



Designation: **B354—16 B354—19**

## Standard Terminology Relating to Uninsulated Metallic Electrical Conductors<sup>1</sup>

This standard is issued under the fixed designation B354; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### INTRODUCTION

These terminologies relate only to interpretations as applied to uninsulated metallic electrical conductors in specifications under the jurisdiction of ASTM Committee B01 on Electrical Conductors, and do not necessarily correspond to the definitions used in other fields.

### 1. Scope

1.1 This terminology standard defines abbreviations and terms specific to uninsulated electrical conductors. For terms relating to superconductors, see Terminology **B713**.

1.2 *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 ASTM Standards:<sup>2</sup>

[B193 Test Method for Resistivity of Electrical Conductor Materials](#)

[B230 Specification for Aluminum 1350-H19 Wire for Electrical Purposes](#)

[B398/B398M Specification for Aluminum-Alloy 6201-T81 and 6201-T83 Wire for Electrical Purposes](#)

[B609/B609M Specification for Aluminum 1350 Round Wire, Annealed and Intermediate Tempers, for Electrical Purposes](#)

[B713 Terminology Relating to Superconductors \(Withdrawn 2001\)<sup>3</sup>](#)

[B941 Specification for Heat Resistant Aluminum-Zirconium Alloy Wire for Electrical Purposes](#)

[B976 Specification for Fiber Reinforced Aluminum Matrix Composite \(AMC\) Core Wire for Aluminum Conductors, Composite Reinforced \(ACCR\)](#)

[B978/B978M Specification for Concentric-Lay-Stranded Aluminum Conductors, Composite Reinforced \(ACCR\)<sup>54-19</sup>](#)

[B987/B987M Specification for Carbon Fiber Thermoset Polymer Matrix Composite Core \(CFC\) for use in Overhead Electrical Conductors](#)

[E8/E8M Test Methods for Tension Testing of Metallic Materials](#)

### 3. Abbreviations

**AAAC**—all aluminum alloy conductor

**AAC**—aluminum conductor

**AACSR**—aluminum alloy conductor, steel reinforced

**ACAR**—aluminum conductor, aluminum alloy reinforced

**ACSR**—aluminum conductor, steel reinforced

**ACSS**—aluminum conductor steel supported

**AMC**—aluminum matrix composite

**AW**—old designation for what is now termed AW2

<sup>1</sup> This terminology is under the jurisdiction of ASTM Committee **B01** on Electrical Conductors and is the direct responsibility of Subcommittee **B01.01** on Editorial and Records.

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<sup>2</sup> 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.

<sup>3</sup> The last approved version of this historical standard is referenced on [www.astm.org](#).

**AW2**—aluminum-clad steel core wire, normal strength  
**AW3**—aluminum-clad steel core wire, high strength  
**AZ**—old designation (aluminized)  
**CCA**—copper-clad aluminum  
**CCS**—copper-clad steel  
**COMP**—compact construction  
**EHS**—extra high strength  
**GA**—old designation for what is now termed GA2  
**GA2**—zinc coated (galvanized) steel wire, coating class A  
**GA3**—zinc coated (galvanized) high strength steel wire, coating class A  
**GA4**—zinc coated (galvanized) extra high strength steel wire, coating class A  
**GA5**—zinc coated (galvanized) ultra high strength steel wire, coating class A  
**GB**—obsolete designation, class B galvanizing is no longer offered  
**GC**—old designation for what is now termed GC2  
**GC2**—zinc coated (galvanized) steel wire, coating class C  
**HS**—high strength  
**IACS**—international annealed copper standard, which is 1/58 Ohm-mm<sup>2</sup>/m at 20°C for 100 % conductivity  
**LSE**—low stress elongation  
**MA**—old designation for what is now termed MA2  
**MA2**—zinc-5 % aluminum-mischmetal alloy coated steel wire, coating class A  
**MA3**—zinc-5 % aluminum-mischmetal alloy coated high strength steel wire, coating class A  
**MA4**—zinc-5 % aluminum-mischmetal alloy coated extra high steel wire, coating class A  
**MA5**—zinc-5 % aluminum-mischmetal alloy coated ultra high steel wire, coating class A  
**MB**—obsolete designation, class B galvanizing is no longer offered  
**MC**—old designation for what is now termed MC2  
**MC2**—zinc-5 % aluminum-mischmetal alloy coated steel wire, coating class C  
**MS**—old designation for what is now termed MA3  
**MM**—mischmetal  
**NS**—non-specular  
**SD**—self dampening construction  
**SIW**—single input wire construction  
**TP**—twisted pair  
**TW**—trapezoidal shaped wire  
**UHS**—ultra high strength  
**UNS**—unified numbering system  
**Zn-5Al-MM**—zinc-5 % aluminum-mischmetal alloy coating

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#### 4. Acronyms

**ACAMCR**—a type of Aluminum Conductor Aluminum Matrix Composite Reinforced bare overhead electrical conductor. The composition of the ACAMCR conductor can be further identified using suffix modifiers where /XX is designation for the aluminum material and /YYYY is designation for the strength member material. Specification **B978/B978M** characterizes an ACAMCR / AT3 / AM1 type of conductor.

