

**Designations
and
Chemical Composition Limits
for
Aluminum Alloys in the
Form of Castings and Ingot**



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Revised: August 2025

Supersedes: October 2018

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ISSN: 3069-1230 (Online)
ISSN: 2377-6722 (Print)

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FOREWORD

Listed herein are designations and chemical composition limits for aluminum alloys in the form of castings or ingot registered with The Aluminum Association. This list is maintained by the Technical Committee on Product Standards of The Aluminum Association. The designations of these compositions were assigned in conformance with the system adopted by The Aluminum Association in 1954 and approved by the American Standards Association (now American National Standards Institute Incorporated) as an American Standard in 1957 (see American National Standard Alloy and Temper Designation Systems for Aluminum ANSI H35.1/H35.1(M)). Additions may be made as required, and alloys will be deleted when no longer in commercial use (see table of inactive alloys printed on page 13).

This registration record is not intended to address all regulatory requirements that may be imposed by local, national or international governing bodies. Regulatory requirements, which vary by region and end use, can further restrict the chemical composition within the registered limits. When applicable, inclusion of such requirements in the sales agreement is advised.

Effective July/2015, the practice of registering experimental alloys has been discontinued and new experimental alloy designations shall not be granted.

Some of the registered alloys may be the subject of patent or patent applications, and their listing herein is not to be construed in any way as the granting of a license under such patent rights.

CHEMICAL COMPOSITION LIMITS^{1,2}

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

REGISTERED ALLOYS IN THE FORM OF xxx.0 CASTINGS, xxx.1 INGOT AND xxx.2 INGOT.

DESIGNATION		PRO-DUCTS ⁵	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ag	Be	Pb	Sn	Zr		FNs	OTHERS ¹²		Al Min.
AA No.	DATE REGISTERED																		Each	Total ³	
100.1*	1970-06-30	Ingot	0.15	0.6-0.8	0.10	...	...	...	...	0.05	...	...	...	...	...	...	0.025 Mn+Cr+Ti+V	...	0.03	0.10	99.00 ⁴
130.1*	1970-06-30	Ingot	...	...	0.10	...	...	...	...	0.05	...	...	...	...	...	...	0.025 Mn+Cr+Ti+V, 2.5 min. Fe/Si ratio	...	0.03	0.10	99.30 ⁴
150.1*	1970-06-30	Ingot	...	...	0.05	...	...	...	...	0.05	...	...	...	...	...	...	0.025 Mn+Cr+Ti+V, 2.0 min. Fe/Si ratio	...	0.03	0.10	99.50 ⁴
160.1	1976-01-28	Ingot	0.10	0.25	...	...	...	...	...	0.05	...	...	...	...	...	...	0.025 Mn+Cr+Ti+V, 2.0 min. Fe/Si ratio	...	0.03	0.10	99.60 ⁴
170.1*	1970-06-30	Ingot	...	...	...	...	...	...	...	0.05	...	...	...	...	...	...	0.025 Mn+Cr+Ti+V, 1.5 min. Fe/Si ratio	...	0.03	0.10	99.70 ⁴
201.0	1968-04-17	S	0.10	0.15	4.0-5.2	0.20-0.50	0.15-0.55	...	...	...	0.15-0.35	0.40-1.0	...	...	...	...	...	...	0.05	0.10	Rem.
201.2	1968-04-17	Ingot	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.
A201.0	1970-10-09	S	0.05	0.10	4.0-5.0	0.20-0.40	0.15-0.35	...	...	...	0.15-0.35	0.40-1.0	...	...	...	...	...	...	0.03	0.10	Rem.
A201.1	1970-10-09	Ingot	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.
B201.0	1984-09-21	S	0.05	0.05	4.5-5.0	0.20-0.50	0.25-0.35	...	...	...	0.15-0.35	0.50-1.0	...	...	...	...	...	...	0.05	0.15	Rem.
204.2	1974-10-01	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	Rem.
205.0	2011-10-26	...	0.10	0.08	4.2-5.0	...	0.20-0.33	...	...	...	0.50	0.6-0.9	...	...	...	...	...	...	0.08	0.17	Rem.
205.2	2011-10-26	Ingot ¹³	0.07	0.05	4.2-5.0	...	0.25-0.33	...	...	...	0.50	0.6-0.9	...	...	...	...	...	...	0.08	0.17	Rem.
206.0	1976-04-23	S&P	0.10	0.15	4.2-5.0	0.20-0.50	0.15-0.35	...	0.05	0.10	0.15-0.30	...	...	...	0.05	...	...	...	0.05	0.15	Rem.
206.2	1976-04-23	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	Rem.
A206.0	1976-04-23	S&P	0.05	0.10	4.2-5.0	0.20-0.50	0.15-0.35	...	0.05	0.10	0.15-0.30	...	...	...	0.05	...	...	...	0.05	0.15	Rem.
A206.2	1976-04-23	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	Rem.
B206.0	2003-07-07	S&P	0.05	0.10	4.2-5.0	0.20-0.50	0.15-0.35	...	0.05	0.10	0.10	...	...	...	0.05	...	...	...	0.05	0.15	Rem.
B206.2	2003-07-07	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	Rem.
207.0	2015-07-07	Sand	0.10	0.08	4.2-5.0	...	0.20-0.33	...	...	...	0.50	...	...	...	...	...	...	...	0.08	0.17	Rem.
207.2	2015-07-07	Ingot	0.07	0.05	4.2-5.0	...	0.25-0.33	...	...	...	0.50	...	...	...	...	...	...	...	0.08	0.17	Rem.
240.0	...	S	0.50	0.50	7.0-9.0	0.30-0.7	5.5-6.5	...	0.30-0.7	0.10	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
240.1	...	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	Rem.
242.0	...	S&P	0.7	1.0	3.5-4.5	0.35	1.2-1.8	0.25	1.7-2.3	0.35	0.25	...	...	...	...	...	...	...	0.05	0.15	Rem.
242.1	...	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	Rem.
242.2	...	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	Rem.

See footnotes on pages 11-12

CHEMICAL COMPOSITION LIMITS^{1,2}

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

REGISTERED ALLOYS IN THE FORM OF xxx.0 CASTINGS, xxx.1 INGOT AND xxx.2 INGOT.

DESIGNATION		PRO- DUCTS ⁵	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ag	Be	Pb	Sn	Zr		FNs	OTHERS ¹²		Al Min.
AA No.	DATE REGISTERED																		Each	Total ³	
A242.0	....	S	0.6	0.8	3.7-4.5	0.10	1.2-1.7	0.15-0.25	1.8-2.3	0.10	0.07-0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
A242.1	....	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	Rem.
A242.2	....	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	Rem.
295.0	....	S	0.7-1.5	1.0	4.0-5.0	0.35	0.03	...	...	0.35	0.25	...	...	...	...	...	...	...	0.05	0.15	Rem.
295.1	....	Ingot	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	....	Ingot	0.7-1.2	0.8	4.0-5.0	0.30	0.03	...	...	0.30	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
296.0	....	P	2.0-3.0	1.2	4.0-5.0	0.35	0.05	...	0.35	0.50	0.25	...	...	...	...	...	...	...	...	0.35	Rem.
296.1	....	Ingot	2.0-3.0	0.9	4.0-5.0	0.35	0.05	...	0.35	0.50	0.25	...	...	...	...	...	...	...	...	0.35	Rem.
296.2	....	Ingot	2.0-3.0	0.8	4.0-5.0	0.30	0.03	...	...	0.30	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
301.0	1994-08-02	....	9.5-10.5	0.8-1.5	3.0-3.5	0.50-0.8	0.25-0.50	...	1.0-1.5	0.05	0.20	...	...	...	...	...	...	...	0.03	0.10	Rem.
301.1 ¹⁴	1994-08-02	Ingot ¹³	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.
302.0	1994-08-02	....	9.5-10.5	0.25	2.8-3.2	...	0.7-1.2	...	1.0-1.5	0.05	0.20	...	...	...	...	...	...	...	0.03	0.10	Rem.
302.1 ¹⁴	1994-08-02	Ingot ¹³	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.
303.0	1994-08-02	....	9.5-10.5	0.8-1.5	0.20	0.50-0.8	0.45-0.7	...	...	0.05	0.20	...	...	...	...	...	...	...	0.03	0.10	Rem.
303.1 ¹⁴	1994-08-02	Ingot ¹³	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.
304.0	2012-04-17	D	9.0-11.5	0.8-1.2	0.05-0.08	0.30-0.50	0.30-0.50	0.05	0.03	0.20	0.03-0.18	...	...	...	0.03	...	...	...	0.03	0.15	Rem.
304.1 ¹⁴	2012-04-17	Ingot	9.0-11.5	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.
308.0	....	S&P	5.0-6.0	1.0	4.0-5.0	0.50	0.10	...	...	1.0	0.25	...	...	...	...	...	...	...	...	0.50	Rem.
308.1 ¹⁴	....	Ingot	5.0-6.0	0.8	4.0-5.0	0.50	0.10	...	...	1.0	0.25	...	...	...	...	...	...	...	...	0.50	Rem.
308.2 ¹⁴	....	Ingot	5.0-6.0	0.8	4.0-5.0	0.30	0.10	...	...	0.50	0.20	...	...	...	...	...	...	...	...	0.50	Rem.
318.0	1991-01-29	S&P	5.5-6.5	1.0	3.0-4.0	0.50	0.10-0.6	...	0.35	1.0	0.25	...	...	...	...	...	...	...	...	0.50	Rem.
318.1 ¹⁴	1991-01-29	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	Rem.
319.0	....	S&P	5.5-6.5	1.0	3.0-4.0	0.50	0.10	...	0.35	1.0	0.25	...	...	...	...	...	...	...	...	0.50	Rem.
319.1 ¹⁴	....	Ingot	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 ¹⁴	....	Ingot	5.5-6.5	0.6	3.0-4.0	0.10	0.10	...	0.10	0.10	0.20	...	...	...	...	...	...	...	...	0.20	Rem.
A319.0	1970-08-28	S&P	5.5-6.5	1.0	3.0-4.0	0.50	0.10	...	0.35	3.0	0.25	...	...	...	...	...	...	...	...	0.50	Rem.
A319.1 ¹⁴	1970-08-28	Ingot	5.5-6.5	0.8	3.0-4.0	0.50	0.10	...	0.35	3.0	0.25	...	...	...	...	...	...	...	...	0.50	Rem.
B319.0	1981-10-30	S&P	5.5-6.5	1.2	3.0-4.0	0.8	0.10-0.50	...	0.50	1.0	0.25	...	...	...	...	...	...	...	...	0.50	Rem.
B319.1 ¹⁴	1981-10-30	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	Rem.
320.0	1982-04-08	S&P	5.0-8.0	1.2	2.0-4.0	0.8	0.05-0.6	...	0.35	3.0	0.25	...	...	...	...	...	...	...	...	0.50	Rem.
320.1 ¹⁴	1982-04-08	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	Rem.
328.0	2003-07-09 ¹⁸	S	7.5-8.5	1.0	1.0-2.0	0.20-0.6	0.20-0.6	0.35	0.25	1.5	0.25	...	...	...	...	...	...	...	...	0.50	Rem.
328.1 ¹⁴	2003-07-09 ¹⁸	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	Rem.

See footnotes on pages 11-12

CHEMICAL COMPOSITION LIMITS^{1,2}

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REGISTERED ALLOYS IN THE FORM OF xxx.0 CASTINGS, xxx.1 INGOT AND xxx.2 INGOT.

