



Designation: B 793 – 03

Standard Specification for Zinc Casting Alloy Ingot for Sheet Metal Forming Dies and Plastic Injection Molds¹

This standard is issued under the fixed designation B 793; 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 (ε) indicates an editorial change since the last revision or reappraisal.

1. Scope*

1.1 This specification covers commercial zinc alloys in ingot form for remelting for the manufacture of dies and molds from the alloys as shown in **Table 1**.

1.2 This specification presents requirements for zinc alloys suitable for the production of sand cast or plaster cast forming dies for sheet metal stamping operations and plastic injection molding. Alloy A is intended for use in the fabrication of dies for sheet metal stamping under drop hammer and hydraulic pressure. Alloy B is a special purpose alloy of closely controlled composition and is primarily used in the manufacture of plastic injection molds.

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

UNS	ASTM	Traditional
Z35543	Alloy A	Kirksite A
Z35542	Alloy B	Kirksite B

1.4 *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 Material Safety Data Sheet (MSDS) 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:*

B 899 Terminology Relating to Non-ferrous Metals and Alloys²

B 908 Practice for the Use of Color Codes for Zinc Casting Alloy Ingot²

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 *Annual Book of ASTM Standards*, Vol 02.04.

TABLE 1 Chemical and North American Color Code Requirements^{A,B}

Color Code ^C	Composition, %	
	UNS Z35543 Alloy A Kirksite A	UNS Z35542 Alloy B Kirksite B
Element	Green/Red	Green/Black
Aluminum	3.5–4.5	3.9–4.3
Cadmium	0.005 max	0.003 max
Copper	2.5–3.5	2.5–2.9
Iron	0.100 max	0.075 max
Lead	0.007 max	0.003 max
Magnesium	0.02–0.10	0.02–0.05
Tin	0.005 max	0.001 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 value 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 **E 29**.

^B UNS designations were established in accordance with Practice **E 527**.

^C Refer to Practice B 908. (Note: Colors indicated are for North American applications.)

E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications³

E 47 Test Methods for Chemical Analysis of Zinc Die-Casting Alloys⁴

E 88 Practice for Sampling Nonferrous Metals and Alloys in Cast Form for Determination of Chemical Composition⁵

E 527 Practice for Numbering Metals and Alloys (UNS)⁶

E 536 Test Methods for Chemical Analysis of Zinc and Zinc Alloys⁵

3. Terminology

3.1 Terms shall be defined in accordance with Terminology **B 899**.

4. Ordering Information

4.1 Orders for ingots under this specification shall include the following information:

³ *Annual Book of ASTM Standards*, Vol 14.02.

⁴ Discontinued; see *1998 Annual Book of ASTM Standards*, Vol 03.05.

⁵ *Annual Book of ASTM Standards*, Vol 03.05.

⁶ *Annual Book of ASTM Standards*, Vol 01.01.

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