REGISTRATION RECORD SERIES
TEAL SHEETS

International Alloy Designations and Chemical Composition Limits for Wrought Aluminum and Wrought Aluminum Alloys

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CONTENTS

FOREWORD

Listed herein are designations and chemical composition limits for wrought aluminum and wrought aluminum alloys registered with The Aluminum Association. Numerical designations are assigned in accordance with the *Recommendation—International Designation System for Wrought Aluminum and Wrought Aluminum Alloys*, which is printed on pages 28 through 30. Additions may be made in accordance with the rules outlined in the Declaration of Accord printed on page 31, and alloys will be deleted when no longer in commercial use (see table of inactive alloys printed on pages 22-23).

Since the International Designation System for Wrought Aluminum and Wrought Aluminum Alloys is based on USA's national standard "*American National Standard Alloy and Temper Designation System for Aluminum ANSI H35.1,"* the system limits introduction of experimental alloy compositions to USA registrations. An experimental alloy registered by USA under this system is indicated by the prefix "X" and is subject to the following rules:

1. A composition shall not be designated as experimental ("X") for more than five years.
2. During its experimental status, the registering organization may request changes in the composition limit of the alloy, provided that it does not invalidate any assigned designation.
3. The "X" is dropped when the alloy is no longer experimental.
4. An experimental composition that is inactivated shall retain the prefix "X" for the duration of its inactive status. If reactivated, the "X" shall be removed.

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 right.

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.

A list of the organizations that are signatories to the Declaration of Accord on the Recommendation is printed on pages ii-iii.

SIGNATORIES TO THE DECLARATION OF ACCORD

The following organizations are signatories to the Declaration of Accord on an International Alloy Designation System for Wrought Aluminum and Wrought Aluminum Alloys which is printed on page 31 of this publication.

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Aluminium Federation Limited — UK
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Association for the Dutch Metallurgic Industry (VNMI) — NETHERLANDS
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Assomet - Associazione Nazionale Industrie Metalli non Ferrosi — ITALY
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www.assomet.it

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CHEMICAL COMPOSITION LIMITS[1, 2]

Only composition limits which are identical to those listed herein for a registered designation are applicable to that designation.

NATURAL IMPURITY LIMITS FOR WROUGHT UNALLOYED ALUMINUM

Registered International Designation																					OTHERS[13]		Al
No.[17]	Date	By	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ag	B	Bi	Ga	Li	Pb	Sn	V	Zr		Each	Total[3]	Minir
1050	1954	USA	0.25	0.40	0.05	0.05	0.05	...	...	0.05	0.03	...	...	...	...	...	...	...	0.05	...	...	0.03	...	99.5
1050A	1972	EAA	0.25	0.40	0.05	0.05	0.05	...	...	0.07	0.05	...	...	...	...	...	...	...	...	...	...	0.03	...	99.5
1060	1954	USA	0.25	0.35	0.05	0.03	0.03	...	...	0.05	0.03	...	...	...	...	...	...	...	0.05	...	...	0.03	...	99.6
1065	1973	USA	0.25	0.30	0.05	0.03	0.03	...	...	0.05	0.03	...	...	...	...	...	...	...	0.05	...	...	0.03	...	99.6
1070	1954	USA	0.20	0.25	0.04	0.03	0.03	...	...	0.04	0.03	...	...	...	...	...	...	...	0.05	...	[6]	0.03	...	99.7
1070A	1972	EAA	0.20	0.25	0.03	0.03	0.03	...	...	0.07	0.03	...	...	...	...	...	...	...	...	...	...	0.03	...	99.7
1080	1954	USA	0.15	0.15	0.03	0.02	0.02	...	...	0.03	0.03	...	...	...	0.03	...	...	...	0.05	...	...	0.02	...	99.8
1080A	1972	EAA	0.15	0.15	0.03	0.02	0.02	...	...	0.06	0.02	...	...	...	0.03	...	...	...	...	...	[6]	0.02	...	99.8
1085	1954	USA	0.10	0.12	0.03	0.02	0.02	...	...	0.03	0.02	...	...	...	0.03	...	...	...	0.05	...	...	0.01	...	99.8
1090	1954	USA	0.07	0.07	0.02	0.01	0.01	...	...	0.03	0.01	...	...	...	0.03	...	...	...	0.05	...	...	0.01	...	99.9
1098	1972	GERMANY	0.010	0.006	0.003	...	...	...	...	0.015	0.003	...	...	...	...	...	...	...	...	...	...	0.003	...	99.9