DESIGNATION		PRO-DUCTS ⁵	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ag	Be	Pb	Sn	Zr		FNs	OTHERS ¹²		Al Min.
AA No.	DATE REGISTERED																		Each	Total ³	
332.0	....	P	8.5-10.5	1.2	2.0-4.0	0.50	0.50-1.5	...	0.50	1.0	0.25	...	...	...	...	...	...	...	...	0.50	Rem.
332.1 ¹⁴	....	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	Rem.
332.2 ¹⁴	....	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	Rem.
333.0	....	P	8.0-10.0	1.0	3.0-4.0	0.50	0.05-0.50	...	0.50	1.0	0.25	...	...	...	...	...	...	...	...	0.50	Rem.
333.1 ¹⁴	....	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	Rem.
A333.0	1970-08-28	P	8.0-10.0	1.0	3.0-4.0	0.50	0.05-0.50	...	0.50	3.0	0.25	...	...	...	...	...	...	...	...	0.50	Rem.
A333.1 ¹⁴	1970-08-28	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	Rem.
336.0	.....	P	11.0-13.0	1.2	0.50-1.5	0.35	0.7-1.3	...	2.0-3.0	0.35	0.25	...	...	...	...	...	...	...	0.05	...	Rem.
336.1 ¹⁴	.....	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	...	Rem.
336.2 ¹⁴	.....	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	Rem.
339.0	....	P	11.0-13.0	1.2	1.5-3.0	0.50	0.50-1.5	...	0.50-1.5	1.0	0.25	...	...	...	...	...	...	...	...	0.50	Rem.
339.1 ¹⁴	....	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	Rem.
345.0	2017-07-20	Casting	4.0-6.5	0.15	0.20	0.10	0.25-0.55	0.10-0.30	0.01	...	0.10-0.25	...	...	...	0.01	...	...	...	0.05	0.10	Rem.
345.1	2017-07-20	Ingot	4.0-6.5	0.12	0.20	0.10	0.30-0.55	0.10-0.30	0.01	...	0.10-0.25	...	...	...	0.01	...	...	...	0.05	0.10	Rem.
345.2	2017-07-20	Ingot	4.0-6.0	0.10	0.20	0.10	0.30-0.50	0.10-0.30	0.01	...	0.10-0.20	...	...	...	0.01	...	...	...	0.05	0.10	Rem.
351.0	2017-07-24	Casting	8.3-9.7	0.20	1.6-2.0	0.05-0.35	0.25-0.45	...	...	...	0.20	...	...	...	...	0.08-0.30	0.08-0.30V	...	0.05	0.15	Rem.
351.1	2017-07-24	Ingot	8.3-9.7	0.15	1.6-2.0	0.05-0.35	0.30-0.45	...	...	...	0.20	...	...	...	...	0.08-0.30	0.08-0.30V	...	0.05	0.15	Rem.
352.0	2017-07-24	Casting	9.0-10.5	0.08-0.20	...	0.35-0.65	0.10-0.6	...	...	...	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
352.1	2017-07-24	Ingot	9.0-10.5	0.08-0.15	...	0.35-0.65	0.15-0.6	...	...	...	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
354.0	....	P	8.6-9.4	0.20	1.6-2.0	0.10	0.40-0.6	...	...	0.10	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
354.1 ¹⁴	....	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	Rem.
354.2 ¹⁴	1997-07-21	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	Rem.
A354.0	2017-07-24	Casting	8.3-9.7	0.20	1.3-2.0	0.10	0.25-0.45	...	...	0.10	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
A354.1	2017-07-24	Ingot	8.3-9.7	0.15	1.3-2.0	0.10	0.30-0.45	...	...	0.10	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
355.0	....	S&P	4.5-5.5	0.6 ⁷	1.0-1.5	0.50 ⁷	0.40-0.6	0.25	...	0.35	0.25	...	...	...	...	...	...	...	0.05	0.15	Rem.
355.1 ¹⁴	....	Ingot	4.5-5.5	0.50 ⁷	1.0-1.5	0.50 ⁷	0.45-0.6	0.25	...	0.35	0.25	...	...	...	...	...	...	...	0.05	0.15	Rem.
355.2 ¹⁴	....	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	Rem.
A355.0	1981-09-17	S&P	4.5-5.5	0.09	1.0-1.5	0.05	0.45-0.6	...	...	0.05	0.04-0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
A355.2 ¹⁴	1981-09-17	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	Rem.
C355.0	....	S&P	4.5-5.5	0.20	1.0-1.5	0.10	0.40-0.6	...	...	0.10	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
C355.1 ¹⁴	1974-06-04	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	Rem.
C355.2 ¹⁴	....	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	Rem.

CHEMICAL COMPOSITION LIMITS^{1,2}

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

REGISTERED ALLOYS IN THE FORM OF xxx.0 CASTINGS, xxx.1 INGOT AND xxx.2 INGOT.

DESIGNATION		PRO-DUCTS ⁵	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ag	Be	Pb	Sn	Zr		FNs	OTHERS ¹²		Al Min.
AA No.	DATE REGISTERED																		Each	Total ³	
356.0	....	S&P	6.5-7.5	0.6 ⁷	0.25	0.35 ⁷	0.20-0.45	...	...	0.35	0.25	...	...	...	...	...	...	...	0.05	0.15	Rem.
356.1 ¹⁴	....	Ingot	6.5-7.5	0.50 ⁷	0.25	0.35 ⁷	0.25-0.45	...	...	0.35	0.25	...	...	...	...	...	...	...	0.05	0.15	Rem.
356.2 ¹⁴	....	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	Rem.
A356.0	....	S&P	6.5-7.5	0.20	0.20	0.10	0.25-0.45	...	...	0.10	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
A356.1 ¹⁴	1974-06-04	Ingot	6.5-7.5	0.15	0.20	0.10	0.30-0.45	...	...	0.10	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
A356.2 ¹⁴	....	Ingot	6.5-7.5	0.12	0.10	0.05	0.30-0.45	...	...	0.05	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
B356.0	1981-09-17	S&P	6.5-7.5	0.09	0.05	0.05	0.25-0.45	...	...	0.05	0.04-0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
B356.2 ¹⁴	1981-09-17	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	Rem.
C356.0	1985-05-30	S&P	6.5-7.5	0.07	0.05	0.05	0.25-0.45	...	...	0.05	0.04-0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
C356.2 ¹⁴	1985-05-30	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	Rem.
F356.0	1971-10-20	S&P	6.5-7.5	0.20	0.20	0.10	0.17-0.25	...	...	0.10	0.04-0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
F356.2 ¹⁴	1971-10-20	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	Rem.
+ G356.0	2024-08-02	Casting	6.5-8.0	0.35	0.25	0.20	0.15-0.6	0.10-0.30	...	0.20	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
+ G356.1	2024-08-02	Ingot	6.5-8.0	0.25	0.25	0.20	0.20-0.6	0.10-0.30	...	0.20	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
+ G356.2	2024-08-02	Ingot	6.5-8.0	0.25	0.10	0.15	0.20-0.55	0.10-0.15	...	0.10	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
357.0	....	S&P	6.5-7.5	0.15	0.05	0.03	0.45-0.6	...	...	0.05	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
357.1 ¹⁴	....	Ingot	6.5-7.5	0.12	0.05	0.03	0.45-0.6	...	...	0.05	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
A357.0	....	S&P	6.5-7.5	0.20	0.20	0.10	0.40-0.7	...	...	0.10	0.04-0.20	...	0.04-0.07	...	...	...	...	...	0.05	0.15	Rem.
A357.2 ¹⁴	....	Ingot	6.5-7.5	0.12	0.10	0.05	0.45-0.7	...	...	0.05	0.04-0.20	...	0.04-0.07	...	...	...	...	...	0.03	0.10	Rem.
B357.0	1981-09-17	S&P	6.5-7.5	0.09	0.05	0.05	0.40-0.6	...	...	0.05	0.04-0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
B357.2 ¹⁴	1981-09-17	Ingot	6.5-7.5	0.06	0.03	0.03	0.45-0.6	...	...	0.03	0.04-0.20	...	...	...	...	...	...	...	0.03	0.10	Rem.
C357.0	1981-09-17	S&P	6.5-7.5	0.09	0.05	0.05	0.45-0.7	...	...	0.05	0.04-0.20	...	0.04-0.07	...	...	...	...	...	0.05	0.15	Rem.
C357.2 ¹⁴	1981-09-17	Ingot	6.5-7.5	0.06	0.03	0.03	0.50-0.7	...	...	0.03	0.04-0.20	...	0.04-0.07	...	...	...	...	...	0.03	0.10	Rem.
D357.0	1984-09-21	S	6.5-7.5	0.20	...	0.10	0.55-0.6	...	...	...	0.10-0.20	...	0.04-0.07	...	...	...	...	...	0.05	0.15	Rem.
E357.0	2001-06-06	S, P & I	6.5-7.5	0.10	...	0.10	0.55-0.6	...	...	...	0.10-0.20	...	0.002	...	...	...	...	...	0.05	0.15	Rem.
E357.1 ¹⁴	2001-06-06	Ingot	6.5-7.5	0.07	...	0.10	0.6-0.7	...	...	...	0.10-0.20	...	0.002	...	...	...	...	...	0.05	0.15	Rem.
E357.2 ¹⁴	2001-06-06	Ingot	6.5-7.5	0.07	...	0.10	0.6-0.7	...	...	...	0.10-0.20	...	0.0003	...	...	...	...	...	0.05	0.15	Rem.
F357.0	2001-06-06	S, P & I	6.5-7.5	0.10	0.20	0.10	0.40-0.7	...	...	0.10	0.04-0.20	...	0.002	...	...	...	...	...	0.05	0.15	Rem.
F357.1 ¹⁴	2001-06-06	Ingot	6.5-7.5	0.07	0.20	0.10	0.45-0.7	...	...	0.10	0.04-0.20	...	0.002	...	...	...	...	...	0.05	0.15	Rem.
F357.2 ¹⁴	2001-06-06	Ingot	6.5-7.5	0.07	0.20	0.10	0.45-0.7	...	...	0.10	0.04-0.20	...	0.0003	...	...	...	...	...	0.05	0.15	Rem.
358.0	....	S&P	7.6-8.6	0.30	0.20	0.20	0.40-0.6	0.20	...	0.20	0.10-0.20	...	0.10-0.30	...	...	...	...	...	0.05	0.15	Rem.
358.2 ¹⁴	....	Ingot	7.6-8.6	0.20	0.10	0.10	0.45-0.6	0.05	...	0.10	0.12-0.20	...	0.15-0.30	...	...	...	...	...	0.05	0.15	Rem.

CHEMICAL COMPOSITION LIMITS^{1,2}

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

REGISTERED ALLOYS IN THE FORM OF xxx.0 CASTINGS, xxx.1 INGOT AND xxx.2 INGOT.

