



Standard Specification for Copper and Copper Alloy Forging Rod, Bar, and Shapes¹

This standard is issued under the fixed designation B124/B124M; 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.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope*

1.1 This specification establishes the requirements for copper and copper alloy rod, bar, and shapes intended for hot forging. The following coppers and copper alloys are involved:

Copper UNS Nos.	Copper Alloy UNS Nos.
C11000	C27450
C14500	C27451
C14700	C35330
	C36500
	C37000
	C37700
	C46400
	C46750
	C48200
	C48500
	C48600
	C49250
	C49255
	C49260
	C49300
	C49340
	C49350
	C49355
	C49360
	C61900
	C62300
	C63000
	C63200
	C64200
	C64210
	C65500
	C67500
	C67600
	C69150
	C69300
	C70620
	C71520
	C77400
	C87700
	C87710

NOTE 1—Additional information about forging practice and forgings produced from these alloys is given in [Appendix X1](#) and in Specification [B283/B283M](#).

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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1.2 *Units*—The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

1.3 *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 requirements prior to use.*

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

[B283/B283M](#) Specification for Copper and Copper-Alloy Die Forgings (Hot-Pressed)

[E54](#) Test Methods for Chemical Analysis of Special Brasses and Bronzes (Withdrawn 2002)³

[E62](#) Test Methods for Chemical Analysis of Copper and Copper Alloys (Photometric Methods) (Withdrawn 2010)³

[E75](#) Test Methods for Chemical Analysis of Copper-Nickel and Copper-Nickel-Zinc Alloys (Withdrawn 2010)³

[E76](#) Test Methods for Chemical Analysis of Nickel-Copper Alloys (Withdrawn 2003)³

[E121](#) Test Methods for Chemical Analysis of Copper-Tellurium Alloys (Withdrawn 2010)³

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

2.2 Other Standards:

[ISO 3110, Part 2 \(TC 26 Ref. No. N 670 E/F\)](#) Determination of Aluminum Content: Flame Atomic Absorption Spectrometric Method⁴

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.

⁴ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

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

JIS H 1068:2005 Methods for Determination of Bismuth in Copper and Copper Alloys⁵ (Japanese Industrial Standards)

3. General Requirements

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

- 3.1.1 Terminology,
- 3.1.2 Material 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 Reports,
- 3.1.13 Packaging and Package Marking, and
- 3.1.14 Supplementary Requirements.

3.2 In addition, when a section with a title identical to that referenced in **3.1**, appears in this specification, it contains additional requirements that supplement those appearing in Specification **B249/B249M**.

4. Ordering Information

4.1 Include the following information when placing orders for products under this specification:

- 4.1.1 ASTM designation and year of issue (B124/B124M – XX),
- 4.1.2 Copper or Copper-Alloy UNS No. designation,
- 4.1.3 Form (rod, bar, or shape) and size (Dimensions and Permissible Variations Section),
- 4.1.4 Permissible Variations (Dimensions and Permissible Variations Section),
- 4.1.5 Temper (Temper Section),
- 4.1.6 Length (Dimensions and Permissible Variations Section),
- 4.1.7 Quantity; total weight for each size and form,
- 4.1.8 If the product is purchased for agencies of the U.S. government (see the Supplementary Requirements Section of this specification for additional requirements, if specified.)

4.2 The following options are available and, when required, should be specified at the time of placing of the order:

- 4.2.1 Mechanical Properties for Temper designated (Mechanical Properties Section),
- 4.2.2 Certification (**B249/B249M**),
- 4.2.3 Test Report (**B249/B249M**), and
- 4.2.4 When product is ordered for ASME Boiler and Pressure Vessel Code Application (see Certification Section of **B249/B249M**).
- 4.2.5 Shapes; dimensional tolerances required and agreed upon (see **10.1.3**).

5. Materials and Manufacture

5.1 Materials:

5.1.1 The material of manufacture shall be a cast rod, bar, or billet of the designated copper or copper-alloy of such purity and soundness to be suitable for processing in to the products prescribed herein.

5.1.2 In the event that heat identification or traceability is required, the purchaser shall specify the details desired.

NOTE 2—Due to the discontinuous nature of the processing of castings into wrought products, it is not always practical to identify a specific casting analysis with a specific quantity of finished material.

