Designation: B792 – 16

Standard Specification for Zinc Alloys in Ingot Form for Slush Casting[1]

This standard is issued under the fixed designation B792; 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 covers commercial zinc alloys in ingot form for remelting for the manufacture of castings from the alloys as specified and designated as shown in Table 1.

1.2 Slush casting alloys are used primarily for the manufacture of hollow castings such as lighting fixtures, lamp bases, and small statues.

1.3 This specification covers two zinc alloys which are specified and designated as follows:

UNS	ASTM
Z34510	Slush Casting Alloy A
Z30500	Slush Casting Alloy B

1.4 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.

1.5 *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 become familiar with all hazards including those identified in the appropriate Safety Data Sheet (SDS) for this product/material as provided by the manufacturer, to establish appropriate safety and health practices, and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 The following documents of the issue in effect on date of order acceptance form a part of this specification to the extent referenced herein:

2.2 *ASTM Standards:*[2]

B899 Terminology Relating to Non-ferrous Metals and Alloys

B908 Practice for the Use of Color Codes for Zinc Casting Alloy Ingot

B949 Specification for General Requirements for Zinc and Zinc Alloy Products

E29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications

E88 Practice for Sampling Nonferrous Metals and Alloys in Cast Form for Determination of Chemical Composition

E527 Practice for Numbering Metals and Alloys in the Unified Numbering System (UNS)

E536 Test Methods for Chemical Analysis of Zinc and Zinc Alloys

2.3 *ISO Standards:*[3]

ISO 3815-1 Zinc and zinc alloys — Part 1: Analysis of solid samples by optical emission spectrometry

ISO 3815-2 Zinc and zinc alloys — Part 2: Analysis by inductively coupled plasma optical emission spectrometry

3. Terminology

3.1 Terms shall be defined in accordance with Terminology B899.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *slush casting, n*—a process for producing hollow castings by pouring special molten alloys into a mold, allowing the metal in contact with the mold to solidify, and then pouring out the still molten metal in the center.

4. Ordering Information

4.1 See appropriate requirements in Specification B949.

5. Chemical Requirements

5.1 *Limits*—This alloy shall conform to the requirements as to chemical composition Table 1.

5.2 Chemical requirement procedures—see appropriate requirements in Specification B949.

6. Sampling for Determination of Chemical Composition

6.1 See appropriate requirements in Specification B949.

[1] This specification is under the jurisdiction of ASTM Committee B02 on Nonferrous Metals and Alloys and is the direct responsibility of Subcommittee B02.04 on Zinc and Cadmium.

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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] 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**

TABLE 1 Chemical and North American Color Code Requirements[A,B]

	Composition, %	
	UNS Z34510 Slush Casting Alloy A	UNS Z30500 Slush Casting Alloy B
Color Code[C]	Black/Red	Black/Orange
Element		
Copper	0.2–0.3	0.1 max
Aluminum	4.50–5.00	5.25–5.75
Lead	0.007 max	0.007 max
Cadmium	0.005 max	0.005 max
Tin	0.005 max	0.005 max
Iron	0.100 max	0.100 max
Magnesium	0.010 max	0.010 max
Zinc	Remainder	Remainder

[A] The following applies to all specified limits in this table. For purposes of determining conformance with this specification, the observed or calculated value obtained from analysis shall be rounded off "to the nearest unit" in the last right-hand place of figures used in expressing the specified limit, in accordance with the rounding method of Practice E29.
[B] UNS designations were established in accordance with Practice E527.
[C] Refer to Practice B908. *(Note: Colors indicated are for North American applications.)*

7. Method of Chemical Analysis

7.1 The determination of chemical composition shall be made in accordance with Test Methods E536, or ISO 3815-1, or ISO 3815-2 or other methods. In case of dispute, the results secured by Test Methods E536, or ISO 3815-1, or ISO 3815-2 shall be the basis of acceptance.

NOTE 1—Test Methods E536 is directly applicable, in an unmodified form, only to alloys 3, 5, and 7. ISO 3815-1 and ISO 3815-2 are generic methods applied to zinc and zinc alloys. Each of the methods may be modified and formatted for the alloy to be assayed. An experienced chemist, using suitable and/or traceable standards along with valid quality assurance techniques, will be able to perform and validate the methods and demonstrate acceptable precision and accuracy.

8. Materials and Manufacture

8.1 The alloys may be made by any approved process.

8.2 The material covered by this specification shall be of uniform quality and shall be free from dross, slag, or other harmful contamination. The ingot shall also be reasonably free of surface corrosion and adhering foreign matter.

9. Physical Properties – NA

10. Mechanical Properties – NA

11. Dimensions, Mass, and Permissible Variation, and Shapes and Sizes – NA

12. Workmanship, Finish, and Appearance – NA

13. Inspection

13.1 See appropriate requirements in Specification B949.

14. Rejection and Rehearing

14.1 See appropriate requirements in Specification B949.

15. Certification

15.1 See appropriate requirements in Specification B949.

16. Product and Package Marking, Packaging and Preparation for Delivery

16.1 See appropriate requirements in Specification B949.

17. Keywords

17.1 casting; casting alloys; gravity casting; permanent mold casting; slush casting; zinc; zinc alloys

SUMMARY OF CHANGES

Committee B02 has identified the location of selected changes to this standard since the last issue (B792–15) that may impact the use of this standard. (Approved May 1, 2016.)

(1) The references to specific sections in Specification B949 were removed.

(2) Several sections added to conform to a standard template and reference Specification B949.

Committee B02 has identified the location of selected changes to this standard since the last issue (B792–13) that may impact the use of this standard. (Approved May 1, 2015.)

(1) The definition for slush casting was added to Terminology Section 3.