DESIGNATION		PRO-DUCTS ⁵	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ag	Be	Pb	Sn	Zr		FNs	OTHERS ¹²		Al Min.
AA No.	DATE REGISTERED																		Each	Total ³	
359.0	....	S&P	8.5-9.5	0.20	0.20	0.10	0.50-0.7	...	...	0.10	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
359.2 ¹⁴	....	Ingot	8.5-9.5	0.12	0.10	0.10	0.55-0.7	...	...	0.10	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
A359.0	1994-08-02	....	8.5-9.5	0.25	0.20	0.10	0.40-0.6	...	...	0.05	0.20	...	...	...	...	...	...	...	0.03	0.10	Rem.
A359.1 ¹⁴	1994-08-02	Ingot ¹³	8.5-9.5	0.20	0.20	0.10	0.45-0.6	...	...	0.05	0.20	...	...	...	...	...	...	...	0.03	0.10	Rem.
360.0 ⁸	....	D	9.0-10.0	2.0	0.6	0.35	0.40-0.6	...	0.50	0.50	...	...	...	...	0.15	...	...	...	...	0.25	Rem.
360.2 ¹⁴	....	Ingot	9.0-10.0	0.7-1.1	0.10	0.10	0.45-0.6	...	0.10	0.10	...	...	...	...	0.10	...	...	...	...	0.20	Rem.
A360.0 ⁸	....	D	9.0-10.0	1.3	0.6	0.35	0.40-0.6	...	0.50	0.50	...	...	...	...	0.15	...	...	...	...	0.25	Rem.
A360.1 ^{8, 14}	....	Ingot	9.0-10.0	1.0	0.6	0.35	0.45-0.6	...	0.50	0.40	...	...	...	...	0.15	...	...	...	...	0.25	Rem.
A360.2 ¹⁴	....	Ingot	9.0-10.0	0.6	0.10	0.05	0.45-0.6	...	...	0.05	...	...	...	...	...	...	...	...	0.05	0.15	Rem.
B360.0	2017-08-03	Casting	9.0-10.0	0.40	0.25	0.40	0.40-0.6	...	0.50	0.50	...	...	...	...	0.15	...	0.05-0.07Sr	...	0.05	0.15	Rem.
B360.1	2017-08-03	Ingot	9.0-10.0	0.30	0.25	0.40	0.45-0.6	...	0.50	0.40	...	...	...	...	0.15	...	0.06-0.10Sr	...	0.05	0.15	Rem.
C360.0	2017-12-21	Casting	9.0-11.0	0.55	0.05	0.45	0.20-0.45	...	0.05	0.10	0.15	...	...	0.05	0.05	...	...	...	0.05	0.15	Rem.
C360.2	2017-12-21	Ingot	9.0-11.0	0.40	0.03	0.45	0.25-0.45	...	0.05	0.10	0.15	...	...	0.05	0.05	...	...	...	0.05	0.15	Rem.
361.0	1978-06-30	D	9.5-10.5	1.1	0.50	0.25	0.40-0.6	0.20-0.30	0.20-0.30	0.50	0.20	...	...	...	0.10	...	...	...	0.05	0.15	Rem.
361.1 ¹⁴	1978-06-30	Ingot	9.5-10.5	0.8	0.50	0.25	0.45-0.6	0.20-0.30	0.20-0.30	0.40	0.20	...	...	...	0.10	...	...	...	0.05	0.15	Rem.
362.0	2011-05-03	D	10.5-11.5	0.40	0.20	0.25-0.35	0.50-0.7	...	0.10	0.10	0.20	...	...	...	0.10	...	...	¹⁹	0.05	0.15	Rem.
362.1 ¹⁵	2011-05-03	Ingot	10.5-11.5	0.30	0.20	0.25-0.35	0.6-0.7	...	0.10	0.10	0.20	...	...	...	0.10	...	...	¹⁹	0.05	0.15	Rem.
363.0	1970-01-16	S&P	4.5-6.0	1.1	2.5-3.5	...	0.15-0.40	...	0.25	3.0-4.5	0.20	...	...	0.25	0.25	...	0.8 Mn+Cr	...	...	0.30	Rem.
363.1 ¹⁴	1970-01-16	Ingot	4.5-6.0	0.8	2.5-3.5	...	0.20-0.40	...	0.25	3.0-4.5	0.20	...	...	0.25	0.25	...	0.8 Mn+Cr	...	...	0.30	Rem.
364.0	....	D	7.5-9.5	1.5	0.20	0.10	0.20-0.40	0.25-0.50	0.15	0.15	...	...	0.02-0.04	...	0.15	...	...	...	0.05	0.15	Rem.
364.2 ¹⁴	....	Ingot	7.5-9.5	0.7-1.1	0.20	0.10	0.25-0.40	0.25-0.50	0.15	0.15	...	...	0.02-0.04	...	0.15	...	...	...	0.05	0.15	Rem.
365.0	1996-01-05	D	9.5-11.5	0.15	0.03	0.50-0.8	0.10-0.50	...	...	0.07	0.04-0.15	...	...	...	...	...	...	⁹	0.03	0.10	Rem.
365.1 ¹⁵	1996-01-05	Ingot	9.5-11.5	0.12	0.03	0.50-0.8	0.15-0.50	...	...	0.07	0.04-0.15	...	...	...	...	...	...	⁹	0.03	0.10	Rem.
A365.0	2008-10-17	D	9.5-11.5	0.15-0.25	0.02	0.30-0.6	0.10-0.6	...	...	0.03	0.10	...	...	...	...	...	...	²⁰	0.05	0.15	Rem.
A365.1 ¹⁵	2008-10-17	Ingot	9.5-11.5	0.15-0.20	0.02	0.30-0.6	0.15-0.6	...	...	0.03	0.10	...	...	...	...	...	...	²⁰	0.05	0.15	Rem.
366.0	2003-03-27	....	6.5-7.5	0.15	0.05	0.03	0.5-1.2	...	...	0.05	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
366.1 ¹⁴	2003-03-27	Ingot ¹⁶	6.5-7.5	0.12	0.05	0.03	0.6-1.2	...	...	0.05	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
367.0	2007-01-10	D	8.5-9.5	0.25	0.25	0.25-0.35	0.30-0.50	...	...	0.10	0.20	...	...	...	...	...	...	¹⁹	0.05	0.15	Rem.
367.1 ¹⁵	2007-01-10	Ingot	8.5-9.5	0.20	0.25	0.25-0.35	0.35-0.50	...	...	0.10	0.20	...	...	...	...	...	...	¹⁹	0.05	0.15	Rem.
368.0	2007-01-10	D	8.5-9.5	0.25	0.25	0.25-0.35	0.10-0.30	...	...	0.10	0.20	...	...	...	...	...	...	¹⁹	0.05	0.15	Rem.
368.1 ¹⁵	2007-01-10	Ingot	8.5-9.5	0.20	0.25	0.25-0.35	0.15-0.30	...	...	0.10	0.20	...	...	...	...	...	...	¹⁹	0.05	0.15	Rem.
369.0	1978-04-04	D	11.0-12.0	1.3	0.50	0.35	0.25-0.45	0.30-0.40	0.05	1.0	...	...	...	...	0.10	...	...	...	0.05	0.15	Rem.
369.1 ¹⁴	1978-04-04	Ingot	11.0-12.0	1.0	0.50	0.35	0.30-0.45	0.30-0.40	0.05	0.9	...	...	...	...	0.10	...	...	...	0.05	0.15	Rem.

See footnotes on pages 11-12

CHEMICAL COMPOSITION LIMITS^{1,2}

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

REGISTERED ALLOYS IN THE FORM OF xxx.0 CASTINGS, xxx.1 INGOT AND xxx.2 INGOT.

DESIGNATION		PRO-DUCTS ⁵	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ag	Be	Pb	Sn	Zr		FNs	OTHERS ¹²		Al Min.
AA No.	DATE REGISTERED																		Each	Total ³	
370.0	2017-08-17	Casting	6.0-9.0	0.08-0.20	...	0.35-0.6	0.10-0.6	...	...	...	0.15	...	...	...	...	...	...	¹⁴	0.05	0.15	Rem.
370.1	2017-08-17	Ingot	6.0-9.0	0.08-0.15	...	0.35-0.6	0.15-0.6	...	...	...	0.15	...	...	...	...	...	...	¹⁴	0.05	0.15	Rem.
374.0	2017-08-31	Casting	6.5-8.5	0.10-0.25	0.02	0.35-0.7	0.10-0.40	...	...	0.03	0.04-0.15	...	...	...	...	...	...	²⁰	0.05	0.15	Rem.
374.1	2017-08-31	Ingot	6.5-8.5	0.10-0.20	0.02	0.35-0.7	0.15-0.40	...	...	0.03	0.04-0.15	...	...	...	...	...	...	²⁰	0.05	0.15	Rem.
375.0	2017-08-31	Casting	9.5-11.5	0.10-0.25	0.02	0.30-0.7	0.15	...	...	0.03	0.04-0.15	...	...	...	...	...	...	¹⁹	0.05	0.15	Rem.
375.1	2017-08-31	Ingot	9.5-11.5	0.10-0.20	0.02	0.30-0.7	0.15	...	...	0.03	0.04-0.15	...	...	...	...	...	...	¹⁹	0.05	0.15	Rem.
379.0	2017-07-20	Casting	7.0-10.5	0.20	0.10-1.5	0.15	0.10-0.35	0.10-0.40	0.01	0.15	0.10-0.25	...	...	...	0.01	...	0.05 Sr	...	0.05	0.10	Rem.
379.1	2017-07-20	Ingot	7.0-10.5	0.15	0.10-1.5	0.15	0.15-0.35	0.10-0.40	0.01	0.15	0.10-0.25	...	...	...	0.01	...	0.05 Sr	...	0.05	0.10	Rem.
379.2	2017-07-20	Ingot	7.5-10.5	0.15	0.10-1.5	0.10	0.15-0.25	0.10-0.30	0.01	0.10	0.10-0.20	...	...	...	0.01	...	0.05 Sr	...	0.05	0.10	Rem.
380.0 ⁸	2006-07-13 ¹⁸	D	7.5-9.5	2.0	3.0-4.0	0.50	0.10	...	0.50	3.0	...	...	...	...	0.35	...	...	...	...	0.50	Rem.
380.2 ¹⁴	2006-07-13 ¹⁸	Ingot	7.5-9.5	0.7-1.1	3.0-4.0	0.10	0.10	...	0.10	0.10	...	...	...	...	0.10	...	...	...	...	0.20	Rem.
A380.0 ⁸	....	D	7.5-9.5	1.3	3.0-4.0	0.50	0.10	...	0.50	3.0	...	...	...	...	0.35	...	...	...	...	0.50	Rem.
A380.1 ^{8, 14}	....	Ingot	7.5-9.5	1.0	3.0-4.0	0.50	0.10	...	0.50	2.9	...	...	...	...	0.35	...	...	...	...	0.50	Rem.
A380.2 ¹⁴	....	Ingot	7.5-9.5	0.6	3.0-4.0	0.10	0.10	...	0.10	0.10	...	...	...	...	...	...	...	...	0.05	0.15	Rem.
B380.0	....	D	7.5-9.5	1.3	3.0-4.0	0.50	0.10	...	0.50	1.0	...	...	...	...	0.35	...	...	...	...	0.50	Rem.
B380.1 ¹⁴	....	Ingot	7.5-9.5	1.0	3.0-4.0	0.50	0.10	...	0.50	0.9	...	...	...	...	0.35	...	...	...	...	0.50	Rem.
C380.0	1991-01-29	D	7.5-9.5	1.3	3.0-4.0	0.50	0.10-0.30	...	0.50	3.0	...	...	...	...	0.35	...	...	...	...	0.50	Rem.
C380.1 ¹⁴	1991-01-29	Ingot	7.5-9.5	1.0	3.0-4.0	0.50	0.15-0.30	...	0.50	2.9	...	...	...	...	0.35	...	...	...	...	0.50	Rem.
D380.0	1991-01-29	D	7.5-9.5	1.3	3.0-4.0	0.50	0.10-0.30	...	0.50	1.0	...	...	...	...	0.35	...	...	...	...	0.50	Rem.
D380.1 ¹⁴	1991-01-29	Ingot	7.5-9.5	1.0	3.0-4.0	0.50	0.15-0.30	...	0.50	0.9	...	...	...	...	0.35	...	...	...	...	0.50	Rem.
E380.0	2006-10-12	D	7.5-9.5	1.3	3.0-4.0	0.50	0.30	...	0.50	3.0	...	...	...	...	0.35	...	...	...	...	0.50	Rem.
E380.1 ¹⁴	2006-10-12	Ingot	7.5-9.5	1.0	3.0-4.0	0.50	0.30	...	0.50	2.9	...	...	...	...	0.35	...	...	...	...	0.50	Rem.
F380.0	2017-08-03	Casting	7.5-9.5	0.40	3.0-4.0	0.40	0.50	...	0.50	1.0	...	...	...	...	0.35	...	0.05-0.07 Sr	...	0.05	0.15	Rem.
F380.1	2017-08-03	Ingot	7.5-9.5	0.30	3.0-4.0	0.40	0.6	...	0.50	0.9	...	...	...	...	0.35	...	0.06-0.10 Sr	...	0.05	0.15	Rem.
381.0	1997-06-12	D	9.0-10.0	1.3	3.0-4.0	0.50	0.13	0.15	0.50	3.0	0.20	...	...	0.15	0.15	...	0.15 Sb	...	...	0.50	Rem.
381.2 ¹⁴	1997-06-12	Ingot	9.0-10.0	0.7-1.0	3.0-4.0	0.50	0.13	0.15	0.50	2.9	0.20	...	...	0.15	0.15	...	0.15 Sb	...	...	0.50	Rem.
383.0	....	D	9.5-11.5	1.3	2.0-3.0	0.50	0.10	...	0.30	3.0	...	...	...	...	0.15	...	...	...	...	0.50	Rem.
383.1 ¹⁴	....	Ingot	9.5-11.5	1.0	2.0-3.0	0.50	0.10	...	0.30	2.9	...	...	...	...	0.15	...	...	...	...	0.50	Rem.
383.2 ¹⁴	....	Ingot	9.5-11.5	0.6-1.0	2.0-3.0	0.10	0.10	...	0.10	0.10	...	...	...	...	0.10	...	...	...	...	0.20	Rem.
A383.0	1991-01-29	D	9.5-11.5	1.3	2.0-3.0	0.50	0.10-0.30	...	0.30	3.0	...	...	...	...	0.15	...	...	...	...	0.50	Rem.
A383.1 ¹⁴	1991-01-29	Ingot	9.5-11.5	1.0	2.0-3.0	0.50	0.15-0.30	...	0.30	2.9	...	...	...	...	0.15	...	...	...	...	0.50	Rem.
B383.0	2006-10-12	D	9.5-11.5	1.3	2.0-3.0	0.50	0.30	...	0.30	3.0	...	...	...	...	0.15	...	...	...	...	0.50	Rem.
B383.1 ¹⁴	2006-10-12	Ingot	9.5-11.5	1.0	2.0-3.0	0.50	0.30	...	0.30	2.9	...	...	...	...	0.15	...	...	...	...	0.50	Rem.