**ACAMCS**—a type of Aluminum Conductor Aluminum Matrix Composite Supported bare overhead electrical conductor. The composition of the ACAMCS conductor can be further identified using suffix modifiers where /XX is designation for the aluminum material and /YYYY is designation for the strength member material.

**ACCFCR**—a type of Aluminum Conductor Carbon Fiber Composite Reinforced bare overhead electrical conductor. The composition of the ACCFCR conductor can be further identified using suffix modifiers where /XX is designation for the aluminum material and /YYYY is designation for the strength member material.

**ACCFCS**—a type of Aluminum Conductor Carbon Fiber Composite Supported bare overhead electrical conductor. The composition of the ACCFCS conductor can be further identified using suffix modifiers where /XX is designation for the aluminum material and /YYYY is designation for the strength member material.

4.1 The following suffix modifiers may be used for the above listed acronyms.

**/A0**—used as a suffix modifier for ACAMCS and ACCFCS type of conductors representing 1350 O Temper aluminum material in accordance with Specification **B609/B609M**.

**/A1**—used as a suffix modifier for ACAMCR and ACCFCR type of conductors representing 1350 H19 aluminum material in accordance with Specification **B230**.

**/A3**—used as a suffix modifier for ACAMCR and ACCFCR type of conductors representing 6201 T81 aluminum alloy material in accordance with Specification **B398/B398M**.

/A4—used as a suffix modifier for ACAMCR and ACCFCR type of conductors representing 6201 T83 aluminum alloy material in accordance with Specification B398/B398M.

/AT3—used as a suffix modifier for ACAMCR and ACCFCR type of conductors representing aluminum zirconium material in accordance with Specification B941.

/M1—used as a suffix modifier for ACAMCR and ACAMCS type of conductors representing an Aluminum Matrix Composite (AMC) core in accordance with Specification B976. Future suffix modifiers may be defined at a later date to identify additional types of metal matrix composite material.

/CS1—used as a suffix modifier for ACCFCR and ACCFCS type of conductors representing Regular Strength Carbon Fiber Thermoset Polymeric Matrix core in accordance with Specification B987/B987M.

/CS2—used as a suffix modifier for ACCFCR and ACCFCS type of conductors representing High Strength Carbon Fiber Thermoset Polymeric Matrix core in accordance with Specification B987/B987M.

/CS3—used as a suffix modifier for ACCFCR and ACCFCS type of conductors representing Extra High Strength Carbon Fiber Thermoset Polymeric Matrix core in accordance with Specification B987/B987M.

/CP1—used as a suffix modifier for ACCFCR and ACCFCS type of conductors representing Regular Strength Carbon Fiber Thermoplastic Polymeric Matrix.

/CP2—used as a suffix modifier for ACCFCR and ACCFCS type of conductors representing High Strength Carbon Fiber Thermoplastic Polymeric Matrix.

## 5. Terminology

### 5.1 Definitions:

**aeolian vibration**—resonant vibration of a conductor caused by the alternate shedding of wind-induced vortices from opposite sides of the conductor. (Frequency is usually less than 200 Hz and amplitude rarely exceeds one conductor diameter.)

**anneal (annealing), *n***—a thermal treatment to change the properties or grain structure of the product. When applied to a cold-worked product having a single phase: to produce softening by recrystallization or recrystallization and grain growth with the accompanying changes in properties. When applied to a product having two or more phases: to produce softening by changes in the phase relationship that may include recrystallization and grain growth.

*annealed wire*—see **soft wire**.

**area density**—mass per unit area.

**bare conductor**—a conductor having no nonmetallic covering.

**brazing**—the joining of ends of two wires, rods, or groups of wires with a nonferrous filler metal at temperatures above 800°F (427°C).

**breaking strength**—the maximum load that a conductor attains when tested in tension to rupture.

**bunch-stranded conductor**—a conductor composed of wires twisted together with a given length and direction of lay in such manner that the respective wires at successive cross sections along the length of the conductor do not necessarily form a symmetrical geometric pattern, nor necessarily occupy the same positions relative to each other.

**casting, continuous, *n***—a casting produced by the continuous pouring and solidification of molten metal through a water-cooled mold which determines the cross-sectional shape. The length of the product is not restricted by mold dimensions.

**circular mil (cmil)**—a unit of area equal to the area of a circle one mil (0.001 in., 0.0254 mm) in diameter. The area of a circle in circular mils is equal to the square of the diameter in mils (area(cmils) = diameter(mils)<sup>2</sup>), 1 cmil = 7.854 × 10<sup>-7</sup> in.<sup>2</sup> (5.067 × 10<sup>-10</sup> m<sup>2</sup>).

**clad wire**—wire comprised of a given metal covered with a relatively thick application of a different metal. The bonding process is normally a combination of heat and pressure and results in a metallurgical bond.

**coated wire**—wire comprised of a given metal covered with a relatively thin application of a different metal. The coating process is normally electroplating or dip coating.

**coil, *n***—a length of the product wound into a series of connected turns. The unqualified term “coil” as applied to tube usually refers to a bunched coil.

**cold-drawing**—reducing the cross section by pulling through a die or dies, at a temperature lower than the recrystallization temperature.

**cold work, *n***—controlled mechanical operations for changing the form or cross section of a product and for producing a strain-hardened product at temperatures below the recrystallization temperature.