



Standard Specification for Zinc Master Alloys for Use in Hot Dip Galvanizing¹

This standard is issued under the fixed designation B 860; 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.

^{ε1} NOTE—Paragraph 1.1, Table 1, and the Summary of Changes section were corrected editorially and in July 2001.

1. Scope *

1.1 This specification covers zinc master alloys which are used in hot dip galvanizing for the purpose of adjusting the concentration of certain alloying elements in the molten zinc bath. Table 2 covers the chemical composition of these materials which include four master alloys of zinc-aluminum (brightener) and one master alloy of zinc-antimony.

ASTM	Common	UNS
Type A-1	90/10 Zn/Al High Purity	Z30750
Type A-2	90/10 Zn/Al Low Purity	Z31710
Type A-3	95/5 Zn/Al High Purity	Z30503
Type A-4	95/5 Zn/Al Low Purity	Z31510
Type S-1	90/10 Zn/Sb	Z55710

1.2 *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 Data Sheet 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:

- B 899 Terminology Relating to Non-ferrous Metals and Alloys²
- E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications³
- E 47 Test Methods for Chemical Analysis of Zinc Die-Casting Alloys⁴
- E 88 Practice for Sampling Nonferrous Metals and Alloys in Cast Form for Determination of Chemical Composition⁵

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 Annual Book of ASTM Standards, Vol 02.04.

³ Annual Book of ASTM Standards, Vol 14.02.

⁴ Discontinued; see 1997 Annual Book of ASTM Standards, Vol 03.05.

⁵ Annual Book of ASTM Standards, Vol 03.05.

TABLE 2 Chemical Requirements Composition, % (Range or Maximum Value)^A

Type A-1	90 % Zinc–10 % Aluminum (90/10 Zn/Al)				High Purity
Type A-2	90 % Zinc–10 % Aluminum (90/10 Zn/Al)				Low Purity
Type A-3	95 % Zinc–5 % Aluminum (95/5 Zn/Al)				High Purity
Type A-4	95 % Zinc–5 % Aluminum (95/5 Zn/Al)				Low Purity
Type S-1	90 % Zinc–10 % Antimony (90/10 Zn/Sb)				
UNS ^B	Type A-1 90/10 Zn/Al Z30750	Type A-2 90/10 Zn/Al Z31710	Type A-3 95/5 Zn/Al Z30503	Type A-4 95/5 Zn/Al Z31510	Type S-1 90/10 Zn/Sb Z55710
Fe	0.05 max	0.15 max	0.05 max	0.15 max	0.03 max
Pb	0.005 max	0.4 max	0.005 max	0.4 max	0.015 max
Cd	0.004 max	...	0.004 max	...	0.003 max
Cu	0.035 max	0.5 max	0.035 max	0.5 max	0.003 max
Sn	0.003 max	...	0.003 max	...	0.01 max
As	...	...	...	...	0.015 max
Al	9.5–10.5	9.5–10.5	4.5–5.5	4.5–5.5	...
Sb ^C	...	...	...	...	9.5–10.5
Others, Total	0.01 max	0.25 max	0.01 max	0.25 max	0.03 max
Zn ^D	Remainder	Remainder	Remainder	Remainder	Remainder

^AThe 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.

^BUNS numbers in conformance with Practice E 527.

^CChemical method under development.

^DFor information only. Quantitative determination of this element is not required. Zinc is assumed to be the difference between 100 % and the sum of those elements listed above.

E 527 Practice for Numbering Metals and Alloys (UNS)⁶

E 536 Test Method for Chemical Analysis of Zinc and Zinc Alloys⁷

3. Terminology

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

4. Ordering Information

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

4.1.1 Quantity, lb,

4.1.2 Alloy type (see Table 2),

⁶ Annual Book of ASTM Standards, Vol 01.01

⁷ Annual Book of ASTM Standards, Vol 03.06.

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