5.2 Manufacture:

5.2.1 The product shall be manufactured by such hot working, cold working, and annealing processes as to produce a uniform wrought structure in the finished product.

5.2.2 The product shall be hot or cold worked to the finished size and subsequently annealed, when required, to meet the temper properties specified.

6. Chemical Composition

6.1 The material shall conform to the chemical composition requirements in **Table 1** for the copper or copper alloy UNS No. designation 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 the purchaser, limits may be established and analysis required for unnamed elements.

6.2 For alloys in which either copper or zinc is listed as “remainder,” copper or zinc is the difference between the sum of results of all elements determined and 100 %. When all elements in **Table 1** for the specified copper-alloy are determined, the sum of results shall be as follows:

Copper Alloy UNS No.	Sum of Results, % min
C36500, C37000, C46400, C48200, C48500, C48600, C69150	99.6
C27450, C27451, C35330, C37700, C46750, C49250, C49255, C49260, C49300, C49340, C49350, C49355, C49360, C61900, C62300, C63000, C63200, C64200, C64210, C65500, C67500, C67600, C69300, C70620, C71520, C77400	99.5
C87700, C87710	99.2

7. Temper

7.1 The standard tempers for products described in this specification are as follows:

- 7.1.1 H50—Extruded and drawn.
- 7.1.2 H80—Hard drawn.
- 7.1.3 M20—As hot-rolled.
- 7.1.4 M30—As hot-extruded.
- 7.1.5 O60—Soft Annealed.
- 7.1.6 O61—Annealed.
- 7.1.7 O30—Hot Extruded and Annealed.

8. Mechanical Property Requirements

8.1 Mechanical property requirements, if any, are to be established by agreement between the manufacturer and the purchaser.

⁵ Available from Japanese Standards Association (JSA), Mita MT Bldg., 3-13-12 Mita, Minato-ku, Tokyo, 108-0073, Japan, <http://www.jsa.or.jp>.



