



Designation: B179 – 18

Standard Specification for Aluminum Alloys in Ingot and Molten Forms for Castings from All Casting Processes¹

This standard is issued under the fixed designation B179; 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 U.S. Department of Defense.

1. Scope*

1.1 This specification covers commercial aluminum alloys in ingot form for remelting and molten form for the manufacture of castings. The specific gravity of these alloys does not exceed 3.0 and they are designated as shown in [Table 1](#).

NOTE 1—Throughout this specification the use of “ingot” in a general sense includes sow, T-bar, T-ingot, and pig.

1.2 Alloy designations are in accordance with ANSI H35.1/H35.1(M).

NOTE 2—Supplementary data pertaining to the alloys covered by this specification when used in the form of castings are given in Specifications [B26/B26M](#), [B85/B85M](#), [B108/B108M](#), [B618/B618M](#), [B686/B686M](#), [B955/B955M](#), and [B969/B969M](#).

1.3 Unless the order specifies the “M” specification designation, the material shall be furnished to the inch-pound units.

1.4 For acceptance criteria for inclusion of new aluminum and aluminum alloys in this specification, see [Annex A1](#).

1.5 The values stated in inch-pound units are to be regarded as standard. No other units of measurement are included in this standard.

1.6 *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 establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.7 *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.*

¹ This specification is under the jurisdiction of ASTM Committee [B07](#) on Light Metals and Alloys and is the direct responsibility of Subcommittee [B07.01](#) on Aluminum Alloy Ingots and Castings.

Current edition approved May 15, 2018. Published May 2018. Originally approved in 1946. Last previous edition approved in 2017 as B179 – 17. DOI: 10.1520/B0179-18.

2. Referenced Documents

2.1 The following documents of the issue in effect on date of material purchase form a part of this specification to the extent referenced herein:

2.2 *ASTM Standards*:²

[B26/B26M](#) Specification for Aluminum-Alloy Sand Castings

[B85/B85M](#) Specification for Aluminum-Alloy Die Castings

[B108/B108M](#) Specification for Aluminum-Alloy Permanent Mold Castings

[B618/B618M](#) Specification for Aluminum-Alloy Investment Castings

[B666/B666M](#) Practice for Identification Marking of Aluminum and Magnesium Products

[B686/B686M](#) Specification for Aluminum Alloy Castings, High-Strength

[B955/B955M](#) Specification for Aluminum-Alloy Centrifugal Castings

[B969/B969M](#) Specification for Aluminum-Alloy Castings Produced by Squeeze Casting, Thixocast and Rheocast Semi-Solid Casting Processes

[B985](#) Practice for Sampling Aluminum Ingots, Billets, Castings and Finished or Semi-Finished Wrought Aluminum Products for Compositional Analysis

[E29](#) Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications

[E34](#) Test Methods for Chemical Analysis of Aluminum and Aluminum-Base Alloys (Withdrawn 2017)³

[E607](#) Test Method for Atomic Emission Spectrometric Analysis Aluminum Alloys by the Point to Plane Technique Nitrogen Atmosphere (Withdrawn 2011)³

[E716](#) Practices for Sampling and Sample Preparation of Aluminum and Aluminum Alloys for Determination of Chemical Composition by Spark Atomic Emission Spectrometry

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

TABLE 1 Chemical Composition Limits of Aluminum Alloys in Ingot and Molten Forms for All Casting Processes^{A,B,C,D}

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Only composition limits which are identical to those listed herein or are registered with the Aluminum Association should be designated as "AA" alloys.

