Method for Analysis of Aluminum and Aluminum Alloys by Inductively Coupled Plasma Atomic Emission Spectrometry (Performance Based Method)

¹ This specification is under the jurisdiction of ASTM Committee **B07** on Light Metals and Alloys and is the direct responsibility of Subcommittee **B07.03** on Aluminum Alloy Wrought Products.

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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.

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

TABLE 1 Tensile Property Limits^{A,B} (US Customary [Metric SI])

US Customary				[Metric SI]			
Temper	Specified Thickness, in.	Tensile Strength, min, ksi	Yield Strength (0.2 % offset), min, ksi	Specified Thickness, mm		Tensile Strength, min, MPa	Yield Strength, min (0.2 % Offset), MPa
				Over	Through		
H12	0.125–1.000	12.0	8.0	3.20	25.00	85	55
H112	0.125–0.499	11.0	6.0	3.20	12.50	75	40
	0.500–1.000	10.0	4.0	12.50	25.00	70	30
	1.001–3.000	9.0	3.5	25.00	40.00	60	25
	All	8.5	3.5	All		60	25

^A For purposes of determining conformance with this specification, each value for tensile strength and yield strength shall be rounded to the nearest 0.1 ksi [1 MPa] in accordance with the rounding method of Practice E29.

^B See Annex A1.

2.3 The Aluminum Association:³

AS&D Aluminum Standards & Data

PK-1 Designations and Chemical Composition Limits for Aluminum Alloys in the Form of Castings and Ingots (Pink Sheets)

TAN-1 Tempers for Aluminum and Aluminum Alloy Products Metric Edition (Tan Sheets)

TEAL-1 International Alloy Designations and Chemical Composition Limits for Wrought Aluminum and Wrought Aluminum Alloys (Teal Sheets)

YL-1 Tempers for Aluminum and Aluminum Alloy Products (Yellow Sheets)

2.4 ANSI Standards:⁴

H35.1/H35.1(M) Alloy and Temper Designation Systems for Aluminum

H35.2 Dimensional Tolerances for Aluminum Mill Products

H35.2M Dimensional Tolerances for Aluminum Mill Products (Metric)

2.5 CEN Standard:⁵

CEN EN 14242 Aluminium and Aluminium Alloys - Chemical Analysis - Inductively Coupled Plasma Optical Emission Spectrometric Analysis

2.6 Military Standard:⁶

MIL-STD-129 Marking for Shipment and Storage

2.7 Federal Standard:

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

3. Terminology

3.1 *Definitions*—Refer to Terminology B881 for definitions of product terms used in this specification.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *capable of*—the term *capable of* as used in this specification means that the test need not be performed by the producer of the material; however, should testing by the purchaser establish that the material does not meet these requirements, the material shall be subject to rejection.

³ Available from Aluminum Association, 1400 Crystal Dr., Suite 430, Arlington, VA 22202, <http://www.aluminum.org>.

⁴ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

⁵ Available from European Committee for Standardization (CEN), Rue de la Science 23, B-1000, Brussels, Belgium, <http://www.cen.eu>.

⁶ Available from Standardization Documents Order Desk, DODSSP, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098, <http://www.dodssp.daps.mil>.

4. Ordering Information

4.1 Orders for material to this specification shall include the following information:

4.1.1 This specification designation (which includes the number, the year, and the revision letter, if applicable),

NOTE 3—For inch-pound orders, specify Specification B236; for metric orders specify Specification B236M. Do not mix units.

4.1.2 Quantity in pieces or pounds [kilograms],

4.1.3 Temper (8.1),

4.1.4 Edge contour (Section 12),

4.1.5 Diameter for rounds; distance across flats for square-cornered squares, hexagons, or octagons; width and depth for square-cornered rectangles,

4.1.6 Length (specific or stock) (Section 14),

4.2 Additionally, orders for material to this specification shall include the following information when required by the purchaser:

4.2.1 Whether inspection or witness of inspection and tests by the purchaser's representative is required prior to material shipment (16.1),

4.2.2 Whether marking for identification is required (18.1),

4.2.3 Whether Practices B660 applies and, if so, the levels of preservation, packaging, and packing required (19.3), and

4.2.4 Whether certification of the material by the producer is required (Section 20).

5. Manufacture

5.1 The products covered by this specification shall be produced by extruding or rolling, at the option of the producer, provided that the production method results in material that meets all requirements of this specification.

5.2 Bars in the H12 temper shall be furnished with a rolled mill finish; bars in the H111 temper, with an as-extruded mill finish; and bars in the H112 temper, with a rolled mill finish except that the edges shall be as sawed.

6. Responsibility for Quality Assurance

6.1 *Responsibility for Inspection and Tests*—Unless otherwise specified in the contract or purchase order, the producer is responsible for the performance of all inspection and test requirements specified herein. Except as otherwise specified in the contract or order, the producer may use his own or any other suitable facilities for the performance of the inspection and test requirements specified herein, unless disapproved by