CHEMICAL COMPOSITION LIMITS^{1,2}

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

REGISTERED ALLOYS IN THE FORM OF xxx.0 CASTINGS, xxx.1 INGOT AND xxx.2 INGOT.

DESIGNATION		PRO- DUCTS ⁵	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ag	Be	Pb	Sn	Zr		FNs	OTHERS ¹²		Al Min.
AA No.	DATE REGISTERED																		Each	Total ³	
384.0	....	D	10.5-12.0	1.3	3.0-4.5	0.50	0.10	...	0.50	3.0	...	...	...	...	0.35	...	...	...	...	0.50	Rem.
384.1 ¹⁴	....	Ingot	10.5-12.0	1.0	3.0-4.5	0.50	0.10	...	0.50	2.9	...	...	...	...	0.35	...	...	...	...	0.50	Rem.
384.2 ¹⁴	....	Ingot	10.5-12.0	0.6-1.0	3.0-4.5	0.10	0.10	...	0.10	0.10	...	...	...	...	0.10	...	...	...	...	0.20	Rem.
A384.0	...	D	10.5-12.0	1.3	3.0-4.5	0.50	0.10	...	0.50	1.0	...	...	...	...	0.35	...	...	...	...	0.50	Rem.
A384.1 ¹⁴	....	Ingot	10.5-12.0	1.0	3.0-4.5	0.50	0.10	...	0.50	0.9	...	...	...	...	0.35	...	...	...	...	0.50	Rem.
B384.0	1991-01-29	D	10.5-12.0	1.3	3.0-4.5	0.50	0.10-0.30	...	0.50	1.0	...	...	...	...	0.35	...	...	...	...	0.50	Rem.
B384.1 ¹⁴	1991-01-29	Ingot	10.5-12.0	1.0	3.0-4.5	0.50	0.15-0.30	...	0.50	0.9	...	...	...	...	0.35	...	...	...	...	0.50	Rem.
C384.0	1991-01-29	D	10.5-12.0	1.3	3.0-4.5	0.50	0.10-0.30	...	0.50	3.0	...	...	...	...	0.35	...	...	...	...	0.50	Rem.
C384.1 ¹⁴	1991-01-29	Ingot	10.5-12.0	1.0	3.0-4.5	0.50	0.15-0.30	...	0.50	2.9	...	...	...	...	0.35	...	...	...	...	0.50	Rem.
390.0	....	D	16.0-18.0	1.3	4.0-5.0	0.10	0.45-0.65 ⁶	...	...	0.10	0.20	...	...	...	...	...	...	...	0.10	0.20	Rem.
390.2 ¹⁴	....	Ingot	16.0-18.0	0.6-1.0	4.0-5.0	0.10	0.50-0.65 ⁶	...	...	0.10	0.20	...	...	...	...	...	...	...	0.10	0.20	Rem.
A390.0	....	S&P	16.0-18.0	0.50	4.0-5.0	0.10	0.45-0.65 ⁶	...	...	0.10	0.20	...	...	...	...	...	...	...	0.10	0.20	Rem.
A390.1 ¹⁴	....	Ingot	16.0-18.0	0.40	4.0-5.0	0.10	0.50-0.65 ⁶	...	...	0.10	0.20	...	...	...	...	...	...	...	0.10	0.20	Rem.
+ + B390.0	1979-03-29	D	16.0-18.0	1.3	4.0-5.0	0.50	0.45-0.65 ⁶	...	0.10	1.5	0.20	...	...	...	...	...	...	...	0.10	0.20	Rem.
+ + B390.1 ¹⁴	1979-03-29	Ingot	16.0-18.0	1.0	4.0-5.0	0.50	0.50-0.65 ⁶	...	0.10	1.4	0.20	...	...	...	...	...	...	...	0.10	0.20	Rem.
391.0	2001-01-30	D	18.0-20.0	1.2	0.20	0.30	0.40-0.7	...	...	0.10	0.20	...	...	...	...	...	...	...	0.10	0.20	Rem.
391.1 ¹⁴	2001-01-30	Ingot	18.0-20.0	0.9	0.20	0.30	0.45-0.7	...	...	0.10	0.20	...	...	...	...	...	...	...	0.10	0.20	Rem.
A391.0	2001-01-30	P	18.0-20.0	0.6	0.20	0.30 ⁷	0.40-0.7	...	...	0.10	0.20	...	...	...	...	...	...	...	0.10	0.20	Rem.
A391.1 ¹⁴	2001-01-30	Ingot	18.0-20.0	0.50	0.20	0.30 ⁷	0.45-0.7	...	...	0.10	0.20	...	...	...	...	...	...	...	0.10	0.20	Rem.
B391.0	2001-01-30	S	18.0-20.0	0.20	0.20	0.30	0.40-0.7	...	...	0.10	0.20	...	...	...	...	...	...	...	0.10	0.20	Rem.
B391.1 ¹⁴	2001-01-30	Ingot	18.0-20.0	0.15	0.20	0.30	0.45-0.7	...	...	0.10	0.20	...	...	...	...	...	...	...	0.10	0.20	Rem.
392.0	....	D	18.0-20.0	1.5	0.40-0.8	0.20-0.6	0.8-1.2	...	0.50	0.50	0.20	...	...	...	0.30	...	...	...	0.15	0.50	Rem.
392.1 ¹⁴	....	Ingot	18.0-20.0	1.1	0.40-0.8	0.20-0.6	0.9-1.2	...	0.50	0.40	0.20	...	...	...	0.30	...	...	...	0.15	0.50	Rem.
393.0	....	S, P & D	21.0-23.0	1.3	0.7-1.1	0.10	0.7-1.3	...	2.0-2.5	0.10	0.10-0.20	...	...	...	...	...	0.08-0.15 V	...	0.05	0.15	Rem.
393.1 ¹⁴	....	Ingot	21.0-23.0	1.0	0.7-1.1	0.10	0.8-1.3	...	2.0-2.5	0.10	0.10-0.20	...	...	...	...	...	0.08-0.15 V	...	0.05	0.15	Rem.
393.2 ¹⁴	....	Ingot	21.0-23.0	0.8	0.7-1.1	0.10	0.8-1.3	...	2.0-2.5	0.10	0.10-0.20	...	...	...	...	...	0.08-0.15 V	...	0.05	0.15	Rem.
394.0	2017-08-03	Casting	18.0-20.0	0.45	0.20	0.25-0.35	0.40-1.1	...	0.50	0.10	0.20	...	...	...	0.15	...	0.05-0.07 Sr	...	0.05	0.15	Rem.
394.1	2017-08-03	Ingot	18.0-20.0	0.35	0.20	0.25-0.35	0.45-1.1	...	0.50	0.10	0.20	...	...	...	0.15	...	0.06-0.10 Sr	...	0.05	0.15	Rem.
409.2 ^{10,14}	1973-09-24	Ingot	9.0-10.0	0.6-1.3	0.10	0.10	...	...	...	0.10	...	...	...	...	...	...	...	...	0.10	0.20	Rem.
413.0 ⁸	....	D	11.0-13.0	2.0	1.0	0.35	0.10	...	0.50	0.50	...	...	...	...	0.15	...	...	...	...	0.25	Rem. Rem.
413.2 ¹⁴	....	Ingot	11.0-13.0	0.7-1.1	0.10	0.10	0.07	...	0.10	0.10	...	...	...	...	0.10	...	...	...	...	0.20	

See footnotes on pages 11-12

CHEMICAL COMPOSITION LIMITS^{1,2}

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

REGISTERED ALLOYS IN THE FORM OF xxx.0 CASTINGS, xxx.1 INGOT AND xxx.2 INGOT.

