



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 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\(M\)](#). The equivalent Unified Numbering System alloy designations are in accordance with Practice [E527](#).

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](#), and [B955/B955M](#).

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 the standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the 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 and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

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.

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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.

[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

[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

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

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

[E716](#) Practices for Sampling Aluminum and Aluminum Alloys for Spectrochemical Analysis

[E1251](#) Test Method for Analysis of Aluminum and Aluminum Alloys by Atomic Emission Spectrometry

2.2 ANSI Standard:

[H35.1/H35.1\(M\)](#) American National Standard Alloy and Temper Designation Systems for Aluminum³

2.3 Aluminum Associations Standard:

Designations and Chemical Composition Limits for Aluminum Alloys in the Form of Castings and Ingot (The Pink Sheets)³

2.4 Other Standards:⁴

[EN 14242](#) Aluminum and Aluminum Alloys — Chemical Analysis — Inductively Coupled Plasma Optical Emission Spectral Analysis

³ Available from Aluminum Association, Inc., 1525 Wilson Blvd., Suite 600, Arlington, VA 22209, <http://www.aluminum.org>.

⁴ Available from European Committee for Standardization (CEN), 36 rue de Stassart, B-1050, Brussels, Belgium, <http://www.cenorm.be>.

*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}

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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.

NOTE 1—Where single units are shown, these indicate the maximum amounts permitted.

NOTE 2—Analysis shall be made for those elements for which limits are shown in this table.

NOTE 3—The following applies to all specified limits in the table: For purposes of acceptance or rejection an observed value or a calculated value obtained from analysis should be rounded to the nearest unit in the last right-hand place of figures used in expressing the specified limit in accordance with the rounding-off method of Practice E29.

Registered Alloys in the Form of XXX.1 Ingot and XXX.2 Ingot

Designation		Registered Date	Products ^C	Composition, %												Others ^D		Aluminum Minimum
AA No.	Former			Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Sn	Each	Total ^E			
100.1*	...	06/30/70	Ingot	0.15	0.6-0.8	0.10	... ^F	...	...^F	...	0.05	... ^F	...	0.03 ^F	0.10	99.00 ^G
130.1*	...	06/30/70	Ingot	... ^H	... ^H	0.10	... ^F	...	...^F	...	0.05	... ^F	...	0.03 ^F	0.10	99.30 ^G
150.1*	...	06/30/70	Ingot	... ^I	... ^I	0.05	... ^F	...	...^F	...	0.05	... ^F	...	0.03 ^F	0.10	99.50 ^G
160.1	...	01/28/76	Ingot	0.10 ^I	0.25 ^I	...	...^F	...	...^F	...	0.05	... ^F	...	0.03 ^F	0.10	99.60 ^G
170.1*	...	06/30/70	Ingot	... ^J	... ^J	...	...^F	...	...^F	...	0.05	... ^F	...	0.03 ^F	0.10	99.70 ^G
201.2	...	04/17/68	Ingot	0.10	0.10	4.0-5.2	0.20-0.50	0.20-0.55	...	...	...	0.15-0.35	...	0.05 ^K	0.10	Remainder
A201.1	A201.2	10/09/70	Ingot	0.05	0.07	4.0-5.0	0.20-0.40	0.20-0.35	...	...	...	0.15-0.35	...	0.03 ^K	0.10	Remainder
203.2	Hiduminium 350	12/02/72	Ingot	0.20	0.35	4.8-5.2	0.20-0.30	0.10	1.3-1.7	0.10	0.15-0.25	...	0.05 ^L	0.20	Remainder	
204.2	A-U5GT	10/01/74	Ingot	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	Remainder		
206.2	...	04/23/76	Ingot	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	Remainder		
A206.2	...	04/23/76	Ingot	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	Remainder		
B206.2	...	07/07/03	Ingot	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	Remainder		
240.1	A240.1, A140	...	Ingot	0.50	0.40	7.0-9.0	0.30-0.7	5.6-6.5	...	0.30-0.7	0.10	0.20	...	0.05	0.15	Remainder		
242.1	142	...	Ingot	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	Remainder		
242.2	142	...	Ingot	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	Remainder		
A242.1	A142	...	Ingot	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	Remainder		
A242.2	A142	...	Ingot	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	Remainder		
295.1	195	...	Ingot	0.7-1.5	0.8	4.0-5.0	0.35	0.03	...	...	0.35	0.25	...	0.05	0.15	Remainder
295.2	195	...	Ingot	0.7-1.2	0.8	4.0-5.0	0.30	0.03	...	...	0.30	0.20	...	0.05	0.15	Remainder
296.1	B295.1, B195	...	Ingot	2.0-3.0	0.9	4.0-5.0	0.35	0.05	...	0.35	0.50	0.25	...	0.05	0.15	Remainder		
296.2	B295.2, B195	...	Ingot	2.0-3.0	0.8	4.0-5.0	0.30	0.03	...	...	0.30	0.20	...	0.05	0.15	Remainder
301.1 ^M	...	08/02/94	Ingot ^N	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	Remainder		
302.1 ^M	...	08/02/94	Ingot ^N	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	Remainder		
303.1 ^M	...	08/02/94	Ingot ^N	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	Remainder
308.1 ^M	A108	...	Ingot	5.0-6.0	0.8	4.0-5.0	0.50	0.10	...	...	1.0	0.25	...	0.50	Remainder	

