



Designation: B793 – 09

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

This standard is issued under the fixed designation B793; 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 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 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 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:

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.

Current edition approved Oct. 1, 2009. Published November 2009. Originally approved in 1988. Last previous edition approved in 2008 as B793 – 08. DOI: 10.1520/B0793-09.

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

	Composition, %	
	UNS Z35543 Alloy A Kirksite A	UNS Z35542 Alloy B Kirksite B
Color Code ^C	Green/Red	Green/Black
Element		
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 E29.

^B UNS designations were established in accordance with Practice E527.

^C Refer to Practice B908. (Note: Colors indicated are for North American applications.)

2.2 ASTM Standards:²

- [B897 Specification for Configuration of Zinc and Zinc Alloy Jumbo Block and Half Block Ingot](#)
- [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 \(UNS\)](#)

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.

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