



Designation: ~~B500/B500M-98 (Reapproved 2002)~~ Designation: B 500/B 500M – 09

# Standard Specification for ~~Metallic Coated Stranded Steel Core for Aluminum Conductors, Steel Reinforced (ACSR)~~ Metallic Coated Stranded Steel Core for Use in Overhead Electrical Conductors<sup>1</sup>

This standard is issued under the fixed designation B 500/B 500M; 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 approval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

~~1.1 This specification covers 7-wire, 19-wire, 37-wire, and 61-wire zinc-coated (galvanized), zinc-5% aluminum-mischmetal alloy-coated, and aluminum-coated (aluminized) stranded steel core inserted for use in aluminum conductors, steel reinforced (ACSR).~~

~~1.2 The values stated in inch-pound units are to be regarded separately as standard. The values in each system are not exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in nonconformance with this specification.\*~~

~~1.1 This specification covers 7-wire, 19-wire, 37-wire, and 61-wire zinc-coated (galvanized), zinc-5 % aluminum-mischmetal alloy-coated stranded steel core intended for use in overhead electrical conductors.~~

~~1.2 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.~~

## 2. Referenced Documents

~~2.1 ASTM Standards: B232/B232M Specification for Concentric-Lay-Stranded Aluminum Conductors, Coated-Steel Reinforced (ACSR)~~

~~B341/B341M Specification for Aluminum-Coated (Aluminized) Steel Core Wire for Aluminum Conductors, Steel Reinforced (ACSR/AZ)<sup>2</sup>~~

~~B 498/B 498M Specification for Zinc-Coated (Galvanized) Steel Core Wire for Aluminum Conductors, Steel Reinforced (ACSR)<sup>2</sup>—Specification for Zinc-Coated (Galvanized) Steel Core Wire for Use in Overhead Electrical Conductors~~

~~B 606 Specification for High-Strength Zinc-Coated (Galvanized) Steel Core Wire for Aluminum and Aluminum-Alloy Conductors, Steel Reinforced~~

~~B 802/B 802M Specification for Zinc-5%—Zinc5 % Aluminum-Mischmetal Alloy-Coated Steel Core Wire for Aluminum Conductors, Steel Reinforced (ACSR)~~

~~B 803 Specification for High-Strength Zinc-5% Aluminum-Mischmetal Alloy-Coated Steel Core Wire for Aluminum and Aluminum-Alloy Conductors, Steel Reinforced<sup>2</sup>—Specification for High-Strength Zinc5 % Aluminum-Mischmetal Alloy-Coated Steel Core Wire for Use in Overhead Electrical Conductors~~

~~E 83 Practice for Verification and Classification of Extensometer System Systems~~

## 3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *lot*—unless otherwise specified in the contract or order, a lot shall consist of all coils or reels of strand of the same diameter and unit lengths submitted for inspection at the same time.

3.1.2 *production lot*—all of the wire spools loaded into a stranding machine that are used to produce a completed strand cable.

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee B01 on Electrical Conductors and is the direct responsibility of Subcommittee B01.05 on Conductors of Ferrous Metals.

Current edition approved Sept. 10, 1998. Published November 1998. Originally published as B500-69. Last previous edition B500-97.

Current edition approved March 15, 2009. Published April 2009. Originally approved in 1969. Last previous edition approved in 2002 as B 500/B 500M – 98 (2002).

<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* Vol 02.03, 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.

#### 4. Ordering Information

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

- 4.1.1 Length of each construction,
- 4.1.2 Construction description of stranded core (for example, 7 by  $\times$  0.0943 in. or 19 by  $\times$  0.0977 in.) (8.1 and 8.2),
- 4.1.3 Nominal unit length of stranded core and multiple lengths, if allowed (
- 4.1.3 The multiple length of stranded core and the total number of multiple lengths per reel, if allowed (8.3 and Section 15),
- 4.1.4 Coating, zinc-coated (Class A, B, or C), zinc-5% aluminum-mischmetal-coated (Class A, B, or C), or aluminum-coated (Section 5
- 4.1.4 Strength and coating type (Section 8),
- 4.1.5 Direction of lay of outer layer (Section 7),
- 4.1.6 Packaging (Section 15), and
- 4.1.7 Place of inspection (Section 13).

#### 5. Material

5.1 The coated steel wire used in the production of the stranded core shall, prior to stranding, meet all of the requirements of the appropriate specification that follows:

- ~~5.1.1 Specification B341/B341M~~
- 5.1.1 Specification B 498/B 498M,
- ~~5.1.2 Specification B498/B498M~~
- 5.1.2 Specification B 606,
- ~~5.1.3 Specification B606;~~
- ~~5.1.4 Specification B802/B802M~~
- 5.1.3 Specification B 802/B 802M, and
- ~~5.1.5 Specification B803~~
- 5.1.4 Specification B 803/B 803M.

#### 6. Joints

6.1 There shall be no joints of any kind made in the finished zinc-coated, zinc-5 % aluminum-mischmetal alloy-coated, or aluminum-coated alloy-coated steel wires.

#### 7. Stranding

- 7.1 The lay length of the 6-wire layer of 7 and 19-wire stranded core shall be not less than ~~18~~16 or more than ~~30~~26 times the outside diameter of the 6-wire layer. (Outside diameter is three times nominal wire diameter.)
- 7.2 The lay length of the 12-wire layer of a 19-wire stranded core shall be not less than ~~16~~14 or more than ~~24~~22 times the outside diameter of the 12-wire layer. (Outside diameter is five times nominal wire diameter.)
- 7.3 The lay length of the 18-wire layer of a 37-wire stranded core shall be not less than 14 ~~nor~~ or more than 20 times the outside diameter of the 18-wire layer. (Outside diameter is seven times nominal wire diameter.)
- 7.4 The lay length of the 24-wire layer of a 61-wire stranded core shall be not less than 14 ~~nor~~ or more than 18 times the outside diameter of the 24-wire layer. (Outside diameter is nine times nominal wire diameter.)
- 7.5 The steel wires shall be so stranded that when the stranded core is cut the individual wires can be readily regrouped and then held in place by one hand.
- 7.6 For construction containing 19 or more wires, the direction of lay will alternate with each layer.
- 7.7 The direction of lay of the outer layer shall be as specified by the purchaser at the time of placing the order.

#### 8. Construction and Recommended Standard Stranded-Core Lengths

~~8.1 Aluminum conductors, steel reinforced may be constructed using steel core wire with any one of nine types of protective coatings. The acceptable core wires are galvanized steel core wire, coating Classes A, B, or C in accordance with Specification B498/B498M; high-strength galvanized steel core wire in accordance with Specification B606; ZN-5A1-MM coated steel core wire, coating Classes A, B, or C, in accordance with Specification B802/B802M; high-strength ZN-5A4-MM coated steel core wire in accordance with Specification B803; aluminized steel core wire in accordance with Specification B341/B341M. Overhead Electrical Conductors may be constructed using steel core wire with any one of six types of protective coatings and associated strength grades. The acceptable core wires are produced to ASTM Specifications shown in Section 5 of this standard.~~

8.2 The number and diameters of the steel wires shall conform to the requirements of Table 1, Construction Requirements of Aluminum Conductors Steel-Reinforced (ACSR), of Specification B232/B232M. The number and diameters of the steel wires shall conform to the requirements in respective ASTM Conductor Standards.

8.3 Recommended standard unit-stranded-core lengths are given in Table number 5 of Specification B232/B232M (for the respective steel-wire stranded-core construction and sizes). Recommended standard unit-stranded-core multiple lengths are given in respective ASTM Conductor Standards.