Designation: B949 – 23

Standard Specification for General Requirements for Zinc and Zinc Alloy Products[1]

This standard is issued under the fixed designation B949; 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 establishes general requirements, unless otherwise specified in the specific product specification, for ordering information, marking, and sampling for chemical analysis common to zinc and zinc alloy products and shall apply to Specifications B6, B69, B86, B240, B327, B418, B750, B792, B793, B833, B852, B860, B892, B894, B897, B907, B943, B960, B989, B997, B1013, and B1022 to the extent referenced therein.

1.2 Although this specification establishes general requirements, it does not restrict that, by agreement between customer and supplier, these requirements may be altered by a customer to suit individual need.

1.3 The chemical composition, physical and mechanical properties, and all other requirements not included in this specification shall be prescribed in the product specification.

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. This applies except where SI units only are specified.

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 Data Sheet (SDS) for this product/material as provided by the manufacturer, to establish appropriate safety, health, and environmental practices, and determine the applicability of regulatory limitations prior to use.*

1.6 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

B6 Specification for Zinc
B69 Specification for Rolled Zinc
B86 Specification for Zinc and Zinc-Aluminum (ZA) Alloy Foundry and Die Castings
B240 Specification for Zinc and Zinc-Aluminum (ZA) Alloys in Ingot Form for Foundry and Die Castings
B327 Specification for Master Alloys Used in Making Zinc Die Casting Alloys
B418 Specification for Cast and Wrought Galvanic Zinc Anodes
B750 Specification for GALFAN (Zinc-5 % Aluminum-Mischmetal) Alloy in Ingot Form for Hot-Dip Coatings
B792 Specification for Zinc Alloys in Ingot Form for Slush Casting
B793 Specification for Zinc Casting Alloy Ingot for Sheet Metal Forming Dies and Plastic Injection Molds
B833 Specification for Zinc and Zinc Alloy Wire for Thermal Spraying (Metallizing) for the Corrosion Protection of Steel
B852 Specification for Continuous Galvanizing Grade (CGG) Zinc Alloys for Hot-Dip Galvanizing of Sheet Steel
B860 Specification for Zinc Master Alloys for Use in Hot Dip Galvanizing
B892 Specification for ACuZinc5 (Zinc-Copper-Aluminum) Alloy in Ingot Form for Die Castings (Withdrawn 2022)[3]
B894 Specification for ACuZinc5 (Zinc-Copper-Aluminum) Alloy Die Castings (Withdrawn 2022)[3]
B897 Specification for Configuration of Zinc and Zinc Alloy Jumbo, Block, Half Block, and Slab Ingot
B899 Terminology Relating to Non-ferrous Metals and Alloys
B907 Specification for Zinc, Tin and Cadmium Base Alloys Used as Solders
B908 Practice for the Use of Color Codes for Zinc Casting Alloy Ingot

[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 April 1, 2023. Published May 2023. Originally approved in 2006. Last previous edition approved in 2018 as B949 – 18. DOI: 10.1520/B0949-23.

[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] The last approved version of this historical standard is referenced on www.astm.org.

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

B914 Practice for Color Codes on Zinc and Zinc Alloy Ingot for Use in Hot-Dip Galvanizing of Steel
B943 Specification for Zinc and Tin Alloy Wire Used in Thermal Spraying for Electronic Applications
B960 Specification for Prime Western Grade-Recycled (PWG-R) Zinc
B989 Specification for High Fluidity (HF) Zinc-Aluminum Alloy in Ingot Form for Thin Wall Die Castings
B997 Specification for Zinc-Aluminum Alloys in Ingot Form for Hot-Dip Coatings
B1013 Specification for High Fluidity (HF) Zinc-Aluminum Alloy Thin Wall Die Castings
B1022 Specification for Zinc-Aluminum-Magnesium Alloys in Ingot Form for Coating Steel Sheet by the Hot-Dip Process
E55 Practice for Sampling Wrought Nonferrous Metals and Alloys for Determination of Chemical Composition
E88 Practice for Sampling Nonferrous Metals and Alloys in Cast Form for Determination of Chemical Composition
E634 Practice for Sampling of Zinc and Zinc Alloys for Analysis by Spark Atomic Emission Spectrometry

