



Standard Specification for ACuZinc5¹ (Zinc-Copper-Aluminum) Alloy in Ingot Form for Die Castings²

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1. Scope

1.1 This specification covers ACuZinc5, a commercial zinc-copper-aluminum alloy (Z46540),³ in ingot form for remelting for use in the production of castings.

1.2 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.

1.3 *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 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:*⁴

[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](#)

¹ ACuZinc and ACuZinc5 are registered trade names of the General Motors Corporation.

² 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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³ See Table 1, footnote A.

⁴ 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.

[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](#)

[E634 Practice for Sampling of Zinc and Zinc Alloys by Spark Atomic Emission Spectrometry](#)

2.3 *ISO Standards:*⁵

[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 *die casting, n*—a casting process in which molten metal is injected under high velocity and pressure into a metal die and solidified, also a product produced by such a process. Alternately known as pressure die casting.

4. Ordering Information

4.1 Orders for ingot under this specification shall include information as specified in Specification [B949](#), Section 4.

5. Materials and Manufacture

5.1 The alloys may be made by any approved process.

5.2 The material covered by this specification shall be of uniform quality and shall be free of harmful contamination.

6. Chemical Requirements

6.1 The ingots shall conform to the requirements as to chemical composition prescribed in [Table 1](#). Conformance shall be determined in accordance with Specification [B949](#), Sections 5.2 and 5.2.1.

⁵ 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 ACuZinc5 Chemical and North American Color Code Requirements

Composition, %	
	Z46540 ^A
Color Code ^B	Red
Elements	
Copper	5.2 - 6.0
Aluminum	2.8 - 3.3
Magnesium	0.035 - 0.050
Iron	0.05 max
Lead	0.004 max
Cadmium	0.003 max
Tin	0.002 max
Zinc	Remainder ^C

^A UNS Alloy designation has been established in accordance with Practice E527.

^B Refer to Practice B908.

^C Determined arithmetically by difference.

7. Sampling for Determination of Chemical Composition

7.1 Sampling procedures shall be in accordance with appropriate provisions of Specification B949, Section 6.

8. Methods of Chemical Analysis

8.1 The determination of chemical composition shall be made in accordance with Specification B949, Section 5.2.2.

8.2 The determination of chemical composition shall be made in accordance with suitable chemical Test Methods E536, ISO 3815-1, ISO 3815-2 or other methods. In case of dispute, the results secured by Test Methods E536, ISO 3815-1, ISO 3815-2 or by a method agreed upon by both parties, shall be the basis of acceptance.

NOTE 1—Test Methods E536 is not directly applicable to ACuZinc5. 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.

8.3 For purposes of determining compliance with specified composition limits as given in Table 1, an observed or calculated value shall be rounded to the nearest unit in the last right-hand place of figures shown in Table 1, in accordance with the rounding method of Practice E29.

9. Source Inspection

9.1 Source inspection provisions shall be in accordance with Specification B949, Section 7.

10. Rejection and Rehearing

10.1 Claims for rejection and rehearing shall be in accordance with the provisions of Specification B949, Section 8.

11. Identification Marking

11.1 All ingots shall be properly marked for identification in accordance with Specification B949, Section 10.

12. Certification

12.1 When specified in the purchase order or contract, certification of the product shall be in accordance with Specification B949, Section 9.

13. Preparation for Delivery

13.1 *Packaging*—Unless otherwise specified, the ingot shall be packaged to provide adequate protection during normal handling and transportation. Each package shall contain only one alloy unless otherwise agreed upon.

14. Keywords

14.1 ACuZinc; ACuZinc5; Casting alloys; die casting alloys; zinc; zinc alloys; zinc - copper - aluminum alloys

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