REGISTERED COMPOSITIONS

Registered International Designation																					OTHERS[13]		A
No.[17]	Date	By	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ag	B	Bi	Ga	Li	Pb	Sn	V	Zr		Each	Total[3]	Mini
1100	1954	USA	...	...	0.05-0.20	0.05	...	...	...	0.10	...	...	...	...	...	...	...	...	...	...	0.95 Si+Fe[6]	0.05	0.15	99.0
1100A	2005	JAPAN	...	...	0.05-0.20	0.05	0.10	...	...	0.10	0.10	...	...	...	...	...	...	...	...	...	1.00 Si+Fe	0.05	0.15	99.0
1200	1966	USA	...	...	0.05	0.05	...	...	...	0.10	0.05	...	...	...	...	...	...	...	...	...	1.00 Si+Fe[6]	0.05	0.15	99.0
1200A	1991	NORWAY	...	...	0.10	0.30	0.30	0.10	...	0.10	...	...	...	...	...	...	...	...	...	...	1.00 Si+Fe	0.05	0.15	99.0
1300[15]	2000	FRANCE	0.20	0.30	0.05	0.03	0.03	...	...	0.20-0.50	0.03	...	...	...	...	...	...	...	...	...	...	0.05	0.15	99.0
1110	1987	FRANCE	0.30	0.8	0.04	0.01	0.25	0.01	...	...	...	...	0.02	...	...	...	...	...	...	...	0.03 V+Ti	0.03	...	99.1
1120	1982	AUSTRALIA	0.10	0.40	0.05-0.35	0.01	0.20	0.01	...	0.05	...	...	0.05	...	0.03	...	...	...	...	...	0.02 V+Ti	0.03	0.10	99.2
1230[15]	1954	USA	...	...	0.10	0.05	0.05	...	...	0.10	0.03	...	...	...	...	...	...	...	0.05	...	0.70 Si+Fe	0.03	...	99.3
1230A	2005	JAPAN	...	...	0.10	0.05	0.05	...	...	0.05	...	...	...	...	...	...	...	...	...	...	0.70 Si+Fe	0.03	...	99.3
1235	1954	USA	...	...	0.05	0.05	0.05	...	...	0.10	0.06	...	...	...	...	...	...	...	0.05	...	0.65 Si+Fe	0.03	...	99.3
1435	1958	USA	0.15	0.30-0.50	0.02	0.05	0.05	...	...	0.10	0.03	...	...	...	...	...	...	...	0.05	...	...	0.03	...	99.3
1145	1954	USA	...	...	0.05	0.05	0.05	...	...	0.05	0.03	...	...	...	...	...	...	...	0.05	...	0.55 Si+Fe	0.03	...	99.4
1345	1956	USA	0.30	0.40	0.10	0.05	0.05	...	...	0.05	0.03	...	...	...	...	...	...	...	0.05	...	...	0.03	...	99.4
++ 1445	1973	AUSTRALIA	...	...	0.04	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0.50 Si+Fe+Cu	...	0.05	99.4
1150	1973	AUSTRALIA	...	...	0.05-0.20	0.05	0.05	...	...	0.05	0.03	...	...	...	...	...	...	...	...	...	0.45 Si+Fe	0.03	...	99.5
1350[11]	1975	USA	0.10	0.40	0.05	0.01	...	0.01	...	0.05	...	...	0.05	...	0.03	...	...	...	...	...	0.02 V+Ti	0.03	0.10	99.5
1350A	1979	GERMANY	0.25	0.40	0.02	...	0.05	...	...	0.05	...	...	...	...	...	...	...	...	...	...	0.03 Cr+Mn+Ti+V[6]	0.03	...	99.5
1450	1990	EAA	0.25	0.40	0.05	0.05	0.05	...	...	0.07	0.10-0.20	...	...	...	...	...	...	...	...	...	...	0.03	...	99.5
1370	1976	FRANCE	0.10	0.25	0.02	0.01	0.02	0.01	...	0.04	...	...	0.02	...	0.03	...	...	...	...	...	0.02 V+Ti	0.02	0.10	99.7
1275	1986	SPAIN	0.08	0.12	0.05-0.10	0.02	0.02	...	...	0.03	0.02	...	...	...	0.03	...	...	...	0.03	...	...	0.01	...	99.7