TABLE 1 Chemical Requirements

Copper or Copper Alloy UNS No.	Composition, %													Copper Plus Elements with Specific Limits Present, min
	Copper	Lead	Tin	Iron	Nickel (incl Co)	Aluminum	Silicon	Manganese	Zinc	Sulfur	Tellurium	Phos- phorus	Arsenic	
C11000	99.90 min ^A	...	...	...	...	...	...	...	...	...	...	...	...	...
C14500 ^B	99.90 min ^C	...	...	...	...	...	...	...	...	...	0.40–0.7	0.004–0.012	...	...
C14700 ^B	99.90 min ^D	...	...	...	...	...	...	...	...	0.20–0.50	...	0.002–0.005	...	...
C27450	60.0–65.0	0.25 max	...	0.35 max	...	...	...	...	remainder	...	...	...	...	99.5
C27451	61.0–65.0	0.25 max	...	0.35 max	...	...	...	...	remainder	...	...	0.05–0.20	...	99.5
C35330	59.5–64.0	1.5–3.5	...	...	...	...	...	...	remainder	...	...	...	.02–.25	...
C36500	58.0–61.0	0.25–0.7	0.25 max	0.15 max	...	...	...	...	remainder	...	...	...	...	99.6
C37000	59.0–62.0	0.8–1.5	...	0.15 max	...	...	...	...	remainder	...	...	...	...	99.6
C37700	58.0–61.0	1.5–2.5	...	0.30 max	...	...	...	...	remainder	...	...	...	...	99.5
C46400	59.0–62.0	0.20 max	0.50–1.0	0.10 max	...	...	...	...	remainder	...	...	...	...	99.6
C46750 ^E	59.2–62.5	0.25 max	1.00–1.80	0.10 max	0.50 max	...	...	...	remainder	...	...	0.05–0.15	...	99.5
C48200	59.0–62.0	0.40–1.0	0.50–1.0	0.10 max	...	...	...	...	remainder	...	...	...	...	99.6
C48500	59.0–62.0	1.3–2.2	0.50–1.0	0.10 max	...	...	...	...	remainder	...	...	...	...	99.6
C48600	59.0–62.0	1.0–2.5	0.30–1.5	...	...	...	...	...	remainder	...	...	...	...	...
C49250 ^F	58.0–61.0	0.09 max	0.30 max	0.50 max	...	...	...	...	remainder	...	...	...	.02–.25	...
C49255 ^G	58.0–60.0	0.01 max	0.50 max	0.10 max	0.10–0.30	...	0.10 max	...	remainder	...	...	0.10 max	1.8–2.4	99.5
C49260 ^H	58.0–63.0	0.09 max	0.50 max	0.50 max	...	...	0.10 max	...	remainder	...	...	0.05–0.15	1.7–2.9	99.5
C49300 ^I	58.0–62.0	0.01 max	1.0–1.8	0.10 max	1.5 max	0.50 max	0.10 max	0.03 max	remainder	...	...	0.20 max	0.50–2.0	99.5
C49340 ^J	60.0–63.0	0.09 max	0.50–1.5	0.12 max	...	...	0.10 max	...	remainder	...	...	0.05–0.15	0.50–2.2	99.5
C49350 ^K	61.0–63.0	0.09 max	1.5–3.0	0.12 max	...	...	0.30 max	...	remainder	...	...	0.04–0.15	0.50–2.5	99.5
C49355 ^L	63.0–69.0	0.09 max	0.50–2.0	0.10 max	...	...	1.0–2.0	0.10 max	27.0–35.0	...	...	...	0.50–1.5	99.5
C49360	remainder ^A	0.09 max	1.0–2.0	...	...	...	2.0–3.5	...	19.0–22.0	...	...	...	0.50–1.5	99.5
C61900	remainder ^A	0.02 max	0.6 max	3.0–4.5	...	8.5–10.0	...	...	0.8 max	...	...	...	...	99.5
C62300	remainder ^A	...	0.6 max	2.0–4.0	1.0 max	8.5–10.0	0.25 max	0.50 max	...	...	...	...	...	99.5
C63000	remainder ^A	...	0.20 max	2.0–4.0	4.0–5.5	9.0–11.0	0.25 max	1.5 max	0.30 max	...	...	...	...	99.5
C63200	remainder ^A	0.02 max	...	3.5–4.3 ^M	4.0–4.8 ^M	8.7–9.5	0.10 max	1.2–2.0	...	...	...	...	...	99.5
C64200	remainder ^A	0.05 max	0.20 max	0.30 max	0.25 max	6.3–7.6	1.5–2.2	0.10 max	0.50 max	...	...	...	0.09 max	99.5
C64210	remainder ^A	0.05 max	0.20 max	0.30 max	0.25 max	6.3–7.0	1.5–2.0	0.10 max	0.50 max	...	...	...	0.09 max	99.5
C65500	remainder ^A	0.05 max	...	0.8 max	0.6 max	...	2.8–3.8	0.50–1.3	1.5 max	...	...	...	...	99.5
C67500	57.0–60.0 ^A	0.20 max	0.50–1.5	0.8–2.0	...	0.25 max	...	0.05–0.50	remainder	...	...	...	...	99.5
C67600	57.0–60.0 ^A	0.50–1.0	0.50–1.5	0.40–1.3	...	...	...	0.05–0.50	remainder	...	...	...	...	99.5
C69150 ^A	82.5–87.5	0.05 max	0.025 max	0.25 max	0.20 max	0.7–1.3	0.02 max	0.25–0.6	remainder	...	...	...	...	99.6
C69300	73.0–77.0 ^A	0.09 max	0.20 max	0.10 max	0.10 max	...	2.7–3.4	0.10 max	remainder	...	...	0.04–0.15	...	99.5
C70620 ^N	86.5 min ^A	0.02 max	...	1.0–1.8	9.0–11.0	...	...	1.0 max	0.50 max	0.02 max	...	0.02 max	...	99.5
C71520 ^N	65.0 min ^A	0.02 max	...	0.40–1.0	29.0–33.0	...	...	1.0 max	0.50 max	0.02 max	...	0.02 max	...	99.5
C77400	43.0–47.0 ^A	0.09 max	...	...	9.0–11.0	...	...	...	remainder	...	...	...	...	99.5
C87700 ^O	87.5 min	0.09 max	2.0 max	0.50 max	0.25 max ^P	...	2.5–3.5	0.8 max	7.0–9.0	...	...	0.15 max	...	99.2
C87710 ^O	84 min	0.09 max	2.0 max	0.50 max	0.25 max ^P	...	3.0–5.0	0.8 max	9.0–11.0	...	...	0.15 max	...	99.2