DESIGNATION		PRO-DUCTS ⁵	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ag	Be	Pb	Sn	Zr		FNs	OTHERS ¹²		Al Min.
AA No.	DATE REGISTERED																		Each	Total ³	
A413.0 ⁸	....	D	11.0-13.0	1.3	1.0	0.35	0.10	...	0.50	0.50	...	...	...	...	0.15	...	...	...	...	0.25	Rem.
A413.1 ^{8, 14}	....	Ingot	11.0-13.0	1.0	1.0	0.35	0.10	...	0.50	0.40	...	...	...	...	0.15	...	...	...	...	0.25	Rem.
A413.2 ¹⁴	....	Ingot	11.0-13.0	0.6	0.10	0.05	0.05	...	0.05	0.05	...	...	...	...	0.05	...	...	...	...	0.10	Rem.
B413.0	1984-11-06	S&P	11.0-13.0	0.50	0.10	0.35	0.05	...	0.05	0.10	0.25	...	...	...	...	...	...	...	0.05	0.20	Rem.
B413.1 ¹⁴	1984-11-06	Ingot	11.0-13.0	0.40	0.10	0.35	0.05	...	0.05	0.10	0.25	...	...	...	...	...	...	...	0.05	0.20	Rem.
430.0	2017-10-06	Casting	2.0-3.5	0.50	0.10	0.10	0.05	0.05	0.05	0.05	0.10	...	...	...	...	...	...	21	0.05	0.15	Rem.
430.1	2017-10-06	Ingot	2.0-3.5	0.40	0.10	0.10	0.05	0.05	0.05	0.05	0.10	...	...	...	...	...	...	21	0.05	0.15	Rem.
435.2 ^{11,14}	1981-12-18	Ingot	3.3-3.9	0.40	0.05	0.05	0.05	...	...	0.10	...	...	...	...	...	...	...	...	0.05	0.20	Rem.
443.0	....	S&P	4.5-6.0	0.8	0.6	0.50	0.05	0.25	...	0.50	0.25	...	...	...	...	...	...	...	...	0.35	Rem.
443.1 ¹⁴	....	Ingot	4.5-6.0	0.6	0.6	0.50	0.05	0.25	...	0.50	0.25	...	...	...	...	...	...	...	...	0.35	Rem.
443.2 ¹⁴	....	Ingot	4.5-6.0	0.6	0.10	0.10	0.05	...	...	0.10	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
A443.0	....	S	4.5-6.0	0.8	0.30	0.50	0.05	0.25	...	0.50	0.25	...	...	...	...	...	...	...	...	0.35	Rem.
A443.1 ¹⁴	....	Ingot	4.5-6.0	0.6	0.30	0.50	0.05	0.25	...	0.50	0.25	...	...	...	...	...	...	...	...	0.35	Rem.
B443.0	....	S&P	4.5-6.0	0.8	0.15	0.35	0.05	...	...	0.35	0.25	...	...	...	...	...	...	...	0.05	0.15	Rem.
B443.1 ¹⁴	....	Ingot	4.5-6.0	0.6	0.15	0.35	0.05	...	...	0.35	0.25	...	...	...	...	...	...	...	0.05	0.15	Rem.
C443.0	....	D	4.5-6.0	2.0	0.6	0.35	0.10	...	0.50	0.50	...	...	...	...	0.15	...	...	...	...	0.25	Rem.
C443.1 ¹⁴	....	Ingot	4.5-6.0	1.1	0.6	0.35	0.10	...	0.50	0.40	...	...	...	...	0.15	...	...	...	...	0.25	Rem.
C443.2 ¹⁴	....	Ingot	4.5-6.0	0.7-1.1	0.10	0.10	0.05	...	...	0.10	...	...	...	...	...	...	...	...	0.05	0.15	Rem.
444.0	1974-11-05	S&P	6.5-7.5	0.6	0.25	0.35	0.10	...	...	0.35	0.25	...	...	...	...	...	...	...	0.05	0.15	Rem.
444.2 ¹⁴	1973-09-24	Ingot	6.5-7.5	0.13-0.25	0.10	0.05	0.05	...	...	0.05	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
A444.0	....	P	6.5-7.5	0.20	0.10	0.10	0.05	...	...	0.10	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
A444.1 ¹⁴	1974-06-04	Ingot	6.5-7.5	0.15	0.10	0.10	0.05	...	...	0.10	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
A444.2 ¹⁴	....	Ingot	6.5-7.5	0.12	0.05	0.05	0.05	...	...	0.05	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
445.2 ^{10, 14}	1973-09-24	Ingot	6.5-7.5	0.6-1.3	0.10	0.10	...	...	...	0.10	...	...	...	...	...	...	...	...	0.10	0.20	Rem.
505.0	2004-04-12	....	0.40-0.8	0.7	0.15-0.40	0.15	0.8-1.2	0.04-0.35	...	0.25	0.15	...	...	...	...	...	...	...	0.05	0.15	Rem.
505.1	2004-04-12	Ingot ¹⁷	0.40-0.8	0.50	0.15-0.40	0.15	0.9-1.2	0.04-0.35	...	0.25	0.15	...	...	...	...	...	...	...	0.05	0.15	Rem.
511.0	....	S	0.30-0.7	0.50	0.15	0.35	3.5-4.5	...	...	0.15	0.25	...	...	...	...	...	...	...	0.05	0.15	Rem.
511.1	....	Ingot	0.30-0.7	0.40	0.15	0.35	3.6-4.5	...	...	0.15	0.25	...	...	...	...	...	...	...	0.05	0.15	Rem.
511.2	....	Ingot	0.30-0.7	0.30	0.10	0.10	3.6-4.5	...	...	0.10	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
512.0	....	S	1.4-2.2	0.6	0.35	0.8	3.5-4.5	0.25	...	0.35	0.25	...	...	...	...	...	...	...	0.05	0.15	Rem.
512.2	....	Ingot	1.4-2.2	0.30	0.10	0.10	3.6-4.5	...	...	0.10	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
513.0	....	P	0.30	0.40	0.10	0.30	3.5-4.5	...	...	1.4-2.2	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
513.2	....	Ingot	0.30	0.30	0.10	0.10	3.6-4.5	...	...	1.4-2.2	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.

See footnotes on pages 11-12

CHEMICAL COMPOSITION LIMITS^{1,2}

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

REGISTERED ALLOYS IN THE FORM OF xxx.0 CASTINGS, xxx.1 INGOT AND xxx.2 INGOT.

DESIGNATION		PRO- DUCTS ⁵	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ag	Be	Pb	Sn	Zr		FNs	OTHERS ¹²		Al Min.
AA No.	DATE REGISTERED																		Each	Total ³	
514.0	....	S	0.35	0.50	0.15	0.35	3.5-4.5	...	...	0.15	0.25	...	...	...	...	...	...	...	0.05	0.15	Rem.
514.1	....	Ingot	0.35	0.40	0.15	0.35	3.6-4.5	...	...	0.15	0.25	...	...	...	...	...	...	...	0.05	0.15	Rem.
514.2	....	Ingot	0.30	0.30	0.10	0.10	3.6-4.5	...	...	0.10	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
515.0	1970-01-02	D	0.50-1.0	1.3	0.20	0.40-0.6	2.5-4.0	...	...	0.10	...	...	...	...	...	...	...	...	0.05	0.15	Rem.
515.2	1970-01-02	Ingot	0.50-1.0	0.6-1.0	0.10	0.40-0.6	2.7-4.0	...	...	0.05	...	...	...	...	...	...	...	...	0.05	0.15	Rem.
516.0	1983-09-30	D	0.30-1.5	0.35-1.0	0.30	0.15-0.40	2.5-4.5	...	0.25-0.40	0.20	0.10-0.20	...	...	0.10	0.10	...	...	...	0.05	—	Rem.
516.1	1983-09-30	Ingot	0.30-1.5	0.35-0.7	0.30	0.15-0.40	2.6-4.5	...	0.25-0.40	0.20	0.10-0.20	...	...	0.10	0.10	...	...	...	0.05	—	Rem.
518.1	....	Ingot	0.35	1.1	0.25	0.35	7.6-8.5	...	0.15	0.15	...	...	...	...	0.15	...	...	...	...	0.25	Rem.
518.2	....	Ingot	0.25	0.7	0.10	0.10	7.6-8.5	...	0.05	...	...	...	...	...	0.05	...	...	...	...	0.10	Rem.
520.0	....	S	0.25	0.30	0.25	0.15	9.5-10.6	...	...	0.15	0.25	...	...	...	...	...	...	...	0.05	0.15	Rem.
520.2	....	Ingot	0.15	0.20	0.20	0.10	9.6-10.6	...	...	0.10	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
+ 527.0	2021-03-05	Casting	...	...	...	...	9.5-10.0	...	...	...	...	...	...	...	...	...	Ce 7.2-8.8	...	0.10	0.50	Rem.
+ 527.1	2021-03-05	Ingot	...	...	...	...	9.7-10.0	...	...	...	...	...	...	...	...	...	Ce 7.4-8.8	...	0.08	0.40	Rem.
535.0	....	S	0.15	0.15	0.05	0.10-0.25	6.2-7.5	...	...	...	0.10-0.25	...	0.003-0.007	...	...	...	0.005 B	...	0.05	0.15	Rem.
535.2	....	Ingot	0.10	0.10	0.05	0.10-0.25	6.6-7.5	...	...	...	0.10-0.25	...	0.003-0.007	...	...	...	0.002 B	...	0.05	0.15	Rem.
A535.0	....	S	0.20	0.20	0.10	0.10-0.25	6.5-7.5	...	...	...	0.25	...	...	...	...	...	...	...	0.05	0.15	Rem.
A535.1	....	Ingot	0.20	0.15	0.10	0.10-0.25	6.6-7.5	...	...	...	0.25	...	...	...	...	...	...	...	0.05	0.15	Rem.
B535.0	....	S	0.15	0.15	0.10	0.05	6.5-7.5	...	...	...	0.10-0.25	...	...	...	...	...	...	...	0.05	0.15	Rem.
B535.2	....	Ingot	0.10	0.12	0.05	0.05	6.6-7.5	...	...	...	0.10-0.25	...	...	...	...	...	...	...	0.05	0.15	Rem.
560.0	2017-08-09	Casting	0.25	0.20	...	1.1-1.4	2.8-3.6	...	...	0.05	0.15	...	...	...	...	...	...	...	0.05	0.15.	Rem.
560.1	2017-08-09	Ingot	0.25	0.15	...	1.1-1.4	2.9-3.6	...	...	0.05	0.15	...	...	...	...	...	...	...	0.05	0.15.	Rem.
701.0	2017-02-28	Casting	0.12	0.12	0.003	...	...	...	...	4.8-6.0	...	...	...	...	...	...	0.002 Cd 0.01-0.03 In	...	0.02	0.05	Rem.
701.1	2017-02-28	Ingot	0.12	0.09	0.003	...	...	...	...	4.8-6.0	...	...	...	...	...	...	0.002 Cd 0.01-0.03 In	...	0.02	0.05	Rem.
705.0	....	S&P	0.20	0.8	0.20	0.40-0.6	1.4-1.8	0.20-0.40	...	2.7-3.3	0.25	...	...	...	...	...	...	...	0.05	0.15	Rem.
705.1	....	Ingot	0.20	0.6	0.20	0.40-0.6	1.5-1.8	0.20-0.40	...	2.7-3.3	0.25	...	...	...	...	...	...	...	0.05	0.15	Rem.
707.0	....	S&P	0.20	0.8	0.20	0.40-0.6	1.6-2.4	0.20-0.40	...	4.0-4.5	0.25	...	...	...	...	...	...	...	0.05	0.15	Rem.
707.1	....	Ingot	0.20	0.6	0.20	0.40-0.6	1.9-2.4	0.20-0.40	...	4.0-4.5	0.25	...	...	...	...	...	...	...	0.05	0.15	Rem.
709.0	2004-04-12	....	0.40	0.50	1.2-2.0	0.30	2.1-2.9	0.18-0.28	...	5.1-6.1	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
709.1	2004-04-12	Ingot ¹⁷	0.40	0.40	1.2-2.0	0.30	2.2-2.9	0.18-0.28	...	5.1-6.1	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
709.2	2004-04-12	Ingot ¹⁷	0.15	0.20	1.2-2.0	0.15	2.2-2.9	0.18-0.28	...	5.1-6.0	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
710.0	....	S	0.15	0.50	0.35-0.6	0.05	0.6-0.8	...	...	6.0-7.0	0.25	...	...	...	...	...	...	...	0.05	0.15	Rem.
710.1	....	Ingot	0.15	0.40	0.35-0.6	0.05	0.65-0.8	...	...	6.0-7.0	0.25	...	...	...	...	...	...	...	0.05	0.15	Rem.

See footnotes on pages 11-12

CHEMICAL COMPOSITION LIMITS^{1,2}

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

REGISTERED ALLOYS IN THE FORM OF xxx.0 CASTINGS, xxx.1 INGOT AND xxx.2 INGOT.

