



Designation: **B856 – 11 B856 – 12**

Standard Specification for Concentric-Lay-Stranded Aluminum Conductors, Coated Steel Supported (ACSS)¹

This standard is issued under the fixed designation B856; 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 round wire concentric-lay-stranded aluminum conductors, steel supported (ACSS) for use as overhead electrical conductors (see Explanatory **Note 1**).

1.2 The values stated in inch-pound or SI units are to be regarded separately as standard. Each system shall be used independently of the other. Combining values from the two systems may result in nonconformance with the specification. For conductor sizes designated by AWG or kcmil sizes, the requirements in SI units are numerically converted from the corresponding requirements in inch-pound units. For conductor sizes designation by AWG or kcmil, the requirements in SI units have been numerically converted from corresponding values stated or derived in inch-pound units. For conductor sizes designated by SI units only, the requirements are stated or derived in SI units.

1.2.1 For density, resistivity and temperature, the values stated in SI units are to be regarded as standard.

2. Referenced Documents

2.1 The following documents of the issue in effect on date of material purchase form part of this specification to the extent referenced herein:

2.2 *ASTM Standards*:²

B263 Test Method for Determination of Cross-Sectional Area of Stranded Conductors

B354 Terminology Relating to Uninsulated Metallic Electrical Conductors

B498/B498M Specification for Zinc-Coated (Galvanized) Steel Core Wire for Use in Overhead Electrical Conductors

B500/B500M Specification for Metallic Coated or Aluminum Clad Stranded Steel Core for Use in Overhead Electrical Conductors

B502 Specification for Aluminum-Clad Steel Core Wire for Use in Overhead Electrical Aluminum Conductors

B549 Specification for Concentric-Lay-Stranded Aluminum Conductors, Aluminum-Clad Steel Reinforced for Use in Overhead Electrical Conductors

B606 Specification for High-Strength Zinc-Coated (Galvanized) Steel Core Wire for Aluminum and Aluminum-Alloy Conductors, Steel Reinforced

B609/B609M Specification for Aluminum 1350 Round Wire, Annealed and Intermediate Tempers, for Electrical Purposes

B802/B802M Specification for Zinc-5 % Aluminum-Mischmetal Alloy-Coated Steel Core Wire for Aluminum Conductors, Steel Reinforced (ACSR)

B803 Specification for High-Strength Zinc-5 % Aluminum-Mischmetal Alloy-Coated Steel Core Wire for Use in Overhead Electrical Conductors

B857 Specification for Shaped Wire Compact Concentric-Lay-Stranded Aluminum Conductors, Coated-Steel Supported (ACSS/TW)

B957 Specification for Extra-High-Strength and Ultra-High-Strength Zinc-Coated (Galvanized) Steel Core Wire for Overhead Electrical Conductors

B958 Specification for Extra-High-Strength and Ultra-High-Strength Class A Zinc-5% Aluminum-Mischmetal Alloy-Coated Steel Core Wire for Use in Overhead Electrical Conductors

¹ This specification is under the jurisdiction of ASTM Committee **B01** on Electrical Conductors and is the direct responsibility of Subcommittee **B01.07** on Conductors of Light Metals.

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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.

E29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications
E527 Practice for Numbering Metals and Alloys in the Unified Numbering System (UNS)

2.3 *Other Standards:*

Aluminum Association Publication 50 Code words for Overhead Aluminum Electrical Conductors³

NBS Handbook 100—Copper Wire Tables of the National Bureau of Standards⁴

3. Terminology

3.1 For definitions of terms relating to conductors refer to definitions found in Specification **B354**.

3.2 *Definitions:*

3.2.1 *aluminum-clad*—aluminum bonded.

3.2.2 *galvanized*—zinc coated.

3.2.3 *Zn-5Al-MM*—Zinc-5% Aluminum-Mischmetal Alloy (Zn-5Al-MM) coated.

3.3 *Abbreviations:*

3.3.1 *ACSS*—aluminum conductor, steel supported.

3.3.2 *ACSS/AW2*—supported with regular strength aluminum-clad core wire in accordance with Specification **B502**.

3.3.3 *ACSS/AW3*—supported with high strength aluminum-clad core wire in accordance with Specification **B502**.

3.3.4 *ACSS/GA2*—supported with regular strength galvanized steel core wire, coating Class A in accordance with Specification **B498/B498M**.

3.3.5 *ACSS/GC2*—supported with regular strength galvanized steel core wire, coating Class C in accordance with Specification **B498/B498M**.

3.3.6 *ACSS/GA3*—supported with high-strength galvanized steel core wire in accordance with Specification **B606**.

3.3.7 *ACSS/GA4*—supported with extra-high strength zinc Class A coated steel core wire in accordance with Specification **B957**.

3.3.8 *ACSS/GA5*—supported with ultra-high strength zinc Class A coated steel core wire in accordance with Specification **B957**.

3.3.9 *ACSS/MA2*—supported with regular strength Zn-5Al-MM coated steel core wire, coating Class A in accordance with Specification **B802/B802M**.

3.3.10 *ACSS/MA3*—supported with high-strength Zn-5Al-MM coated steel core wire in accordance with Specification **B803**.

3.3.11 *ACSS/MA4*—supported with extra-high strength Zinc-5% Aluminum-Mischmetal Alloy (Zn-5Al-MM) Coated steel core wire in accordance with Specification **B958**.

3.3.12 *ACSS/MA5*—supported with ultra-high strength Zinc-5% Aluminum-Mischmetal Alloy (Zn-5Al-MM) Coated steel core wire in accordance with Specification **B958**.

4. Ordering Information

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

4.1.1 Quantity of each size, stranding, and class,

4.1.2 Conductor size, circular-mil area or AWG, and diameter (see Section 9 and **Table 1**),

4.1.3 Number of wires, aluminum and steel,

4.1.4 Type of steel core wire and class (if applicable) of coating (see 5.2),

4.1.5 Direction of lay of outer layer of aluminum wires if other than right hand (see 7.3),

4.1.6 Special tension test, if desired (see 14.3),

4.1.7 Package size and type (see 16.1),

4.1.8 Special package markings, if required (see 16.4),

4.1.9 Heavy wood lagging, if required (see 16.3), and

4.1.10 Place of inspection (see Section 15).

5. Requirement for Wires

5.1 After stranding, the round aluminum wires shall conform to the requirements of Specification **B609/B609M** for 1350-0 temper, except for elongation requirements. The elongation shall not be less than 20 % after stranding.

5.2 Before stranding, the steel core wire shall meet the requirements of Specification **B498/B498M**, **B606**, **B802/B802M**, **B803**, **B957**, or **B958**, whichever is applicable.

5.3 The stranded steel core shall meet the requirements of Specification **B500/B500M** as applicable.

³ Available from the Aluminum Association, Inc., 900 19th Street, NW, Suite 300, Washington, DC 20006-1525 Wilson Blvd., Suite 600, Arlington, VA 22209, <http://www.aluminum.org>.

⁴ Available from National Technical Information Services, Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161-22161, <http://www.ntis.gov>.