



Designation: B989 – 19

Standard Specification for High Fluidity (HF) Zinc-Aluminum Alloy in Ingot Form for Thin Wall Die Castings¹

This standard is issued under the fixed designation B989; 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 covers a commercial zinc-aluminum alloy in ingot form for remelting for the manufacture of thin wall pressure die castings as designated and specified in [Table 1](#).

1.2 Systems of nomenclature used to designate zinc and zinc-aluminum (ZA) alloys used for casting are described in [Appendix X1](#).

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 Safety 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.*

1.5 *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 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:²

[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](#)

[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 Determine Conformance with Specifications](#)

[E527 Practice for Numbering Metals and Alloys in the Unified Numbering System \(UNS\)](#)

[E536 Test Methods for Chemical Analysis of Zinc and Zinc Alloys](#)

2.3 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 [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.

3.2.2 *high fluidity alloy, n*—a zinc alloy by nature of its composition is capable of producing die castings with thinner wall sections compared to typical die cast alloys; often less than 0.012 in. (0.30 mm) in thickness.

3.2.3 *thin wall die casting, n*—a die casting with wall sections that can be less than 0.012 in. (0.30 mm) in thickness.

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, 2019. Published May 2019. Originally approved in 2014. Last previous edition approved in 2014 as B989 – 14. DOI: 10.1520/B0989-19.

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>.

APPENDIX
(Nonmandatory Information)
X1. NOMENCLATURE SYSTEMS FOR ZINC AND ZINC-ALUMINUM (ZA) ALLOYS

X1.1 The information in this appendix does not constitute a part of this specification but is provided for informational purposes only. The nomenclature covers a commercial zinc-aluminum alloy in ingot form for remelting for the manufacture of pressure die castings as designated and specified in **Table 1**.

X1.2 Several different systems of nomenclature have evolved over the years to designate the zinc alloys used for casting as listed in **Table X1.1**.

X1.2.1 Common names refer to the established and common reference to the zinc casting alloy.

X1.2.2 UNS numbers are established in Practice **E527** (SAE J1086) as part of a Unified Numbering System to provide unique designations for each metal grade and alloy in use worldwide. Zinc alloys start with the prefix “Z” followed by five numbers. The first digit is based on the major alloying element, the second digit provides a further sub-classification based on secondary and tertiary alloying elements, the third digit designates the nominal composition of the major alloying element, the fourth digit designates the nominal concentration of the second most important alloying element, and the fifth digit allows a unique number to be established to differentiate between similar compositions.

TABLE X1.1 Nomenclature Systems for Zinc-Aluminum Alloys

Common	UNS
HF alloy	to be assigned

SUMMARY OF CHANGES

Committee B02 has identified the location of selected changes to this standard since the last issue (B989 – 14) that may impact the use of this standard. (Approved April 1, 2019.)

(1) Revised references to Specification **B949** in subsections 5.1 and 7.1.

ASTM International takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.

This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, at the address shown below.

This standard is copyrighted by ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States. Individual reprints (single or multiple copies) of this standard may be obtained by contacting ASTM at the above address or at 610-832-9585 (phone), 610-832-9555 (fax), or service@astm.org (e-mail); or through the ASTM website (www.astm.org). Permission rights to photocopy the standard may also be secured from the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923, Tel: (978) 646-2600; <http://www.copyright.com/>



Contact ASTM

Call Us

Monday through Friday 8:30am-6:00pm Eastern US
Standard Time

Sales & Support

1-877-909-2786 (USA & Canada)

International

001-610-832-9585 (Customer Service)

001-610-832-9578 (Technical Support)

ASTM Headquarters

100 Barr Harbor Drive
P.O. Box C700
West Conshohocken, PA
19428-2959, USA
Tel: +1.610.832.9500
Fax: +1.610.832.9555
service@astm.org
[Directions](#)

Washington Office

1850 M Street, NW
Suite 1030
Washington, DC 20036
[Jeffrey Grove](#)
Tel: +1.202.223.8505

Latin America Office

EnginZone
Monterosa 233
of. 402 Chacarilla del Estanque
Surco, Lima 33
PERU
[Maria Isabel Barrios](#)
Tel: +51 (1) 205-5502



Contact ASTM

Call Us

Monday through Friday 8:30am-6:00pm Eastern
US Standard Time

Sales & Support

1-877-909-2786 (USA & Canada)

International

001-610-832-9585 (Customer Service)

001-610-832-9578 (Technical Support)

Canada Office

171 Nepean Street, Suite 400
Ottawa, ON K2P 0B4

[Diane Thompson](#)

Tel: +1.613.751.3409

Brussels Office

Rue de la Loi 67
B-1040 Brussels,
Belgium

[Sara Gobbi](#)

Tel +32.(0)2.8405127

China Office

Suite EF-09, Twin Towers East,
B-12 Jianguomenwai Ave.
Chaoyang District, Beijing, P.R. China
100022

[Liu Fei](#)

Tel: +86.10.5109.6033

Fax: +86.10.5109.6039



Contact ASTM

Call Us

Monday through Friday 8:30am-6:00pm Eastern
US Standard Time

Sales & Support

1-877-909-2786 (USA & Canada)

International

001-610-832-9585 (Customer Service)

001-610-832-9578 (Technical Support)

Media Contact

[Nathan Osburn](#), Director,
Corporate Communications
Tel: +610.832.9603