DESIG. ^S	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ag	Be	Pb	Sn	Zr	FNs	OTHERS ^E Each Total ^F Al Min.	
100.1 [*]	0.15	0.6-0.8	0.10	...	...	...	...	0.05	...	...	...	...	...	...	...	0.025 Mn+Cr+Ti+V, 0.025 Mn+Cr+Ti+V, 2.5 min. Fe/Si ratio	0.03 0.10 99.00 ^G
130.1 [*]	...	...	0.10	...	...	...	...	0.05	...	...	...	...	...	...	...	0.025 Mn+Cr+Ti+V, 2.0 min. Fe/Si ratio	0.03 0.10 99.30 ^G
150.1 [*]	...	...	0.05	...	...	...	...	0.05	...	...	...	...	...	...	...	0.025 Mn+Cr+Ti+V, 2.0 min. Fe/Si ratio	0.03 0.10 99.50 ^G
160.1	0.10	0.25	...	...	...	...	...	0.05	...	...	...	...	...	...	...	0.025 Mn+Cr+Ti+V, 2.0 min. Fe/Si ratio	0.03 0.10 99.60 ^G
170.1 [*]	...	...	...	...	...	...	...	0.05	...	...	...	...	...	...	...	0.025 Mn+Cr+Ti+V, 1.5 min. Fe/Si ratio	0.03 0.10 99.70 ^G
201.2	0.10	0.10	4.0-5.2	0.20-0.50	0.20-0.55	...	...	...	0.15- 0.35	0.40- 1.0	...	...	...	...	...	0.05 0.10 Rem.	
A201.1	0.05	0.07	4.0-5.0	0.20-0.40	0.20-0.35	...	...	...	0.15- 0.35	0.40- 1.0	...	...	...	...	...	0.03 0.10 Rem.	
203.2	0.20	0.35	4.8-5.2	0.20-0.30	0.10	...	1.3-1.7	0.10	0.15-0.25	...	...	...	..	0.10-0.30	...	0.05 0.20 Rem.	
204.2	0.15	0.10-0.20	4.2-4.9	0.05	0.20-0.35	...	0.03	0.05	0.15-0.25	...	...	...	0.05	...	...	0.05 0.15 Rem.	
205.2 ^L	0.07	0.05	4.2-5.0	...	0.25-0.33	...	...	...	0.50	0.6-0.9	...	...	...	...	...	0.08 0.17 Rem.	
206.2	0.10	0.10	4.2-5.0	0.20-0.50	0.20-0.35	...	0.03	0.05	0.15-0.25	...	...	...	0.05	...	...	0.05 0.15 Rem.	
A206.2	0.05	0.07	4.2-5.0	0.20-0.50	0.20-0.35	...	0.03	0.05	0.15-0.25	...	...	...	0.05	...	...	0.05 0.15 Rem.	
B206.2	0.05	0.07	4.2-5.0	0.20-0.50	0.20-0.35	...	0.03	0.05	0.05	...	...	...	0.05	...	...	0.05 0.15 Rem.	
240.1	0.50	0.40	7.0-9.0	0.30-0.7	5.6-6.5	...	0.300.7	0.10	0.20	...	...	...	...	...	...	0.05 0.15 Rem.	
242.1	0.7	0.8	3.5-4.5	0.35	1.3-1.8	0.25	1.7-2.3	0.35	0.25	...	...	...	...	...	...	0.05 0.15 Rem.	
242.2	0.6	0.6	3.5-4.5	0.10	1.3-1.8	...	1.7-2.3	0.10	0.20	...	...	...	...	...	...	0.05 0.15 Rem.	
A242.1	0.6	0.6	3.7-4.5	0.10	1.3-1.7	0.15- 0.25	1.8-2.3	0.10	0.07-0.20	...	...	...	...	...	...	0.05 0.15 Rem.	
A242.2	0.35	0.6	3.7-4.5	0.10	1.3-1.7	0.15-0.25	1.8-2.3	0.10	0.07-0.20	...	...	...	...	...	...	0.05 0.15 Rem.	
295.1	0.7-1.5	0.8	4.0-5.0	0.35	0.03	...	...	0.35	0.25	...	...	...	...	...	...	0.05 0.15 Rem.	
295.2	0.7-1.2	0.8	4.0-5.0	0.30	0.03	...	...	0.30	0.20	...	...	...	...	...	...	0.05 0.15 Rem.	
296.1	2.0-3.0	0.9	4.0-5.0	0.35	0.05	...	0.35	0.50	0.25	...	...	...	...	...	...	0.05 0.35 Rem.	