^A Silver counts as copper.^B Includes oxygen-free or deoxidized grades with deoxidizers (such as phosphorus, boron, lithium, or others) in amount agreed upon.^C This includes copper + silver + tellurium + phosphorus.^D This includes copper + silver + sulfur + phosphorus.^E Includes antimony 0.05–0.15^F Includes cadmium 0.001 % max.^G Includes cadmium 0.01, selenium 0.02–0.07.^H Includes cadmium 0.001 % max.^I Includes antimony 0.50 % max and selenium 0.20 % max.^J Includes cadmium 0.001 % max.^K Includes antimony 0.02–0.10 %.^L Includes boron 0.001 % max.^M Iron content shall not exceed nickel content.^N Carbon shall be 0.05 % max.^O Antimony shall be 0.10 % max.^P Not including Co.



9. Purchases for U.S. Government

9.1 When specified in the contract or purchase order, products purchased for agencies of the U.S. Government shall conform to the special governmental regulations specified in the Supplementary Requirements sections of this specification and of **B249/B249M**.

10. Dimensions and Permissible Variations

10.1 The dimensions and tolerances for product described by this specification shall be as specified in Specification **B249/B249M** with particular reference to the following tables and related paragraphs:

10.1.1 Diameter or Distance Between Parallel Surfaces:

10.1.1.1 For M30 rod, Copper Alloy UNS Nos. C27450, C27451, C35330, C36500, C37000, C37700, C46400, C46750, C48200, C48500, C48600, C49250, C49255, C49260, C49300, C49340, C49350, C49355, C49360, C61900, C62300, C63000, C63200, C64200, C64210, C67500, C67600, C69150, C69300, C70620, and C71520, refer to Table 4.

10.1.1.2 For M30 rod, Copper UNS Nos. C11000, C14500, C14700, C65500, C77400, C87700, and C87710, refer to Table 5.

10.1.1.3 For M20, round rod, refer to Table 6.

10.1.1.4 For H50 rod, refer to Table 1 for Copper UNS Nos. C11000, C14500, C14700, and Copper Alloy UNS Nos. C46400, C46750, C48200, C48500, C49250, C49255, C49260, C49300, C49340, C49350, C49360, and C69150.

10.1.1.5 For H50 rod, refer to Table 2 for Copper Alloy UNS Nos. C27450, C27451, C36500, C37000, C37700, C61900, C62300, C63000, C63200, C64200, C64210, C65500, C67500, C67600, C69300, C70620, C71520, C77400, C87700, and C87710.

10.1.2 Width and Thickness:

10.1.2.1 For M30 bar refer to Table 4 for Copper Alloy UNS Nos. C27450, C27451, C35330, C36500, C37000, C37700, C46400, C46750, C48200, C48500, C48600, C49250, C49255, C49260, C49300, C49340, C49350, C49355, C49360, C61900, C62300, C63000, C63200, C64200, C64210, C67500, C67600, C69150, C69300, C70620, and C71520.

10.1.2.2 For M30 bar refer to Table 5 for Copper UNS Nos. C11000, C14500, and C14700 and Copper Alloy UNS Nos. C65500, C77400, C87700, and C87710.

10.1.2.3 For H50 bar, refer to Tables 7 and 10 for Copper UNS Nos. C11000, C14500, and C14700.

10.1.2.4 For H50 bar, refer to Tables 8 and 10 for Copper Alloy UNS Nos. C35330, C46400, C48200, C48500, and C48600.

10.1.2.5 For H50 bar refer to Tables 9 and 11 for Copper Alloy UNS Nos. C27450, C27451, C36500, C37000, C37700, C46750, C61900, C62300, C63000, C63200, C64200, C64210, C65500, C67500, C67600, C69300, C70620, C71520, C77400, C87700, and C87710.

10.1.3 *Shapes*—The dimensional tolerances for shapes shall be agreed upon between the manufacturer and the purchaser and shall be specified in the order.

TABLE 2 Stock Lengths

Ordered Length		Shortest Permissible Length	
ft	[m]	ft	[m]
12	[4]	6	[2]
10	[3]	6	[2]
8	[2]	4	[1]
6	...	4	...

