



Designation: **B455 – 10 (Reapproved 2017) B455/B455M – 20**

Standard Specification for Copper-Zinc-Lead Alloy (Leaded-Brass) Extruded Shapes¹

This standard is issued under the fixed designation ~~B455~~; **B455/B455M**; 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 extruded leaded-brass angles, channels, and other architectural shapes of solid cross section produced in Copper Alloy UNS Nos. C38000 and C38500.

1.1.1 Pipe, tube, or other hollow section products are not included in this specification.

1.2 *Units*—~~The values stated in either inch-pound units or SI 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, separately as standard. Within the text, SI units are shown in brackets. The values stated in each system are not necessarily exact equivalents; therefore, to ensure conformance with the standard, each system shall be used independently of the other, and values from the two systems shall not be combined.~~

1.3 *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:*²

B249/B249M Specification for General Requirements for Wrought Copper and Copper-Alloy Rod, Bar, Shapes and Forgings

B601 Classification for Temper Designations for Copper and Copper Alloys—Wrought and Cast

B846 Terminology for Copper and Copper Alloys

~~**B950** Guide for Editorial Procedures and Form of Product Specifications for Copper and Copper Alloys~~

E8/E8M Test Methods for Tension Testing of Metallic Materials

E54 Test Methods for Chemical Analysis of Special Brasses and Bronzes (Withdrawn 2002)³

E255 Practice for Sampling Copper and Copper Alloys for the Determination of Chemical Composition

E478 Test Methods for Chemical Analysis of Copper Alloys

<https://standards.iteh.ai/catalog/standards/sist/dec21534-03bd-4d3c-a9fc-f64935dedc24/astm-b455-b455m-20>

3. General Requirements

3.1 The following sections of Specification **B249/B249M** constitute a part of this specification:

3.1.1 ~~Terminology~~; Terminology

3.1.2 Materials and ~~Manufacture~~; Manufacture

3.1.3 Workmanship, Finish, and ~~Appearance~~; Appearance

3.1.4 ~~Sampling~~; Sampling

3.1.5 Number of Tests and ~~Retests~~; Retests

3.1.6 Specimen ~~Preparation~~; Preparation

3.1.7 Test ~~Methods~~; Methods

3.1.8 Significance of Numerical ~~Limits~~; Limits

3.1.9 ~~Inspection~~; Inspection

3.1.10 Rejection and ~~Rehearing~~; Rehearing

3.1.11 ~~Certification~~; Certification

¹ This specification is under the jurisdiction of ASTM Committee **B05** on Copper and Copper Alloys and is the direct responsibility of Subcommittee **B05.02** on Rod, Bar, Wire, Shapes and Forgings.

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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.

³ The last approved version of this historical standard is referenced on www.astm.org.

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



- 3.1.12 Mill Test Report, and Report
- 3.1.13 Packaging and Package Marking-Marking

3.2 In addition, when a section with a title identical to that referenced in 3.1 appears in this specification, it contains additional information which supplements that appearing in Specification B249/B249M. In case of conflict this specification shall prevail.

4. Terminology

4.1 For definitions of terms related to copper and copper alloys, refer to Terminology B846.

5. Ordering Information

5.1 Include the following information when placing orders for product under this specification, as applicable:

- 5.1.1 ASTM designation and year of issue (for example, B455 – 01);
- 5.1.2 Copper Alloy UNS No. designation (for example, C38000);
- 5.1.3 Temper (Section 7);
- 5.1.4 Form, dimensions, and tolerances (Section 9); and
- 5.1.5 Quantity—total weight or number of pieces for each form, temper, size, and copper alloy.

5.2 The following options are available and shall be specified at the time of placing of the order when required:

- 5.2.1 Intended end use or application,
- 5.2.2 Heat identification or traceability details (Specification B249/B249M),
- 5.2.3 Certification (Specification B249/B249M), and
- 5.2.4 Mill test report (Specification B249/B249M).

6. Chemical Composition

6.1 The material shall conform to the chemical compositional requirements in Table 1 for the copper alloy UNS No. specified in the ordering information.

6.1.1 These composition limits do not preclude the presence of other elements. By agreement between the manufacturer and purchaser, limits will be established and analysis required for unnamed elements.

6.2 For alloys in which zinc is specified as the remainder, either copper or zinc is permitted to be taken as the difference between the sum of results for all elements analyzed and 100 %. When copper is so determined, that difference value shall conform to the requirements given in Table 1.

6.3 When all elements specified in Table 1 are determined for the copper alloy UNS No. designated in the ordering information, the sum of the results shall be 99.5 % minimum.

7. Temper

7.1 The temper of the product furnished to this specification, as defined in Specification B249/B249M, shall be M30 (as hot extruded).

8. Mechanical Property Requirements

8.1 Tensile Strength Requirements:

- 8.1.1 The product furnished shall conform to the requirements of Table 2 when tested in accordance with Test Methods E8/E8M.
- 8.1.2 The tension test results shall be the basis for purchaser acceptance or rejection based upon mechanical properties.
- 8.1.2.1 When product is intended for strictly decorative purposes and so stated in the purchase order or contract, it is permitted under this specification for the mechanical property requirements to be waived by the purchaser.

8.2 Rockwell Hardness:

8.2.1 A Rockwell hardness test offers a quick and convenient method of checking general conformity to temper and tensile requirements.

TABLE 1 Chemical Requirements

Element	Composition, %	
	Copper Alloy UNS No. C38000	Copper Alloy UNS No. C38500
Copper	55.0–60.0	55.0–59.0
Lead	1.5–2.5	2.5–3.5
Zinc	remainder	remainder
Iron, max	0.35	0.35
Tin, max	0.30	...
Aluminum, max	0.50	...