TABLE 1 Continued

Designation		Registered Date	Products ^C	Composition, %												Aluminum Minimum
AA No.	Former			Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Sn	Others ^D		
														Each	Total ^E	
308.2 ^M	A108	...	Ingot	5.0-6.0	0.8	4.0-5.0	0.30	0.10	...	...	0.50	0.20	...	...	0.50	Remainder
318.1 ^M	...	01/29/91	Ingot	5.5-6.5	0.8	3.0-4.0	0.50	0.15-0.6	...	0.35	0.9	0.25	...	...	0.50	Remainder
319.1 ^M	319, All Cast	...	Ingot	5.5-6.5	0.8	3.0-4.0	0.50	0.10	...	0.35	1.0	0.25	...	...	0.50	Remainder
319.2 ^M	319, All Cast	...	Ingot	5.5-6.5	0.6	3.0-4.0	0.10	0.10	...	0.10	0.10	0.20	...	...	0.20	Remainder
A319.1 ^M	...	08/28/70	Ingot	5.5-6.5	0.8	3.0-4.0	0.50	0.10	...	0.35	3.0	0.25	...	...	0.50	Remainder
B319.1 ^M	...	10/30/81	Ingot	5.5-6.5	0.9	3.0-4.0	0.8	0.15-0.50	...	0.50	1.0	0.25	...	...	0.50	Remainder
320.1 ^M	...	04/08/82	Ingot	5.0-8.0	0.9	2.0-4.0	0.8	0.10-0.6	...	0.35	3.0	0.25	...	...	0.50	Remainder
328.1 ^M	Red X-8	...	Ingot	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	Remainder
332.1 ^M	F332.1, F132	...	Ingot	8.5-10.5	0.9	2.0-4.0	0.50	0.6-1.5	...	0.50	1.0	0.25	...	...	0.50	Remainder
332.2 ^M	F332.2, F132	...	Ingot	8.5-10.0	0.6	2.0-4.0	0.10	0.9-1.3	...	0.10	0.10	0.20	...	...	0.30	Remainder
333.1 ^M	333	...	Ingot	8.0-10.0	0.8	3.0-4.0	0.50	0.10-0.50	...	0.50	1.0	0.25	...	...	0.50	Remainder
A333.1 ^M	...	08/28/70	Ingot	8.0-10.0	0.8	3.0-4.0	0.50	0.10-0.50	...	0.50	3.0	0.25	...	...	0.50	Remainder
336.1 ^M	A332.1, A132	...	Ingot	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	...	Remainder
336.2 ^M	A332.2, A132	...	Ingot	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	Remainder
339.1 ^M	Z332.1, Z132	...	Ingot	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	Remainder
354.1 ^M	354	...	Ingot	8.6-9.4	0.15	1.6-2.0	0.10	0.45-0.6	...	...	0.10	0.20	...	0.05	0.15	Remainder
354.2 ^M	...	07/21/97	Ingot	8.6-9.4	0.06	1.6-2.0	0.10	0.45-0.6	...	...	0.10	0.20	...	0.05	0.15	Remainder
355.1 ^M	355	...	Ingot	4.5-5.5	0.50 ^O	1.0-1.5	0.50 ^O	0.45-0.6	0.25	...	0.35	0.25	...	0.05	0.15	Remainder
355.2 ^M	355	...	Ingot	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	Remainder
A355.2 ^M	...	09/17/81	Ingot	4.5-5.5	0.06	1.0-1.5	0.03	0.50-0.6	...	...	0.03	0.04-0.20	...	0.03	0.10	Remainder
C355.1 ^M	...	06/04/74	Ingot	4.5-5.5	0.15	1.0-1.5	0.10	0.45-0.6	...	...	0.10	0.20	...	0.05	0.15	Remainder
C355.2 ^M	C355	...	Ingot	4.5-5.5	0.13	1.0-1.5	0.05	0.50-0.6	...	...	0.05	0.20	...	0.05	0.15	Remainder
356.1 ^M	356	...	Ingot	6.5-7.5	0.50 ^O	0.25	0.35 ^O	0.25-0.45	...	...	0.35	0.25	...	0.05	0.15	Remainder
356.2 ^M	356	...	Ingot	6.5-7.5	0.13-0.25	0.10	0.05	0.30-0.45	...	...	0.05	0.20	...	0.05	0.15	Remainder
A356.1 ^M	...	06/04/74	Ingot	6.5-7.5	0.15	0.20	0.10	0.30-0.45	...	...	0.10	0.20	...	0.05	0.15	Remainder
A356.2 ^M	A356	...	Ingot	6.5-7.5	0.12	0.10	0.05	0.30-0.45	...	...	0.05	0.20	...	0.05	0.15	Remainder
B356.2 ^M	...	09/17/81	Ingot	6.5-7.5	0.06	0.03	0.03	0.30-0.45	...	...	0.03	0.04-0.20	...	0.03	0.10	Remainder
C356.2 ^M	...	05/30/85	Ingot	6.5-7.5	0.04	0.03	0.03	0.30-0.45	...	...	0.03	0.04-0.20	...	0.03	0.10	Remainder
F356.2 ^M	...	10/20/71	Ingot	6.5-7.5	0.12	0.10	0.05	0.17-0.25	...	...	0.05	0.04-0.20	...	0.05	0.15	Remainder
357.1 ^M	357	...	Ingot	6.5-7.5	0.12	0.05	0.03	0.45-0.6	...	...	0.05	0.20	...	0.05	0.15	Remainder