



Standard Specification for Phosphorized Coppers—Refinery Shapes¹

This standard is issued under the fixed designation B 379; 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 establishes the requirements for phosphorized copper wire bars, billets, and cakes.

NOTE 1—Wire bars furnished under this specification do not conform in dimensions with that furnished under Specification B 5.

1.2 The values in inch-pound units are the standard. SI values given in parentheses are for information only.

1.3 The following hazard caveat applies to 14.2 and 14.3 of this specification: *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 and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

- B 5 Specification for High Conductivity Tough-Pitch Copper Refinery Shapes
- B 193 Test Method for Resistivity of Electrical Conductor Materials
- B 224 Classification of Coppers
- B 577 Test Methods for Detection of Cuprous Oxide (Hydrogen Embrittlement Susceptibility) in Copper
- B 846 Terminology for Copper and Copper Alloys
- E 8 Test Methods for Tension Testing of Metallic Materials
- E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications
- E 53 Test Methods for Determination of Copper in Unalloyed Copper by Gravimetry
- E 62 Test Methods for Chemical Analysis of Copper and Copper Alloys (Photometric Methods)
- E 255 Practice for Sampling Copper and Copper Alloys for Determination of Chemical Composition

3. Terminology

3.1 For definitions of terms related to copper and copper alloys, refer to Terminology B 846.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *billet*—refinery shape used for piercing or extrusion into tubular products or for extrusion into rod, bars, and shapes. Circular in cross section, usually 3 to 16 in. (76 to 406 mm) in diameter, normally ranging in weight from 100 to 4200 lb (45 to 1905 kg).

3.2.2 *cake*—refinery shape used for rolling into plate, sheet, strip, or shape. Rectangular in cross section and of various sizes, normally ranging in weight from 140 to 62 000 lb (64 to 28 123 kg).

3.2.3 *capable of*—possessing the required properties or characteristics, or both, necessary to conform to specification requirements when subjected to specified test(s).

3.2.4 *copper, electrolytic*—copper of any origin refined by electrolytic deposition including electrowinning. When used alone, this term usually refers to electrolytic tough pitch copper.

3.2.5 *copper, fire-refined*—copper of any origin or type finished by furnace refining without having been processed at any stage by electrolytic or chemical refining. When used alone, the term usually refers to fire refined tough pitch copper.

3.2.6 *copper, oxygen-free*—electrolytic copper produced without the use of metallic or metalloidal deoxidizers, free of cuprous oxide as determined by metallographic examination at 75× under polarized light.

3.2.7 *wire bar*—refinery shape used for rolling into rod or flat products for subsequent processing into wire, strip, or shape. Approximately 3½ to 5 in. (89 to 127 mm) square in cross section, usually 54 in. (1372 mm) in length and ranging in weight from 200 to 420 lb (91 to 191 kg). Usually tapered at both ends.

4. Ordering Information

4.1 Contracts or purchase orders for product under this specification should include the following information:

4.1.1 ASTM designation and year of issue (for example, B 379 – XX),

4.1.2 Copper UNS Number (for example, C10800),

4.1.3 Shape required: wire bar, billet or cake,

4.1.3.1 Billet end type,

¹ This specification is under the jurisdiction of ASTM Committee B05 on Copper and Copper Alloys and is the direct responsibility of Subcommittee B05.07 on Refined Copper.

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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.