See footnotes on page 15.

CHEMICAL COMPOSITION LIMITS[1, 2]

REGISTERED COMPOSITION—Continued

Only composition limits which are identical to those listed herein for a registered designation are applicable to that designation.

Registered International Designation																					OTHERS[13]		
No.[17]	Date	By	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ag	B	Bi	Ga	Li	Pb	Sn	V	Zr		Each	Total[3]	Mini
1185	1954	USA	...	...	0.01	0.02	0.02	...	...	0.03	0.02	...	...	...	0.03	...	...	...	0.05	...	0.15 Si+Fe	0.01	...	99.8
1285	1954	USA	0.08	0.08	0.02	0.01	0.01	...	...	0.03	0.02	...	...	...	0.03	...	...	...	0.05	...	0.14 Si+Fe	0.01	...	99.8
1385	1987	FRANCE	0.05	0.12	0.02	0.01	0.02	0.01	...	0.03	...	...	0.02	...	0.03	...	...	...	...	...	0.03 V+Ti	0.01	...	99.8
1188	1954	USA	0.06	0.06	0.005	0.01	0.01	...	...	0.03	0.01	...	...	...	0.03	...	...	...	0.05	...	[6]	0.01	...	99.8
1190	1987	FRANCE	0.05	0.07	0.01	0.01	0.01	0.01	...	0.02	...	...	0.01	...	0.02	...	...	...	...	...	0.01 V+Ti	0.01	...	99.9
1290	2005	JAPAN	0.050	0.030	0.050	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0.01	...	99.9
1193	1964	USA	0.04	0.04	0.006	0.01	0.01	...	...	0.03	0.01	...	...	...	0.03	...	...	...	0.05	...	...	0.01	...	99.9
++ 1198	1990	FRANCE	0.010	0.006	0.006	0.006	...	...	...	0.010	0.006	...	...	...	0.006	...	...	...	...	...	...	0.003	...	99.9
1199	1956	USA	0.006	0.006	0.006	0.002	0.006	...	...	0.006	0.002	...	...	...	0.005	...	...	...	0.005	...	...	0.002	...	99.9
2001	1979	FRANCE	0.20	0.20	5.2-6.0	0.15-0.50	0.20-0.45	0.10	0.05	0.10	0.20	...	...	...	...	...	0.003	...	...	0.05	...	0.05	0.15	Ren
2002	1975	FRANCE	0.35-0.8	0.30	1.5-2.5	0.20	0.50-1.0	0.20	...	0.20	0.20	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
2004	1980	UK	0.20	0.20	5.5-6.5	0.10	0.50	...	...	0.10	0.05	...	...	...	...	...	...	...	...	0.30-0.50	...	0.05	0.15	Ren
2005	1983	ARGENTINA	0.8	0.7	3.5-5.0	1.0	0.20-1.0	0.10	0.20	0.50	0.20	...	...	0.20	...	...	1.0-2.0	...	...	...	...	0.05	0.15	Ren
2006	1983	ARGENTINA	0.8-1.3	0.7	1.0-2.0	0.6-1.0	0.50-1.4	...	0.20	0.20	0.30	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
2007	1979	GERMANY	0.8	0.8	3.3-4.6	0.50-1.0	0.40-1.8	0.10	0.20	0.8	0.20	...	...	0.20	...	...	0.8-1.5	0.20	...	...	...	0.10	0.30	Ren
2007A	2001	ITALY	0.8	0.8	3.3-4.6	0.20-1.0	0.40-1.8	0.10	0.20	0.8	0.20	...	...	0.20	...	...	0.05	0.8-1.5	...	...	...	0.10	0.30	Ren
2007B	2006	SLOVENIA	0.8	0.7	3.3-4.6	0.50-1.0	0.40-1.8	0.10	0.10	0.8	0.20	...	...	0.10	...	...	0.10	0.40-1.9	...	...	...	0.05	0.15	Ren
2008	1987	USA	0.50-0.8	0.40	0.7-1.1	0.30	0.25-0.50	0.10	...	0.25	0.10	...	...	...	...	...	...	...	0.05	...	...	0.05	0.15	Ren
