



Standard Specification for Copper Alloy Addition Agents¹

This standard is issued under the fixed designation B 644; 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 Department of Defense.

1. Scope*

1.1 This specification establishes the requirements for copper nickel, ferro copper, phosphor copper, and silicon copper master alloys in ingot, shot, and waffle form to be used as addition agents for cast and wrought alloys.

1.2 Inch-pound units are the standard. SI units given in parenthesis are for information only.

2. Referenced Documents

2.1 ASTM Standards:

E 29 Practice for Using Significant Digits in Test Data to Determine Conformation With Specification²

E 255 Practice for Sampling Copper and Copper Alloys for the Determination of Chemical Composition³

E 62 Test Methods for Chemical Analysis of Copper and Copper Alloys (Photometric Methods)³

E 76 Test Methods for Chemical Analysis of Nickel-Copper Alloys³

E 478 Test Methods for Chemical Analysis of Copper Alloys³

E 1371 Test Method for Gravimetric Determination of Phosphorus in Phosphorus-Copper Alloys and Phosphorus-Copper-Silver Alloys³

2.2 ISO Standard:

No. 4748 Determination of Iron Content; Na₂EDTA Titrimetric Method⁴

3. Ordering Information

3.1 Orders for materials should include the following information:

3.1.1 ASTM designation and year of issue (for example B 644-XX).

3.1.2 Alloy number and letter; generic name (Table 1),

3.1.3 Form; size, weight, screen distribution,

3.1.4 Quantity or total weight; each form, size, weight, screen distribution.

4. Material and Manufacture

4.1 Material:

4.1.1 Any material may be used which, when melted, will form an alloy of the required composition.

4.2 Manufacture:

4.2.1 Any manufacturing process may be used that will yield a product uniform in composition and free of defects of a nature that would render the product unsuitable for the intended application.

5. Chemical Composition

5.1 The product in final form shall conform to the requirements prescribed in Table 1 for the specified alloy.

5.1.1 These specification limits do not preclude the presence of other elements. Limits may be established and analysis required for unnamed elements by agreement between the manufacturer and the purchaser.

6. Sampling

6.1 The inspection lot size, portion size, and selection of portion pieces shall be as follows:

6.1.1 *Lot Size*—An inspection lot shall consist of all product from a single heat.

6.1.2 Portion Size:

6.1.2.1 *Ingot and Shot*—The portion size shall be not less than 1 ingot.

6.1.2.2 *Shot and Waffle*—The portion size for product in shot or waffle form shall be not less than 1 lb (0.453 kg) and shall be selected to consist of an average of all sizes of product in the lot.

6.1.3 *Selection of Portion Pieces*—The individual pieces shall be randomly selected.

6.2 Chemical Analysis:

¹ This specification is under the jurisdiction of ASTM Committee B05 on Copper and Copper Alloys and is the direct responsibility of Subcommittee B05.05 on Castings and Ingots for Remelting.

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² *Annual Book of ASTM Standards*, Vol 14.02.

³ *Annual Book of ASTM Standards*, Vol 03.05.

⁴ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.