



Standard Specification for Electrolytic Copper Cathode¹

This standard is issued under the fixed designation B115; 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 electrolytic copper cathode; electrorefined and electrowon.

1.2 *Units*—The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

NOTE 1—Cathode produced to this specification corresponds to the designation “Cath” as defined in Classification B224 and may be used to produce all other coppers listed in Classification B224 that are normally produced from “Cath” copper.

NOTE 2—Grade 1 cathode conforms to the chemical compositional requirements of Copper UNS No. C11040, except for oxygen, and is suitable for the manufacture of wire rod as designated in Specification B49.

1.3 The following hazard caveat applies to the test methods described in Annex A2 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

- B49 Specification for Copper Rod for Electrical Purposes
- B193 Test Method for Resistivity of Electrical Conductor Materials
- B224 Classification of Coppers
- B846 Terminology for Copper and Copper Alloys
- E29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications
- E50 Practices for Apparatus, Reagents, and Safety Considerations for Chemical Analysis of Metals, Ores, and Related Materials

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.

E53 Test Method for Determination of Copper in Unalloyed Copper by Gravimetry

3. Terminology

3.1 For definition of general terms related to copper and copper alloys, refer to the current editions of Classification B224 and Terminology B846.

4. Ordering Information

4.1 Orders for product shall include the following information, as applicable:

- 4.1.1 ASTM designation and year of issue (for example, B115 – XX),
- 4.1.2 Cathode grade (Table 1),
- 4.1.3 Size; full cathode or cut,
- 4.1.4 Total weight of each size.

5. Chemical Composition

5.1 The cathode furnished shall conform to the requirements of Table 1 for the grade specified in the contract or purchase order.

5.2 These composition limits do not preclude the presence of other elements. Limits may be established and analysis required for unnamed elements by agreement between the supplier and the purchaser and such agreement shall be part of the contract or purchase order.

6. Physical Property Requirements

6.1 Electrical Resistivity:

6.1.1 The maximum electrical resistivity for product produced from Grade 2 cathode shall be $0.153\ 28\ \Omega\cdot\text{g}/\text{m}^2$ (conductivity 100.0 % minimum IACS) at 20°C (68°F) annealed³ when tested in accordance with Test Method B193. Measurement error is not included in the maximum/minimum limit.

7. Dimensions, Mass, and Permissible Variations

7.1 Full-size cathodes or cathodes cut to size may be supplied as agreed upon between supplier and purchaser.

³ NBS Notebook 100 available from National Technical Information Service (NTIS), 5301 Shawnee Rd, Alexandria, VA 22312, <http://www.ntis.gov>.

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