



Standard Specification for Zinc¹

This standard is issued under the fixed designation B 6; 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.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope*

1.1 This specification covers zinc metal made from ore or other material by a process of distillation or by electrolysis in five grades as follows:

- 1.1.1 LME Grade
- 1.1.2 Special High Grade
- 1.1.3 High Grade
- 1.1.4 Intermediate Grade
- 1.1.5 Prime Western Grade

NOTE 1—Certain continuous galvanizing grades are specified in Specification B 852. Other continuous galvanizing and controlled lead grades are not included in this specification but are covered by specific user purchasing specifications.

1.2 This specification does not cover zinc produced by “sweating” or remelting of secondary zinc.

~~1.3 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.~~

1.3 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.

1.4 *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 the date of material purchase form a part of this specification to the extent referenced herein.

2.2 ASTM Standards:²

- B 852 Specification for Continuous Galvanizing Grade (CGG) Zinc Alloys for Hot-Dip Galvanizing of Sheet Steel
- B 897 Specification for the Configuration of Zinc and Zinc Alloy Jumbo and Block Ingot
- B 899 Terminology Relating to Non-ferrous Metals and Alloys
- B 914 Practice for Color Codes on Zinc and Zinc Alloy Ingot for Use in Hot-Dip Galvanizing of Steel
- E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications
- E 47 Test Methods for Chemical Analysis of Zinc Die-Casting Alloys³
- E 88 Practice for Sampling Nonferrous Metals and Alloys in Cast Form for Determination of Chemical Composition
- E 527 Practice for Numbering Metals and Alloys in the Unified Numbering System (UNS)
- E 536 Test Methods for Chemical Analysis of Zinc and Zinc Alloys

2.3 ISO Standards:⁴

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

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 Withdrawn.

⁴ 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.

3. Terminology

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

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *LME Grade, n*—a grade of zinc containing a minimum of 99.995 % zinc, with controlled impurity levels, as specified in Table 1.

3.2.2 *Special High Grade, n*—a high purity grade of zinc containing a minimum of 99.990 % zinc, with controlled impurity levels, as specified in Table 1.

3.2.3 *High Grade, n*—a grade of zinc containing a minimum of 99.95 % zinc, with controlled impurity levels, as specified in Table 1.

3.2.4 *Intermediate Grade, n*—a grade of zinc containing a minimum of 99.5 % zinc, with controlled impurity levels, as specified in Table 1.

3.2.5 *Prime Western Grade, n*—a grade of zinc containing 0.5 to 1.4 % lead, a minimum of 98.5 % zinc, with controlled impurity levels, as specified in Table 1.

3.3 *Abbreviations:*

3.3.1 *LME*—LME Grade Zinc

3.3.2 *SHG*—Special High Grade Zinc

3.3.3 *HG*—High Grade Zinc

3.3.4 *IG*—Intermediate Grade Zinc

3.3.5 *PWG*—Prime Western Grade Zinc

4. Ordering Information

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

4.1.1 ASTM designation and year of issue,

4.1.2 Quantity (weight),

4.1.3 Name of material (zinc metal),

4.1.4 Size (see Section 7), and

4.1.5 Grade (see Table 1).

5. Materials and Manufacture

5.1 The manufacturer shall use care to have each lot of zinc metal be as uniform in quality as possible.

6. Chemical Composition

6.1 The zinc metal shall conform to the requirements prescribed in Table 1.

7. Sizes and Shapes

7.1 Slabs varying in weight from 40 to 60 lb (18 to 27 kg) are all considered standard slabs.

7.2 Zinc metal may be ordered in jumbos or blocks, as specified in Specification B 897.

TABLE 1 Chemical Requirements

NOTE 1—The following applies to all specified limits in this table: For purposes of determining conformance with this specification, an observed value obtained from analysis shall be rounded off “to the nearest unit” in the last right-hand place of figures used in expressing the limiting value, in accordance with the rounding method of Practice E 29.

Grade [UNS] ^A	Color Code ^B	Composition, %							
		Lead	Iron max	Cadmium max	Alumi- num max	Copper max	Tin max	Total Non-Zinc max	Zinc, min by difference
LME Grade (LME) [Z12002]	White	0.003 max	0.002	0.003	0.001	0.001	0.001	0.005	99.995
Special High Grade ^C (SHG) [Z13001]	Yellow	0.003 max	0.003	0.003	0.002	0.002	0.001	0.010	99.990
High Grade (HG) [Z14002]	Green	0.03 max	0.02	0.01	0.01	0.002	0.001	0.05	99.95
Intermediate Grade (IG) [Z16003]	Blue	0.45 max	0.05	0.01	0.01	0.20	...	0.5	99.5
Prime Western Grade (PWG) [Z18004]	Black	0.5–1.4	0.05	0.20	0.01	0.10	...	1.5	98.5

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

^B Refer to Practice B 914.

^C For London Metal Exchange (LME) purposes, Special High Grade zinc must be 99.995 % minimum zinc content by difference, corresponding to LME Grade in ASTM Specification B 6.