2.2 *ISO Standards:*[4]
ISO 20081 Zinc and zinc alloys – Method of sampling – Specifications

3. Terminology

3.1 For terms related to non-ferrous metals and alloys, refer to Terminology B899 and the product specifications.

4. Ordering Information

4.1 Where applicable include the following minimum information when placing orders for zinc and zinc alloy products under this specification:

4.1.1 ASTM designation and latest year of issue (see Scope),

4.1.2 Quantity (weight),

4.1.3 Alloy or grade, or both, (when applicable),

4.1.4 Size,

4.1.4.1 For zinc metal and alloy ingot, if not the manufacturer's standard:

a) Zinc metal slabs varying in weight from 40 to 60 lb (18 to 27 kg) are all considered standard slabs.

b) Zinc metal may also be ordered in jumbos, blocks, anodes, or other shapes (in accordance with Specification B897).

4.1.4.2 For castings and other zinc alloy products, see the specific product specification for size requirement information.

4.1.5 Delivery schedule,

4.1.6 Marking (Section 16),

4.1.7 Whether certification is required (Section 15),

4.1.8 Appearance—the product shall be reasonably free from surface corrosion and adhering foreign matter, and

4.1.9 Source inspection must be specified at the time of order (Section 13).

4.2 Additional ordering information for specific zinc and zinc alloy products:

4.2.1 There may be additional information required when ordering specific products. These may be found in the product specifications listed in 2.1 (Specifications B6, B69, B86, B240, B327, B418, B750, B792, B793, B833, B852, B860, B892, B894, B897, B907, B943, B960, B989, B997, B1013, and B1022).

4.3 Specifications for material may be altered by agreement between customer and supplier to suit individual need. If the agreed upon chemistry falls outside the limits of the appropriate standard, then the material does not meet all requirements of the standard.

5. Chemical Requirements

5.1 Final product (ingots, slabs, jumbos, etc.) shall conform to the chemical composition requirements prescribed in the applicable product specification (see 2.1: Specifications B6, B69, B86, B240, B327, B418, B750, B792, B793, B833, B852, B860, B892, B894, B897, B907, B943, B960, B989, B997, B1013, and B1022).

5.2 Conformance shall be determined by the manufacturer by analyzing samples taken at the time the final product is poured or samples taken from the ingots.

5.2.1 If the producer has determined the chemical composition of the metal during the course of manufacture, he shall not be required to sample and analyze the finished product.

6. Sampling for Determination of Chemical Composition

6.1 *Samples for Spectrochemical and Other Methods of Analysis*—Samples for spectrochemical and other methods of analysis shall be suitable for the form of material being analyzed and the type of analytical method used.

6.2 *Sampling During Production of Ingots, Slabs, Blocks or Jumbos, and Wrought Products:*

6.2.1 *Sampling During Casting*—Samples may be taken from the pour during the casting of zinc and zinc alloys.

6.2.1.1 Samples for spectrochemical methods may be cast as pins or discs in accordance with Practice E634 for spectrochemical analyses or may be cast in a form or by a method the producer has determined will generate a homogeneous and representative sample.

6.2.1.2 The producer should determine the sampling regimen that will efficiently result in samples that are representative of the product. As a suggested minimum, at least two sample sets shall be taken for batches of 25 tons (22.7 mTons) or less. At least three sample sets shall be taken for batches up to 150 tons (136 mTons). The average chemical analyses shall be determined from these samples. Unless otherwise agreed in the contact or purchase order, sampling procedure will be the manufacturer's choice.

6.2.2 Samples held at the producer's plant shall be retained for not less than 90 days.

6.3 *Sampling of Ingot, Slabs, or Blocks and Jumbos and Wrought Product in the Event of a Dispute or if the Alloy is at the Customer's Plant*—The sample for chemical analysis shall be taken based on the form of the product.

[4] Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, http://www.ansi.org.