



Designation: ~~B852-07~~ Designation: **B 852 – 08**

Standard Specification for Continuous Galvanizing Grade (CGG) Zinc Alloys for Hot- Dip Galvanizing of Sheet Steel¹

This standard is issued under the fixed designation B 852; 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 grades of zinc alloys, commonly known as Continuous Galvanizing Grade (CGG) alloys that contain aluminum, or aluminum and lead and that are used in continuous hot-dip galvanizing of steel sheet. The compositions for CGG grades made from primary zinc are shown in Table 1. Exceptions for grades made from secondary zinc are found in footnote C.

1.2 Other alloy compositions not included in B 852, and as may be agreed upon between the producer and the user, may be used for continuous galvanizing.

~~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 ASTM Standards:²

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

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

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

E 634 Practice for Sampling of Zinc and Zinc Alloys for Optical Emission Spectrometric Analysis

2.2 ISO Standards:³

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 B 899.

4. Ordering Information

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

4.1.1 Number of ASTM standard, including year of issue,

4.1.2 Quantity (weight),

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 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 Chemical Requirements

Grade ^A (UNS)	Composition, %			
	Nominal		Range ^B	
	Aluminum	Lead	Aluminum	Lead ^C
Z80310	0.25	...	0.22 to 0.28	0.007 max
Z80411	0.35	...	0.31 to 0.39	0.007 max
Z80511	0.45	...	0.40 to 0.50	0.007 max
Z80531	0.45	0.02	0.40 to 0.50	0.01 to 0.03
Z80610	0.55	...	0.49 to 0.61	0.007 max
Z80710	0.65	...	0.58 to 0.72	0.007 max
Z80810	0.75	...	0.67 to 0.83	0.007 max
Z80910	1.00	...	0.90 to 1.10	0.007 max
Impurities, %:	Iron ^C		0.0075 max	
	Cadmium		0.01 max	
	Copper		0.01 max	
	Other Elements		total of 0.01 max	
Zinc:			balance by difference	

^A UNS numbers in conformance with Practice E 527.

^B For purposes of determining conformance with this specification, an observed value obtained from analysis shall be rounded 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.

^C Lead and Iron levels of 0.01 % max and 0.01 % max respectively are allowed for CGG alloys produced from secondary zinc.

- 4.1.3 Name of material (CGG),
- 4.1.4 Size and shape (Section 7), and
- 4.1.5 Grade (see Table 1).

5. Materials and Manufacture

5.1 The producer shall use care that each shipment of CGG alloy be as uniform in quality as possible.

6. Chemical Composition

6.1 CGG alloy shall conform to the requirements of Table 1 as determined by chemical analysis by the producer on samples taken at his plant (see Section 9).

7. Size and Shape

7.1 CGG alloy may be ordered as either jumbos, blocks, or slabs.

7.1.1 CGG alloy metal may be ordered in jumbos or blocks, as specified in Specification B 897.

7.1.2 *Jumbos*—large castings of zinc or zinc alloy designed for handling by mechanical equipment. A jumbo usually weighs about 2400 lb (1087 kg). Jumbo shapes may vary, depending on the producer's practice, and may be referred to as strip jumbos or as block jumbos. The nominal weight, dimensions, and location of holes or openings shall be as agreed upon between the producer and the customer.

7.1.3 *Slabs*—smaller castings of zinc or zinc alloy designed for manual handling, but often handled by mechanical equipment. A slab usually weighs about 55 lb (25 kg) but may weigh anywhere from 40 to 60 lb (18 to 27 kg). Slabs are usually shipped in strapped bundles weighing about 2200 lb (one metric ton). Other bundle weights may be as agreed upon between the producer and the customer.

7.1.4 Other shapes and sizes as may be agreed upon between the producer and the customer may be cast to the chemical requirements (Table 1) of this specification.

8. Appearance

8.1 CGG alloy castings (jumbos and slabs) shall be free of undue surface oxide, adhering foreign matter, and any "flash" that would interfere with handling and use.

9. Sampling for Chemical Analysis

9.1 *Sampling During Casting*—Samples shall be taken from the pour during the casting of CGG alloys and shall be cast as pins or discs according to Practice E 634 for spectrochemical analyses. A sample shall be taken at least every 18 metric tons (18 000 kg). Unless otherwise agreed upon between the producer and the customer, chemical analyses shall be determined from these samples (see Section 6).

9.2 *Sampling of Slabs*—When CGG alloy slabs must be sampled, sampling shall be by drilling or sawing.

9.2.1 *Selection of Portion*—A portion representative of the lot shall be selected at random for the sample. From lots containing at least 60 000 lb (27 200 kg), one slab shall be taken from every 10 000 lb (4530 kg). For smaller lots, five slabs shall be taken.