



Designation: ~~B455-05~~ Designation: B455 – 10

## Standard Specification for Copper-Zinc-Lead Alloy (Leaded-Brass) Extruded Shapes<sup>1</sup>

This standard is issued under the fixed designation B455; 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 reappraisal. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reappraisal.

### 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 inch-pound units are ~~the~~ to be regarded as standard. The values given in parentheses are mathematical conversions to SI units, ~~which~~ units that are provided for information only and are not considered standard.

### 2. Referenced Documents

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

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

E54 [Test Methods for Chemical Analysis of Special Brasses and Bronzes](#)

E255 [Practice for Sampling Copper and Copper Alloys for the Determination of Chemical Composition](#)

E478 [Test Methods for Chemical Analysis of Copper Alloys](#)

### 3. General Requirements

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

3.1.1 Terminology,

3.1.2 Materials and Manufacture,

3.1.3 Workmanship, Finish, and Appearance,

3.1.4 Sampling,

3.1.5 Number of Tests and Retests,

3.1.6 Specimen Preparation,

3.1.7 Test Methods,

3.1.8 Significance of Numerical Limits,

3.1.9 Inspection,

3.1.10 Rejection and Rehearing,

3.1.11 Certification,

3.1.12 Mill Test Report, and

3.1.13 Packaging and Package 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.

<sup>1</sup> 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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<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.

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

## 5. Ordering Information

~~5.1 When placing orders for products under this specification include the following 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 ~~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 in this specification and shall be included in the contract or purchase order when required:~~

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. ~~designations specified~~ in the ordering information.

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

6.2 For copper 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~~ 7.1 The temper of the product furnished to this specification, as defined in ~~Classification~~ 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.

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.

NOTE 1—For assistance in testing, the minimum Rockwell B hardness of M30 (as hot-extruded) temper shapes to this specification is approximately 42.

## 9. Dimensions, Mass, and Permissible Variations

9.1 The dimensions, contours, and tolerances shall be provided by the purchaser, by means of a drawing or other medium, and shall be a part of the contract or purchase order.

**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	...