2009	1990	USA	0.25	0.05	3.2-4.4	...	1.0-1.6	...	...	0.10	...	...	...	...	...	...	...	...	...	...	0.6 O	0.05	0.15	Ren
2010	1990	USA	0.50	0.50	0.7-1.3	0.10-0.40	0.40-1.0	0.15	...	0.30	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
2011	1954	USA	0.40	0.7	5.0-6.0	...	...	...	...	0.30	...	...	...	0.20-0.6	...	...	0.20-0.6	...	...	...	...	0.05	0.15	Ren
2011A	1982	SWITZERLAND	0.40	0.50	4.5-6.0	...	...	...	...	0.30	...	...	...	0.20-0.6	...	...	0.20-0.6	...	...	...	...	0.05	0.15	Ren
2111	1993	USA	0.40	0.7	5.0-6.0	...	...	...	...	0.30	...	...	...	0.20-0.8	...	...	...	0.10-0.50	...	...	...	0.05	0.15	Ren
2111A	2001	ITALY	0.40	0.7	5.0-6.0	0.15	0.15	...	...	0.30	0.05	...	...	0.20-0.6	...	...	0.05	0.20-0.6	...	...	...	0.05	0.15	Ren
2111B	2001	SWITZERLAND	0.30	0.50	4.6-6.0	0.05	0.05	...	...	...	...	...	...	0.30-0.6	...	...	...	0.30-0.7	...	...	...	0.05	0.15	Ren
2012	1993	USA	0.40	0.7	4.0-5.5	...	...	...	...	0.30	...	...	...	0.20-0.7	...	...	...	0.20-0.6	...	...	...	0.05	0.15	Ren
2013	2003	JAPAN	0.6-1.0	0.40	1.5-2.0	0.25	0.8-1.2	0.04-0.35	...	0.25	0.15	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
2014	1954	USA	0.50-1.2	0.7	3.9-5.0	0.40-1.2	0.20-0.8	0.10	...	0.25	0.15	...	...	...	...	...	...	...	...	...	[7]	0.05	0.15	Ren
2014A	1976	AECMA	0.50-0.9	0.50	3.9-5.0	0.40-1.2	0.20-0.8	0.10	0.10	0.25	0.15	...	...	...	...	...	...	...	...	...	0.20 Zr+Ti	0.05	0.15	Ren
2214	1954	USA	0.50-1.2	0.30	3.9-5.0	0.40-1.2	0.20-0.8	0.10	...	0.25	0.15	...	...	...	...	...	...	...	...	...	[7]	0.05	0.15	Ren
2015	2003	SWITZERLAND	0.8	0.8	3.9-5.2	0.30-1.0	0.30-1.3	0.15	0.20	0.7	0.20	...	...	0.40	...	...	0.20	0.7-1.5	...	...	...	0.05	0.15	Ren
2016	2003	GERMANY	0.30-0.7	0.15	3.5-4.5	0.10-0.50	0.30-0.8	...	...	...	0.05-0.15	0.30-0.7	...	...	...	...	...	...	...	0.10-0.25	...	0.05	0.15	Ren
2017	1954	USA	0.20-0.8	0.7	3.5-4.5	0.40-1.0	0.40-0.8	0.10	...	0.25	0.15	...	...	...	...	...	...	...	...	...	[7]	0.05	0.15	Ren
2017A	1972	EAA	0.20-0.8	0.7	3.5-4.5	0.40-1.0	0.40-1.0	0.10	...	0.25	...	...	...	...	...	...	...	...	...	...	0.25 Zr+Ti	0.05	0.15	Ren
2117	1954	USA	0.8	0.7	2.2-3.0	0.20	0.20-0.50	0.10	...	0.25	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
2018	1954	USA	0.9	1.0	3.5-4.5	0.20	0.45-0.9	0.10	1.7-2.3	0.25	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
2218	1954	USA	0.9	1.0	3.5-4.5	0.20	1.2-1.8	0.10	1.7-2.3	0.25	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
2618	1954	USA	0.10-0.25	0.9-1.3	1.9-2.7	...	1.3-1.8	...	0.9-1.2	0.10	0.04-0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
2618A	1972	EAA	0.15-0.25	0.9-1.4	1.8-2.7	0.25	1.2-1.8	...	0.8-1.4	0.15	0.20	...	...	...	...	...	...	...	...	...	0.25 Zr+Ti	0.05	0.15	Ren