DESIGNATION		PRO- DUCTS ⁵	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ag	Be	Pb	Sn	Zr		FNs	OTHERS ¹²		AI Min.
AA No.	DATE REGISTERED																		Each	Total ³	
711.0		P	0.30	0.7-1.4	0.35-0.6	0.05	0.25-0.45	...	...	6.0-7.0	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
711.1		Ingot	0.30	0.7-1.1	0.35-0.6	0.05	0.30-0.45	...	...	6.0-7.0	0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
712.0		S	0.30	0.50	0.25	0.10	0.50-0.65 ⁶	0.40-0.6	...	5.0-6.5	0.15-0.25	...	...	...	...	...	...	...	0.05	0.20	Rem.
712.2		Ingot	0.15	0.40	0.25	0.10	0.50-0.65 ⁶	0.40-0.6	...	5.0-6.5	0.15-0.25	...	...	...	...	...	...	...	0.05	0.20	Rem.
713.0		S&P	0.25	1.1	0.40-1.0	0.6	0.20-0.50	0.35	0.15	7.0-8.0	0.25	...	...	...	...	...	...	...	0.10	0.25	Rem.
713.1		Ingot	0.25	0.8	0.40-1.0	0.6	0.25-0.50	0.35	0.15	7.0-8.0	0.25	...	...	...	...	...	...	...	0.10	0.25	Rem.
+ 727.0	2021-03-05	Casting	...	0.25-0.50	...	...	2.3-2.7	...	0.6-0.7	5.7-6.0	...	...	...	...	...	...	Ce 3.5-4.0	...	0.10	0.50	Rem.
+ 727.1	2021-03-05	Ingot	...	0.25-0.45	...	...	2.4-2.7	...	0.6-0.7	5.7-6.0	...	...	...	...	...	...	Ce 3.6-4.0	...	0.08	0.40	Rem.
771.0		S	0.15	0.15	0.10	0.10	0.8-1.0	0.06-0.20	...	6.5-7.5	0.10-0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
771.2		Ingot	0.10	0.10	0.10	0.10	0.85-1.0	0.06-0.20	...	6.5-7.5	0.10-0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
772.0		S	0.15	0.15	0.10	0.10	0.6-0.8	0.06-0.20	...	6.0-7.0	0.10-0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
772.2	...	Ingot	0.10	0.10	0.10	0.10	0.65-0.8	0.06-0.20	...	6.0-7.0	0.10-0.20	...	...	...	...	...	...	...	0.05	0.15	Rem.
850.0		S&P	0.7	0.7	0.7-1.3	0.10	0.10	...	0.7-1.3	...	0.20	...	...	...	5.5-7.0	...	...	...	...	0.30	Rem.
850.1		Ingot	0.7	0.50	0.7-1.3	0.10	0.10	...	0.7-1.3	...	0.20	...	...	...	5.5-7.0	...	...	...	...	0.30	Rem.
851.0		S&P	2.0-3.0	0.7	0.7-1.3	0.10	0.10	...	0.30-0.7	...	0.20	...	...	...	5.5-7.0	...	...	...	...	0.30	Rem.
851.1		Ingot	2.0-3.0	0.50	0.7-1.3	0.10	0.10	...	0.30-0.7	...	0.20	...	...	...	5.5-7.0	...	...	...	...	0.30	Rem.
852.0		S&P	0.40	0.7	1.7-2.3	0.10	0.6-0.9	...	0.9-1.5	...	0.20	...	...	...	5.5-7.0	...	...	...	...	0.30	Rem.
852.1		Ingot	0.40	0.50	1.7-2.3	0.10	0.7-0.9	...	0.9-1.5	...	0.20	...	...	...	5.5-7.0	...	...	...	...	0.30	Rem.
853.0		S&P	5.5-6.5	0.7	3.0-4.0	0.50	...	...	...	...	0.20	...	...	...	5.5-7.0	...	...	...	...	0.30	Rem.
853.2		Ingot	5.5-6.5	0.50	3.0-4.0	0.10	...	...	...	...	0.20	...	...	...	5.5-7.0	...	...	...	...	0.30	Rem.

FOOTNOTES

- Composition in weight percent maximum unless shown as a range or a minimum.

Standard limits for alloying elements and impurities are expressed to the following places:

Less than 0.001% 0.000X
 0.001 but less than 0.01% 0.00X
 0.01 but less than 0.10%:

Unalloyed aluminum made by a refining process 0.0XX

Alloys and unalloyed aluminum not made by a refining process.....0.0X

0.10-0.55%.....0.XX
 (It is customary to express limits of 0.30% through 0.55% as 0.X0 or 0.X5)

Over 0.55%.....0.X, X.X, etc.
 (NOTE: Mg percent for some long standing alloys is an exception to this rule.)

- Except for "Aluminum" and "Others", analysis is required for elements for which specific limits are shown. For purposes of determining conformance to these limits, an observed value or calculated value obtained from analysis is rounded off to the nearest unit in the last right-hand digit used in expressing the specified limit, in accordance with the following:

When the digit next beyond the last place to be retained is less than 5, retain unchanged the digit in the last place retained.

When the digit next beyond the last place to be retained is greater than 5, increase by 1 the digit in the last place retained.

When the digit next beyond the last place to be retained is 5, and there are no digits beyond this 5, or only zeros, increase by 1 the digit in the last place retained if it is odd, leave the digit unchanged if it is even. Increase by 1 the digit in the last place retained if there are non-zero digits beyond this 5.

- The sum of those "Others" metallic elements 0.010% or more each, expressed to the second decimal before determining the sum.
- The aluminum content for unalloyed aluminum not made by a refining process is the difference between 100.00% and the sum of all other analyzed metallic elements together with silicon present in amounts of 0.010% or more each, expressed to the second decimal before determining the sum. For alloys and unalloyed aluminum not made by a refining process, when the specified maximum limit is 0.XX, an observed value or a calculated value greater than 0.005 but less than 0.010% is rounded off and shown as "less than 0.01%".
- D = Die Casting. P = Permanent Mold. S = Sand. I = Investment Casting.
 Other products may pertain to the composition shown even though not listed.

- The number of decimal places to which Mg percent is expressed is exempted by the Note stated in Footnote 1.
- If iron exceeds 0.45%, manganese content shall not be less than one-half iron content.
- A360.1, A380.1 and A413.1 ingot is used to produce 360.0 and A360.0; 380.0 and A380.0; 413.0 and A413.0 castings, respectively.
- Casting: 0.001% max. P, 0.005-0.015% Sr.
 Ingot: 0.001% max. P, 0.010-0.020% Sr.
- Used to coat steel.
- Used with zinc to coat steel.
- "Others" includes listed elements for which no specific limit is shown as well as unlisted metallic elements. The producer may analyze samples for trace elements not specified in the registration or specification. However, such analysis is not required and may not cover all metallic "others" elements. Should any analysis by the producer or the purchaser establish that an "others" element exceeds the limit of "Each" or that the aggregate of several "others" elements exceeds the limit of "Total", the material shall be considered non conforming.
- Primarily used for making metal matrix composite.
- Identifiers for Certain 3xx.x and 4xx.x Foundry Ingot Containing Structure Modifiers:

One of the applicable suffixes in the table below should be added to the registered alloy designation whenever a structure modifier is intentionally added to that alloy.

Alloy Designation Suffix	Structure Modifying Element	Chemical Composition Limits	
		Min. (%)	Max. (%)
N	Na	0.003	0.08
S	Sr	0.005	0.08
C	Ca	0.005	0.15
P	P	—	0.060

•The letter suffix follows and is separated from the registered foundry ingot designations by a hyphen (e.g., "A356.1-S").

•In cases where more than one modifier is Intentionally added, only the modifier of greater concentration shall be identified by suffix letter affixed to the registered alloy designation.

•When a foundry alloy is sold with a suffix added to its alloy designation, the modifying element's concentration is not to be included in "Others, Each" or "Others, Total".

•It is not intended that these structure modifier identifiers be treated as new alloy registration, nor should these designations be listed in the Registration Record.

FOOTNOTES

15. Identifiers for Certain 3xx.x and 4xx.x Foundry Ingot Containing Structure Modifiers:

One of the applicable suffixes in the table below should be added to the registered alloy designation whenever a structure modifier is intentionally added to that alloy.

Alloy Designation Suffix	Structure Modifying Element	Chemical Composition Limits	
		Min. (%)	Max. (%)
N	Na	0.003	0.08
C	Ca	0.005	0.15

•The letter suffix follows and is separated from the registered foundry ingot designations by a hyphen (e.g., "365.1-N").

•In cases where more than one modifier is Intentionally added, only the modifier of greater concentration shall be identified by suffix letter affixed to the registered alloy designation.

•When a foundry alloy is sold with a suffix added to its alloy designation, the modifying element's concentration is not to be included in "Others, Each" or "Others, Total".

•It is not intended that these structure modifier identifiers be treated as new alloy registration, nor should these designations be listed in the Registration Record.

16. Used for semi-solid formed products.

17. Used for centrifugally cast products.

18. Reactivation date of alloy designation.

19. Casting: 0.001% max. P, 0.05-0.07% Sr.
Ingot: 0.001% max. P; Sr range to be determined between producer and purchaser to allow for potential burn out at caster's facility.

20. Casting: 0.001% max. P, 0.01-0.018% Sr.
Ingot: 0.001% max. P.

21. Casting: 0.001% max. P, 0.005-0.015% Sr Ingot 0.001% max. P, Sr range to be determined between producer and purchaser to allow for potential burn out at caster's facility.

* *Rated minimum conductivities for rotor ingot (electrical motor armatures) and other high conductivity applications:*

<u>Ingot</u>	<u>Percent IACS</u>
100.1	54
130.1	55
150.1	57
170.1	59

The rating of ingot metal for minimum conductivity characteristic is based on established relations between electrical conductivity and metal composition.

+ Designation added since previous issue.

INACTIVE ALLOYS

DESIGNATION	DATE RECLASSIFIED
202.0	04/22/88
202.2	04/22/88
203.0	09/19/18
203.2	09/19/18
208.0	08/15/95
208.1	08/15/95
208.2	08/15/95
213.0	08/15/95
213.1	08/15/95
222.0	08/15/95
222.1	08/15/95
224.0	08/15/95
224.2	08/15/95
238.0	04/22/88
238.1	04/22/88
238.2	04/22/88
243.0	08/15/95
243.1	08/15/95
249.0	04/22/88
249.2	04/22/88
305.0	08/15/95
305.2	08/15/95
A305.0	08/15/95
A305.1	08/15/95
A305.2	08/15/95
324.0	08/15/95
324.1	08/15/95
324.2	08/15/95
343.0	08/15/95
343.1	08/15/95
D355.2	11/18/74
385.0	01/20/03
385.1	01/20/03
408.2	01/20/03
411.2	01/20/03