296.2	2.0-3.0	0.8	4.0-5.0	0.30	0.03	...	...	0.30	0.20	...	...	...	...	...	...	0.05 0.15 Rem.	
301.1 ^{L,M}	9.5-10.5	0.8-1.2	3.0-3.5	0.50-0.8	0.30-0.50	...	1.0-1.5	0.05	0.20	...	...	...	...	...	...	0.03 0.10 Rem.	
302.1 ^{L,M}	9.5-10.5	0.20	2.8-3.2	...	0.8-1.2	...	1.0-1.5	0.05	0.20	...	...	...	...	...	...	0.03 0.10 Rem.	
303.1 ^{L,M}	9.5-10.5	0.8-1.2	0.20	0.50-0.8	0.50-0.7	...	...	0.05	0.20	...	...	...	...	...	...	0.03 0.10 Rem.	
304.1 ^M	9.5-11.5	0.8-1.0	0.05-0.08	0.30-0.50	0.35-0.50	0.05	0.03	0.20	0.03-0.18	...	...	...	0.03	...	...	0.03 0.15 Rem.	
308.1 ^M	5.0-6.0	0.8	4.0-5.0	0.50	0.10	...	...	1.0	0.25	...	...	...	...	...	...	0.50 Rem.	
308.2 ^M	5.0-6.0	0.8	4.0-5.0	0.30	0.10	...	...	0.50	0.20	...	...	...	...	...	...	0.50 Rem.	
318.1 ^M	5.5-6.5	0.8	3.0-4.0	0.50	0.15-0.6	...	0.35	0.9	0.25	...	...	...	...	...	...	0.50 Rem.	
319.1 ^M	5.5-6.5	0.8	3.0-4.0	0.50	0.10	...	0.35	1.0	0.25	...	...	...	...	...	...	0.50 Rem.	
319.2 ^M	5.5-6.5	0.6	3.0-4.0	0.10	0.10	...	0.10	0.10	0.20	...	...	...	...	...	...	0.20 Rem.	
A319.1 ^M	5.5-6.5	0.8	3.0-4.0	0.50	0.10	...	0.35	3.0	0.25	...	...	...	...	...	...	0.50 Rem.	
B319.1 ^M	5.5-6.5	0.9	3.0-4.0	0.8	0.15-0.50	...	0.50	1.0	0.25	...	...	...	...	...	...	0.50 Rem.	
320.1 ^M	5.0-8.0	0.9	2.0-4.0	0.8	0.10-0.6	...	0.35	3.0	0.25	...	...	...	...	...	...	0.50 Rem.	
328.1 ^M	7.5-8.5	0.8	1.0-2.0	0.20-0.6	0.25-0.6	0.35	0.25	1.5	0.25	...	...	...	...	...	...	0.50 Rem.	
332.1 ^M	8.5-10.5	0.9	2.0-4.0	0.50	0.6-1.5	...	0.50	1.0	0.25	...	...	...	...	...	...	0.50 Rem.	
332.2 ^M	8.5-10.0	0.6	2.0-4.0	0.10	0.9-1.3	...	0.10	0.10	0.20	...	...	...	...	...	...	0.30 Rem.	
333.1 ^M	8.5-10.0	0.8	3.0-4.0	0.50	0.10-0.50	...	0.50	1.0	0.25	...	...	...	...	...	...	0.50 Rem.	
A333.1 ^M	8.5-10.0	0.8	3.0-4.0	0.50	0.10-0.50	...	0.50	3.0	0.25	...	...	...	...	...	...	0.50 Rem.	
336.1 ^M	11.0-13.0	0.9	0.50-1.5	0.35	0.8-1.3	...	2.0-3.0	0.35	0.25	...	...	...	...	...	...	0.05 ... Rem.	
336.2 ^M	11.0-13.0	0.9	0.50-1.5	0.10	0.9-1.3	...	2.0-3.0	0.10	0.20	...	...	...	...	...	...	0.05 0.15 Rem.	
339.1 ^M	11.0-13.0	0.9	1.5-3.0	0.50	0.6-1.5	...	0.50-1.5	1.0	0.25	...	...	...	...	...	...	0.50 Rem.	
354.1 ^M	8.6-9.4	0.15	1.6-2.0	0.10	0.45-0.6	...	...	0.10	0.20	...	...	...	...	...	...	0.05 0.15 Rem.	
354.2 ^M	8.6-9.4	0.06	1.6-2.0	0.10	0.45-0.6	...	...	0.10	0.20	...	...	...	...	...	...	0.05 0.15 Rem.	
355.1 ^M	4.5-5.5	0.50 ^I	1.0-1.5	0.50 ^I	0.45-0.6	0.25	...	0.35	0.25	...	...	...	...	...	...	0.05 0.15 Rem.	
355.2 ^M	4.5-5.5	0.14-0.25	1.0-1.5	0.05	0.50-0.6	...	...	0.05	0.20	...	...	...	...	...	...	0.05 0.15 Rem.	