See footnotes on page 15.

CHEMICAL COMPOSITION LIMITS[1, 2]

REGISTERED COMPOSITION—Continued

Only composition limits which are identical to those listed herein for a registered designation are applicable to that designation.

	Registered International Designation																				OTHERS[13]		
	No.[17]	Date	By	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ag	B	Bi	Ga	Li	Pb	Sn	V	Zr		Each	Total[3]	Mini
	2219[8]	1954	USA	0.20	0.30	5.8-6.8	0.20-0.40	0.02	...	...	0.10	0.02-0.10	...	...	...	...	...	...	...	0.05-0.15	0.10-0.25	...	0.05	0.15	Ren
	2319	1958	USA	0.20	0.30	5.8-6.8	0.20-0.40	0.02	...	...	0.10	0.10-0.20	...	...	...	...	...	...	...	0.05-0.15	0.10-0.25	[6]	0.05	0.15	Ren
	2419	1972	USA	0.15	0.18	5.8-6.8	0.20-0.40	0.02	...	...	0.10	0.02-0.10	...	...	...	...	...	...	...	0.05-0.15	0.10-0.25	...	0.05	0.15	Ren
	2519	1985	USA	0.25	0.30	5.3-6.4	0.10-0.50	0.05-0.40	...	...	0.10	0.02-0.10	...	...	...	...	...	...	...	0.05-0.15	0.10-0.25	0.40 Si+Fe	0.05	0.15	Ren
	2021	1981	UK	0.20	0.30	5.8-6.8	0.20-0.40	0.02	...	...	0.10	0.02-0.10	...	...	...	...	...	...	0.03-0.08	0.05-0.15	0.10-0.25	0.05-0.20 Cd	0.05	0.15	Ren
	2022	2004	FRANCE	0.15	0.20	4.5-5.5	0.15-0.50	0.10-0.45	0.05	...	0.05-0.30	0.15	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	2023	2004	FRANCE	0.10	0.15	3.6-4.5	0.30	1.0-1.6	0.10	...	...	0.05	...	...	...	...	...	...	...	...	0.05-0.15	0.01-0.06 Sc	0.05	0.15	Ren
	2024	1954	USA	0.50	0.50	3.8-4.9	0.30-0.9	1.2-1.8	0.10	...	0.25	0.15	...	...	...	...	...	...	...	...	...	[7]	0.05	0.15	Ren
	2024A	1996	FRANCE	0.15	0.20	3.7-4.5	0.15-0.8	1.2-1.5	0.10	...	0.25	0.15	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	2124	1970	USA	0.20	0.30	3.8-4.9	0.30-0.9	1.2-1.8	0.10	...	0.25	0.15	...	...	...	...	...	...	...	...	...	[7]	0.05	0.15	Ren
	2224	1978	USA	0.12	0.15	3.8-4.4	0.30-0.9	1.2-1.8	0.10	...	0.25	0.15	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	2224A	1997	RUSSIA	0.10	0.15	3.8-4.5	0.40-0.8	1.2-1.6	...	0.05	0.10	0.01-0.07	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	2324	1978	USA	0.10	0.12	3.8-4.4	0.30-0.9	1.2-1.8	0.10	...	0.25	0.15	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	2424	1994	USA	0.10	0.12	3.8-4.4	0.30-0.6	1.2-1.6	...	...	0.20	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	2524	1995	USA	0.06	0.12	4.0-4.5	0.45-0.7	1.2-1.6	0.05	...	0.15	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