REGISTERED CHEMICAL COMPOSITION LIMITS OF INACTIVE ORIGINAL ALLOYS

Registered International Designation		Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ag	Be	Pb	Sn	Zr		FNs	OTHERS ¹²		Al Min.
AA No.	Products ⁵																	Each	Total ³	
202.0	S	0.10	0.15	4.0-5.2	0.20-0.8	0.15-0.55	0.20-0.6	-	-	0.15-0.35	0.40-1.0	-	-	-	-	-	-	0.05	0.10	Rem.
202.2	Ingot	0.10	0.10	4.0-5.2	0.20-0.8	0.20-0.55	0.20-0.6	-	-	0.15-0.35	0.40-1.0	-	-	-	-	-	-	0.05	0.10	Rem.
203.0	S	0.30	0.50	4.5-5.5	0.20-0.30	0.10	-	1.3-1.7	0.10	0.15-0.25	-	-	-	-	0.10-0.30	0.20-0.30 Co, 0.20-0.30 Sb, 0.50 Ti + Zr	-	0.05	0.20	Rem.
203.2	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	-	-	-	-	0.10-0.30	0.20-0.30 Co, 0.20-0.30 Sb, 0.50 Ti + Zr	-	0.05	0.20	Rem.
208.0	S&P	2.5-3.5	1.2	3.5-4.5	0.50	0.10	-	0.35	1.0	0.25	-	-	-	-	-	-	-	-	0.50	Rem.
208.1	Ingot	2.5-3.5	0.9	3.5-4.5	0.50	0.10	-	0.35	1.0	0.25	-	-	-	-	-	-	-	-	0.50	Rem.
208.2	Ingot	2.5-3.5	0.8	3.5-4.5	0.30	0.03	-	-	0.20	0.20	-	-	-	-	-	-	-	-	0.30	Rem.
213.0	S&P	1.0-3.0	1.2	6.0-8.0	0.6	0.10	-	0.35	2.5	0.25	-	-	-	-	-	-	-	-	0.50	Rem.
213.1	Ingot	1.0-3.0	0.9	6.0-8.0	0.6	0.10	-	0.35	2.5	0.25	-	-	-	-	-	-	-	-	0.50	Rem.
222.0	S&P	2.0	1.5	9.2-10.7	0.50	0.15-0.35	-	0.50	0.8	0.25	-	-	-	-	-	-	-	-	0.35	Rem.
222.1	Ingot	2.0	1.2	9.2-10.7	0.50	0.20-0.35	-	0.50	0.8	0.25	-	-	-	-	-	-	-	-	0.35	Rem.
224.0	S&P	0.06	0.10	4.5-5.5	0.20-0.50	-	-	-	-	0.35	-	-	-	-	0.10-0.25	0.05-0.15 V	-	0.03	0.10	Rem.
224.2	Ingot	0.02	0.04	4.5-5.5	0.20-0.50	-	-	-	-	0.25	-	-	-	-	0.10-0.25	0.05-0.15 V	-	0.03	0.10	Rem.
238.0	P	3.5-4.5	1.5	9.0-11.0	0.6	0.15-0.35	-	1.0	1.5	0.25	-	-	-	-	-	-	-	-	0.50	Rem.
238.1	Ingot	3.5-4.5	1.2	9.0-11.0	0.6	0.20-0.35	-	1.0	1.5	0.25	-	-	-	-	-	-	-	-	0.50	Rem.
238.2	Ingot	3.5-4.5	1.2	9.5-10.5	0.50	0.20-0.35	-	0.50	0.50	0.20	-	-	-	-	-	-	-	-	0.50	Rem.
243.0	S	0.35	0.40	3.5-4.5	0.15-0.45	1.8-2.3	0.20-0.40	1.9-2.3	0.05	0.06-0.20	-	-	-	-	-	0.06-0.20 V	-	0.05	0.15	Rem.
243.1	Ingot	0.35	0.30	3.5-4.5	0.15-0.45	1.9-2.3	0.20-0.40	1.9-2.3	0.05	0.06-0.20	-	-	-	-	-	0.06-0.20 V	-	0.05	0.15	Rem.
249.0	P	0.05	0.10	3.8-4.6	0.25-0.50	0.25-0.50	-	-	2.5-3.5	0.02-0.35	-	-	-	-	-	-	-	0.03	0.10	Rem.
249.2	Ingot	0.05	0.07	3.8-4.6	0.25-0.50	0.30-0.50	-	-	2.5-3.5	0.02-0.12	-	-	-	-	-	-	-	0.03	0.10	Rem.
305.0	S&P	4.5-5.5	0.6	1.0-1.5	0.50	0.10	0.25	-	0.35	0.25	-	-	-	-	-	-	-	0.05	0.15	Rem.
305.2	Ingot	4.5-5.5	0.14-0.25	1.0-1.5	0.05	-	-	-	0.05	0.20	-	-	-	-	-	-	-	0.05	0.15	Rem.
324.0	P	7.0-8.0	1.2	0.40-0.6	0.50	0.40-0.7	-	0.30	1.0	0.20	-	-	-	-	-	-	-	0.15	0.20	Rem.
324.1	Ingot	7.0-8.0	0.9	0.40-0.6	0.50	0.45-0.7	-	0.30	1.0	0.20	-	-	-	-	-	-	-	0.15	0.20	Rem.
324.2	Ingot	7.0-8.0	0.6	0.40-0.6	0.10	0.45-0.7	-	0.10	0.10	0.20	-	-	-	-	-	-	-	0.05	0.15	Rem.
343.0	D	6.7-7.7	1.2	0.50-0.9	0.50	0.10	0.10	-	1.2-2.0	-	-	-	-	0.50	-	-	-	0.10	0.35	Rem.
343.1	Ingot	6.7-7.7	0.9	0.50-0.9	0.50	0.10	0.10	-	1.2-1.9	-	-	-	-	0.50	-	-	-	0.10	0.35	Rem.
385.0	D	11.0-13.0	2.0	2.0-4.0	0.50	0.30	-	0.50	3.0	-	-	-	-	0.30	-	-	-	-	0.50	Rem.

See footnotes on pages 11-12.

REGISTERED CHEMICAL COMPOSITION LIMITS OF INACTIVE ORIGINAL ALLOYS

Registered International Designation																		OTHERS ¹²		Al Min.
AA No.	Products ⁵	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ag	Be	Pb	Sn	Zr		FNs	Each	Total ³	
385.1 ¹⁴	Ingot	11.0-13.0	1.1	2.0-4.0	0.50	0.30	-	0.50	2.9	-	-	-	-	0.30	-	-	-	-	0.50	Rem.
408.2 ^{10, 14}	Ingot	8.5-9.5	0.6-1.3	0.10	0.10	-	-	-	0.10	-	-	-	-	-	-	-	-	0.10	0.20	Rem.
411.2 ^{10, 14}	Ingot	10.0-12.0	0.6-1.3	0.20	0.10	-	-	-	0.10	-	-	-	-	-	-	-	-	0.10	0.20	Rem.

See footnotes on pages 11-12.

CROSS REFERENCE OF CURRENT AND FORMER DESIGNATIONS

AA Designation	Former Designation	AA Designation	Former Designation	AA Designation	Former Designation
A201.1	A201.2	359.0	359	A443.0	43 (0.30 max Cu)
203.0	Hiduminium 350	359.2	359	A443.1	43 (0.30 max Cu)
203.2	Hiduminium 350	360.0	360	B443.0	43 (0.15 max Cu)
204.0	A-U5GT	360.2	360	B443.1	43 (0.15 max Cu)
204.2	A-U5GT	A360.0	A360	C443.0	A43
240.0	A240.0, A140	A360.1	A360	C443.1	A43
240.1	A240.1, A140	A360.2	A360	C443.2	A43
242.0	142	362.0	XK360	A444.0	A344
242.1	142	362.1	XK360	A444.2	A344
242.2	142	363.0	363	445.2	B444.2
A242.0	A142	363.1	363	511.0	F514.0, F214
A242.1	A142	364.0	364	511.1	F514.1, F214
A242.2	A142	364.2	364	511.2	F514.2, F214
295.0	195	365.0	Silafont-36	512.0	B514.0, B214
295.1	195	365.1	Silafont-36	512.2	B514.2, B214
295.2	195	A365.0	Aural 2	513.0	A514.0, A214
296.0	B295.0, B195	A365.1	Aural 2	513.2	A514.2, A214
296.1	B295.1, B195	367.0	Mercalloy 367	514.0	214
296.2	B295.2, B195	367.1	Mercalloy 367	514.1	214
304.0	K-Alloy	368.0	Mercalloy 366	514.2	214
304.1	K-Alloy	368.1	Mercalloy 366	515.0	L514.0, L214
308.0	A108	369.0	Special K-9	515.2	L514.2, L214
308.1	A108	369.1	Special K-9	518.0	218
308.2	A108	380.0	380	518.1	218
319.0	319, All Cast	380.2	380	518.2	218
319.1	319, All Cast	A380.0	A380	520.0	220
319.2	319, All Cast	A380.1	A380	520.2	220
B319.0	SAE 329	A380.2	A380	535.0	Almag 35
328.0	Red X-8	B380.0	A380	535.2	Almag 35
328.1	Red X-8	B380.1	A380	A535.0	A218
332.0	F332.0, F132	384.0	384	A535.1	A218
332.1	F332.1, F132	384.1	384	B535.0	B218
332.2	F332.2, F132	384.2	384	B535.2	B218
333.0	333	A384.0	384	705.0	603, Ternalloy 5
333.1	333	A384.1	384	705.1	603, Ternalloy 5
336.0	A332.0, A132	390.0	390	707.0	607, Ternalloy 7
336.1	A332.1, A132	390.2	390	707.1	607, Ternalloy 7
336.2	A332.2, A132	A390.0	A390	710.0	A712.0, A612
339.0	Z332.0, Z132	A390.1	A390	710.1	A712.1, A612
339.1	Z332.1, Z132	391.0	Mercosil	711.0	C712.0, C612
354.0	354	391.1	Mercosil	711.1	C712.1, C612
354.1	354	A391.0	Mercosil	712.0	D712.0, D612, 40E
355.0	355	A391.1	Mercosil	712.2	D712.2, D612, 40E
355.1	355	B391.0	Mercosil	713.0	613, Tenzaloy
355.2	355	B391.1	Mercosil	713.1	613, Tenzaloy
C355.0	C355	392.0	392	771.0	Precedent 71A
C355.2	C355	392.1	392	771.2	Precedent 71A
356.0	356	393.0	Vanasil	772.0	B771.0, Precedent 71B
356.1	356	393.1	Vanasil	772.2	B771.2, Precedent 71B
356.2	356	393.2	Vanasil	850.0	750
A356.0	A356	413.0	13	850.1	750
A356.2	A356	413.2	13	851.0	A850.0, A750
357.0	357	A413.0	A13	851.1	A850.1, A750
357.1	357	A413.1	A13	852.0	B850.0, B750
A357.0	A357	A413.2	A13	852.1	B850.1, B750
A357.2	A357	443.0	43	853.0	XC850.0, XC750
358.0	B358.0, Tens-50	443.1	43	853.2	XC850.2, XC750
358.2	B358.2, Tens-50	443.2	43		

NOTE: This table is included for information purposes only.

RECOMMENDATION

DESIGNATION SYSTEM

FOR CAST ALUMINUM AND ALUMINUM ALLOYS

7 December 2015

This Recommendation is based on the designation system for cast aluminum and aluminum alloys which was adopted in the U.S.A. in 1954, and became its national standard in 1957.

Designations, registered in accordance with this Recommendation, may be used by any country. For use, see Appendixes A, B, and C.

A designation assigned in conformance with this Recommendation should only be used to indicate an aluminum or an aluminum alloy having chemical composition limits identical to those registered with the Aluminum Association and published herein.

No changes in the composition limits are allowed after the registration is final.

1. Scope

This recommendation describes a four digit numerical system for designating aluminum and aluminum alloys in the form of castings and foundry ingot.

2. Alloy Groups¹⁻³

The first digit indicates the alloy group as follows:

Aluminum, 99.00% minimum and greater	1xx.x
Aluminum alloys grouped by major alloying elements	
Copper	2xx.x
Silicon, with added copper and/or magnesium	3xx.x
Silicon	4xx.x
Magnesium	5xx.x
Zinc	7xx.x
Tin	8xx.x
Other element	9xx.x
Unused series	6xx.x

3. 1xx.x Group

The designation assigned shall be in the 1xx.x group whenever the minimum aluminum content is specified as 99.00% and greater. In the 1xx.x group, the second two of the four digits in the designation shall indicate the minimum aluminum percentage.⁵ These digits are the same as the two digits to the right of the decimal point in the minimum aluminum percentage when it is expressed to the nearest 0.01%. The last digit, which is to the right of the decimal point, shall indicate the product form: 1xx.0 indicates castings, and 1xx.1 indicates ingot.