10.2 *Length*—Rod, bar, and shapes for forging, when ordered to any length, will be furnished in stock lengths, unless it is specifically stated in the purchase order that the lengths are to be specific.

10.2.1 Stock lengths for all rod, bar, and shapes for forging up to and including 1 in. [25 mm] in diameter shall be as listed in **Table 2**, but the weight of lengths less than the ordered length, shall not exceed 40 % of any one shipment. The tolerance for the full-length pieces shall be plus 1 in. [25 mm].

10.2.2 For rod and bar for forging over 1 in. [25 mm] up to and including 2 in. [50 mm] in diameter, the lengths shall be random lengths, from 4 to 12 ft [1.2 to 3.7 m].

10.2.3 Rod and bar for forging, over 2 in. [50 mm] in diameter shall be ordered in special lengths.

10.3 *Straightness*—The material shall be straight, within 1 in. [25 mm] maximum depth of arc in 6 ft [1.8 m].

11. Test Methods

11.1 Chemical Analysis:

11.1.1 In case of disagreement, determine the composition using the following methods:

Element	Range, %	Method
Aluminum	0.005–12	ISO 3110 (AA)
	2–12	E478 (Titrimetric)
Antimony	0.05–0.70	E62
Arsenic	0–0.50	E62
Bismuth		JIS H 1068:2005
Copper	43–99.9	E478
Carbon		E76
Iron	0.15–5	E54, E75 for CuNi
	0.003–1.25	E478
Lead	0.02–3	E478 (AA)
Manganese	0.10–2.0	E62, E75 for CuNi
Nickel	0–5	E478 (Photometric)
	>5	E478 (Gravimetric)
Phosphorous	0.004–0.7	E62
Silicon	0.10–4	E62
Sulfur	0–0.5	E76 (Gravimetric)
Tellurium	0.40–1	E121
Tin	0.2–1.5	E478 (Photometric)
Zinc	0.3–1.5	E478 (AA)
	2–40	E478 (Titrimetric)

11.1.2 Test methods to be followed for the determination of elements resulting from contractual or purchase order agreement shall be as agreed upon between the manufacturer, or supplier, and the purchaser.

12. Keywords

12.1 bar; brass; brass forging shapes; brass forgings; bronze; bronze forging shapes; copper; copper alloy; copper alloy forging bar; copper alloy forging rod; copper alloy forging shapes; copper alloy forgings; copper forging bar; copper forging rod; copper forging shapes; copper forgings; copper nickel; copper nickel forging rod; copper nickel forgings; hot



forging; hot forging stock; nickel silver; nickel silver forging shapes; nickel silver forgings; rod; shapes; UNS Alloy Nos. C27450; C27451; C35330; C36500; C37000; C37700; C46400; C46750; C48200; C48500; C48600; C49250; C49255; C49260; C49300; C49340; C49350; C49355;

C49360; C61900; C62300; C63000; C63200; C64200; C64210; C65500; C67500; C67600; C69150; C69300; C70620; C71520; C77400; UNS Nos. C11000; C14500; C14700; C87700; C87710

SUPPLEMENTARY REQUIREMENTS

The following supplementary requirements shall apply only when specified by the purchaser in the contract or purchase order. Details of the supplementary requirements shall be agreed upon in writing, between the manufacturer and the purchaser. Supplementary requirements shall in no way negate any requirement of the specification itself.

S1. Supplementary requirements S1, S2, and S4 of Specification **B249/B249M** shall apply.

S2. *Identification Marking*—Forging stock shall be marked with the producer's name or trademark, this ASTM specification number, the UNS number, and the heat number or lot number. Marking shall be by low stress die stamps or vibroetching.

APPENDIX

(Nonmandatory Information)

X1. FORGING PRACTICE

X1.1 The data in **Table X1.1** do not constitute a part of this specification. The suggested forging temperatures give the range suitable for hot forging of the alloys and the forgeability ratings illustrate the relative difference in ease of forging, with forging brass being the most readily forgeable. For the relative strength of these alloy forgings, as hot pressed, see Specifica-

tion **B283/B283M**, Appendix 2, Table 4.

X1.2 For the relative strength of these alloy forgings, as hot pressed, see Specification **B283/B283M**, Appendix X3, Table X3.1.