4. 2xx.x – 9xx.x Groups

The alloy designation in the 2xx.x through 9xx.x excluding 6xx.x alloys is determined by the alloying element present in the greatest mean percentage, except in cases in which the alloy being registered qualified as a modification of a previously registered alloy. If the greatest mean percentage is common to more than one alloying element, choice of group shall be in order of group sequence Cu, Si with added Cu and/or Mg, Si, Mg, Zn, Sn or Others. In the 2xx.x through 9xx.x alloy groups the second two of the four digits in the designation have no special significance but serve only to identify the different aluminum alloys in the group. The last digit, which is to the right of the decimal point, indicates the product form: xxx.0 indicates castings, xxx.1 and xxx.2 indicate ingot. Ingot designated xxx.1 has chemical composition limits identical to those assigned to the casting (xxx.0) except grain refining elements and except for the following provisions:

Maximum Iron Percentage:

<u>For All Forms of Castings</u>	<u>For Ingot, Fe Shall Be at Least</u>
Up thru 0.15	0.03 less than castings
Over 0.15 thru 0.25	0.05 less than castings
Over 0.25 thru 0.6	0.10 less than castings
Over 0.6 thru 1.0	0.2 less than castings
Over 1.0	0.3 less than castings

Minimum Magnesium Percentage⁶:

<u>For All Forms of Castings</u>	<u>For Ingot, Mg Shall Be at Least</u>
Less than 0.50	0.05 more than castings
0.50 and greater	0.1 more than castings

Maximum Zinc Percentage:

<u>For Die Castings</u>	<u>For Ingot, Zn Shall Be At Least</u>
Over 0.25 thru 0.6	0.10 less than castings
Over 0.6	0.1 less than castings

Ingot designated as xxx.2 shall have chemical composition limits tighter than those assigned to the casting (XXX.0) except for grain refining elements and except for the following provisions:

Maximum Iron Percentage:

<u>For All Forms of Castings</u>	<u>For Ingot, Fe Shall Be at Least</u>
Up thru 0.15	0.03 less than castings
Over 0.15 thru 0.25	0.05 less than castings
Over 0.25 thru 0.6	0.10 less than castings
Over 0.6 thru 1.0	0.2 less than castings
Over 1.0	0.3 less than castings

Minimum Magnesium Percentage⁶:

<u>For All Forms of Castings</u>	<u>For Ingot, Mg shall Be at least</u>
Less than 0.50	0.05 more than castings
0.50 and greater	0.05 more than castings

Maximum Zinc Percentage:

<u>For Die Castings</u>	<u>For Ingot, Zn shall Be at least</u>
Over 0.25 thru 0.6	0.10 less than castings
Over 0.6	0.1 less than castings

5. Modifications

A modification of the original alloy⁴ or impurity limits is indicated by a serial letter before the numerical designation. The serial letters are assigned in alphabetical sequence starting with A but omitting I, O, Q and X. A modification of the original alloy is limited to any one or a combination of the following:

(a) Change of not more than the following amounts in the arithmetic mean of the limits for an individual alloying element or combination of elements expressed as an alloying element or both:

<u>Arithmetic Mean of Limits for Alloying Elements in Original Alloy</u>	<u>Maximum Change</u>
Up thru 1.0%	0.15
Over 1.0 thru 2.0%	0.20
Over 2.0 thru 3.0%	0.25
Over 3.0 thru 4.0%	0.30
Over 4.0 thru 5.0%	0.35
Over 5.0 thru 6.0%	0.40
Over 6.0%	0.50

To determine compliance when maximum and minimum limits are specified for a combination of two or more elements in one alloy composition, the arithmetic mean of such a combination is compared to the sum of the mean values of the same individual elements, or any combination thereof, in another alloy composition.

(b) Addition or deletion of not more than one alloying element with limits having an arithmetic mean of not more than 0.30% or addition or deletion of not more than one combination of elements expressed as an alloying element with limits having a combined arithmetic mean of not more than 0.40%.

(c) Substitution of one alloying element for another element serving the same purpose.

+(d) Deletion or change in limits for impurities expressed singly or as a combination.

(e) Change in limits for grain refining elements.

(f) Iron or silicon maximum limits of 0.12% and 0.10%, or less, respectively, reflecting use of high purity base metal.

6. Identifiers for Certain 3xx.x and 4xx.x Foundry Ingot containing Structure Modifiers

One of the applicable suffixes in the table below should be added to the registered alloy designation whenever a structure modifier is intentionally added to that alloy.

RECOMMENDATION (CONTINUED)

Alloy Designation Suffix	Structure Modifying Element	Chemical Composition Limits	
		Minimum (%)	Maximum (%)
N	Na	0.003	0.08
S	Sr	0.005	0.08
C	Ca	0.005	0.15
P	P	—	0.060

(a) The letter suffix follows and is separated from the registered foundry ingot designation by a hyphen (e.g., "A356.1-S")

(b) In cases where more than one modifier is intentionally added, only the modifier of greater concentration shall be identified by suffix letter affixed to the registered alloy designation.

(c) Where foundry alloy is sold with a suffix added to its alloy designation, the modifying element's concentration is not to be included in "Others, Each" or "Others, Total".

(d) It is not intended that these structure modifier identifiers be treated as new alloy registration, nor should these designations be listed in the Registration Record.

RECOMMENDATION - FOOTNOTES

1. For codification purposes an alloying element is any element which is intentionally added for any purpose other than grain refinement and for which minimum and maximum limits are specified.

2. Standard limits for alloying elements and impurities are expressed to the following places:

Less than 0.001%	0.000X
0.001 but less than 0.01%	0.00X
0.01 but less than 0.10%	0.0XX
Unalloyed aluminum made by a refining process	0.0XX
Alloys and unalloyed aluminum not made by a refining process	0.0X
0.10 through 0.55%	0.XX
(It is customary to express limits of 0.30 percent through 0.55 percent as 0.X0 or 0.X5)	
Over 0.55%	0.X, X.X, etc.
(Except that combined Si+Fe limits for 1xxx designations must be expressed as 0.XX or 1.XX)	

3. Standard limits for alloying elements and impurities are expressed in the following sequence: Silicon; Iron; Copper; Manganese; Magnesium; Chromium; Nickel; Zinc; Titanium (See Note 1); Other (See Note 2) Elements, Each; Other Elements, Total; Aluminum (See Note 3).

Note 1—Additional specified elements having limits are inserted in alphabetical order by their chemical symbols between Titanium and Other Elements, Each, or are specified in footnotes.

Note 2—"Others" includes listed elements for which no specific limit is shown as well as unlisted metallic elements. The producer may analyze samples for trace elements not specified in the registration or specification; however, such analysis is not required and may not cover all metallic "Others" elements. Should any analysis by the producer or the purchaser establish that an "Others" element exceeds the limit of "Each" or that the aggregate of several "Others" elements exceeds the limit of "Total", the material shall be considered non-conforming.

Note 3—Aluminum is specified as minimum for unalloyed aluminum, and as a remainder for aluminum alloys.

4. The term "original" alloy as used in the Registration Record is defined based on the following guidelines:

- (a) Only one alloy set (xxx.0, xxx.1, xxx.2) in any alloy family is considered the "original" alloy, and it is always used as the basis for registration of a modification.
- (b) All active and inactive alloys with no letter preceding the numerical digits are considered the "original" alloys for each specific alloy family.
- (c) No designation changes are made to any and all of the currently registered original alloys whether active or inactive.

5. The aluminum content for unalloyed aluminum made by a refining process is the difference between 100.00% and the sum of all other metallic elements together with silicon present in amounts of 0.0010% or more, each, expressed to the third decimal before determining the sum, which is rounded to the second decimal before subtracting; for unalloyed aluminum not made by a refining process it is the difference between 100.00% and the sum of all other analyzed metallic elements together with silicon present in amounts of 0.010 percent or more, each, expressed to the second decimal before determining the sum. For unalloyed aluminum made by a refining process, when the specified maximum limit is 0.0XX, an observed value or a calculated value greater than 0.0005 but less than 0.0010% is rounded off and shown as "less than 0.001". For alloys and unalloyed aluminum not made by a refining process, when the specified maximum limit is 0.XX, an observed value or a calculated value greater than 0.005 but less than 0.010% is rounded off and shown as "less than 0.01%".

6. Applicable only if magnesium is an alloying element (i.e. has a registered minimum and maximum percentage).

APPENDIX A

USE AND ASSIGNMENT OF DESIGNATIONS

USE OF DESIGNATIONS

- A.1 Alloy designations used in accordance with this Recommendation shall have chemical composition limits identical to the registered limits of that designation.
- A.2 Designations that could be mistaken for a designation described in the Recommendation (shown on page 17) shall not be used for unregistered aluminum alloys in the form of castings and ingot.
- A.3 Aluminum alloys in the form of castings and ingot having chemical composition limits that differ from registered designations should be submitted for the assignment of a designation.

ASSIGNMENT OF DESIGNATIONS

- A.4 Designations for a new alloy registration shall be assigned in the following order of precedence:
 - A.4.1 Any proposed alloy having chemical composition limits that are identical to a registered designation shall use the registered designation.
 - A.4.2 If a proposed alloy qualifies to be a modification of an original alloy, a designation for an alloy modification shall be assigned.
 - A.4.3. A new original designation shall be assigned only for an alloy having different chemical composition limits which do not meet the requirements to qualify as a modification of any registered alloy.
- A.5 In considering requests for designation of a new alloy, the following criteria also apply:
 - A.5.1 The complete chemical composition limits shall be disclosed and judged to be reasonable and technically correct by the Technical Committee on Products and Standards.
 - A.5.2 Any request for the registration of Ingot composition limits shall be accompanied with a request for registration of casting composition limits of the same designation, with the exception of rotor and aluminizing ingot for which only ingot composition limits are required.
 - A.5.3 The product (Sand, Permanent Mold, Die, Investment Casting, or any variation of these processes) shall be shown at the time of registration. Other products may pertain even when not listed.

APPENDIX B

DEACTIVATION OF REGISTERED ALLOYS

- B.1 Designations in accordance with this Recommendation should be reviewed, at least once in every five years, to see if these alloys are still commercially active. If not, alloys should be proposed for deactivation. Any inactive alloy can still be reactivated when such need arises.

APPENDIX C

REQUIREMENTS FOR "SALE OF ALLOY" AND "COMMERCIAL QUANTITY" FOR PURPOSES OF REGISTERING ALUMINUM ALLOYS IN THE FORM OF CASTINGS AND INGOT

- C.1 Sale of Alloy

The aluminum or aluminum alloy shall be offered for sale currently and shall have been sold within the 12 months immediately preceding the date of the registration request, in both cases in commercial quantities (C.2). Such sales shall have been made to external users/customers (i.e., internal use and/or transfer of an alloy within a company does not meet the stated criteria).
- C.2 Commercial Quantity
 - C.2.1 The alloy has undergone bona fide mill production and is NOT a "laboratory" scale volume.
 - C.2.2 The alloy is cast and fabricated in standard production facilities and is NOT a one-time production.
 - C.2.3 There is an expected and ongoing commercial demand and/or need for the alloy.
 - C.2.4 The alloy must be purchased and sold in a standard business context which indicates that the alloy is actually "sold" and not "given away" for uses such as promotional evaluations.

OTHER ALUMINUM ASSOCIATION REGISTRATION RECORDS AND REFERENCES

- **INTERNATIONAL ALLOY DESIGNATIONS AND CHEMICAL COMPOSITION LIMITS FOR WROUGHT ALUMINUM AND WROUGHT ALUMINUM ALLOYS** (Teal Sheets).
 - **INTERNATIONAL DESIGNATIONS AND CHEMICAL COMPOSITION LIMITS FOR UNALLOYED ALUMINUM** (Gold Sheets).
 - **INTERNATIONAL DESIGNATIONS AND CHEMICAL COMPOSITION LIMITS FOR ALUMINUM HARDENERS** (Gray Sheets).
 - **DESIGNATIONS AND CHEMICAL COMPOSITION LIMITS FOR ALUMINUM POWDERS AND ALUMINUM ALLOY POWDERS** (Purple Sheets).
 - **COMPONENTS OF CLAD ALUMINUM ALLOY PRODUCTS** (Lt. Green Sheets).
 - **TEMPERS FOR ALUMINUM AND ALUMINUM ALLOY PRODUCTS** (Yellow Sheets).
 - **TEMPERS FOR ALUMINUM AND ALUMINUM ALLOY PRODUCTS—METRIC EDITION** (Tan Sheets).
 - **ALUMINUM STANDARDS AND DATA**
A reference book containing data on chemical compositions, mechanical and physical properties, tolerances and other information on aluminum mill products in general use, in U.S. Customary units.
 - **ALUMINUM STANDARDS AND DATA METRIC SI**
A reference book containing data on chemical compositions, mechanical and physical properties, tolerances and other information on aluminum mill products in general use, in Metric (SI) units.
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