TABLE X1.1 Forging Temperatures and Forgeability

Copper or Copper Alloy UNS No.	Name	Suggested Forging Temperatures		Forgeability Rating ^A
		°F	°C	
C11000	Copper	1400–1700	760–930	65
C14500	Copper-tellurium	1350–1650	730–900	65
C14700	Copper-sulfur	1400–1600	760–870	65
C27450	Plumbers Brass	1200–1450	650–790	95
C27451	Plumbers Brass	1200–1450	650–790	95
C35330	Leaded brass	1200–1450	650–790	95
C36500	Leaded muntz metal, uninhibited	1200–1450	650–790	100
C37000	Free-cutting muntz metal	1200–1450	650–790	100
C37700	Forging brass	1200–1450	650–790	100
C46400	Naval brass	1200–1500	650–820	90
C46750	Tin brass	1200–1470	650–800	95
C48200	Medium leaded naval brass	1200–1500	650–820	90
C48500	Leaded naval brass	1200–1500	650–820	90
C48600	Naval brass	1200–1500	650–820	90
C49250	Bismuth brass	1200–1450	650–790	90
C49255	Bismuth brass	1200–1450	650–790	95
C49260	Bismuth brass	1210–1450	650–790	90
C49300	Bismuth brass	1260–1510	680–820	95
C49340	Bismuth brass	1260–1510	680–820	90
C49350	Bismuth brass	1260–1510	680–820	95
C49355	Bismuth brass	1220–1360	660–740	80
C49360	Bismuth brass	1330–1510	720–820	90
C61900	Aluminum bronze	1300–1600	700–870	75
C62300	Aluminum bronze, 9 %	1300–1600	700–870	75
C63000	Aluminum-nickel bronze	1450–1700	790–930	75
C63200	Aluminum-nickel bronze	1450–1700	790–930	75
C64200	Aluminum-silicon bronze	1300–1600	700–870	75
C64210	Aluminum-silicon bronze, 6.7 %	1300–1600	700–870	75
C65500	High-silicon bronze (A)	1300–1600	700–870	40
C67500	Manganese bronze (A)	1350–1550	730–840	80
C67600	Leaded manganese bronze A	1350–1550	730–840	80
C69150	Copper-zinc-manganese-aluminum	1300–1550	700–840	85
C69300	Copper-zinc-silicon	1200–1450	650–790	95
C70620	Copper-nickel 90–10	1550–1750	840–950	75
C71520	Copper-nickel 70–30	1700–1900	930–1040	40
C77400	Nickel silver, 45–10	1300–1500	700–820	85
C87700	Silicon Bronze	1250–1520		80
C87710	Silicon Bronze	1200–1485		80

^A Relative forgeability rating takes into consideration such variable factors as pressure, die wear, and plasticity (hot). Since it is impractical to reduce these variables to common units, calibration in terms of a percentage of the most generally used alloy, forging brass (100 %), is considered the most practical basis for such ratings. The values shown represent the general opinion and are intended for information to enable the designer to better understand the forging characteristics of these various alloys. Intricate parts are more likely to be available in alloys having a high rating.

SUMMARY OF CHANGES

Committee B05 has identified the location of selected changes to this standard since the last issue (B124/B124M – 14) that may impact the use of this standard. (Approved Sept. 1, 2014.)

(1) Added UNS Alloy No. C46750 to 1.1, 6.2, Table 1, 10.1.1.1, 10.1.1.4, 10.1.2.1, 10.1.2.5, 11.1.1, Section 12, and Table X1.1.

Committee B05 has identified the location of selected changes to this standard since the last issue (B124/B124M – 13) that may impact the use of this standard. (Approved April 1, 2014.)

(1) Added UNS Alloy No. C27451 to 1.1, Table 1, 6.2, 10.1.1.1, 10.1.1.5, 10.1.2.1, 10.1.2.5, Section 12, and Table X1.1.



Committee B05 has identified the location of selected changes to this standard since the last issue (B124/B124M – 12) that may impact the use of this standard. (Approved April 1, 2013.)

(1) Added UNS Alloy No. C69150 to **1.1**, **6.2**, **Table 1**,
10.1.1.1, **10.1.1.4**, **10.1.2.1**, **Section 12** and **Table X1.1**.

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