+	2624	2009	USA	0.08	0.08	3.8-4.3	0.45-0.7	1.2-1.6	0.05	...	0.15	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
+	2724	2010	USA	0.15	0.20	3.8-4.9	0.30-0.9	1.2-1.8	...	...	0.25	0.06	...	...	...	...	...	...	...	...	0.08-0.14	...	0.05	0.15	Ren
+	2824	2014	USA	0.08	0.11	3.7-4.3	0.50-0.9	1.1-1.6	0.05	...	0.25	0.15	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	2025	1954	USA	0.50-1.2	1.0	3.9-5.0	0.40-1.2	0.05	0.10	...	0.25	0.15	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	2026	1999	USA	0.05	0.07	3.6-4.3	0.30-0.8	1.0-1.6	...	...	0.10	0.06	...	...	...	...	...	...	...	...	0.05-0.25	...	0.05	0.15	Ren
	2027	2001	FRANCE	0.12	0.15	3.9-4.9	0.50-1.2	1.0-1.5	...	...	0.20	0.08	...	...	...	...	...	...	...	...	0.05-0.15	...	0.05	0.15	Ren
	2028	2005	GERMANY	0.8	0.8	3.3-4.6	0.50-1.0	0.40-1.8	0.10	0.20	0.8	0.20	...	...	0.10-1.0	...	...	1.0	0.10-1.0	...	...	...	0.10	0.30	Ren
	2028A	2006	SLOVENIA	0.8	0.7	3.3-4.5	0.20-1.0	0.50-1.3	0.10	0.10	0.50	0.20	...	...	0.50-0.7	...	...	0.20-0.40	...	...	...	...	0.05	0.15	Ren
	2028B	2006	SLOVENIA	0.8	0.8	3.3.-4.6	0.50-1.0	0.40-1.8	0.10	0.10	0.8	0.20	...	...	0.50-0.7	...	...	0.20-0.40	...	...	...	...	0.05	0.15	Ren
	2028C	2006	BELGIUM	0.8	0.7	3.3-5.0	0.20-1.0	0.50-1.3	0.10	...	0.50	0.20	...	...	0.40-1.0	...	...	0.05	0.20-1.0	...	...	...	0.10	0.30	Ren
+	2029	2013	USA	0.12	0.15	3.2-4.0	0.20-0.40	0.8-1.1	...	...	...	0.10	0.30-0.50	...	...	...	...	...	...	...	0.08-0.15	...	0.05	0.15	Ren
	2030	1972	EAA	0.8	0.7	3.3-4.5	0.20-1.0	0.50-1.3	0.10	...	0.50	0.20	...	...	0.20	...	...	0.8-1.5	...	...	...	...	0.10	0.30	Ren
	2031	1974	UK	0.50-1.3	0.6-1.2	1.8-2.8	0.50	0.6-1.2	...	0.6-1.4	0.20	0.20	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	2032	2005	JAPAN	0.50-1.3	0.6-1.5	1.5-2.5	0.20	1.2-1.8	...	0.6-1.4	0.20	0.20	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	2034	1983	USA	0.10	0.12	4.2-4.8	0.8-1.3	1.3-1.9	0.05	...	0.20	0.15	...	...	...	...	...	...	...	...	0.08-0.15	...	0.05	0.15	Ren
	2036	1970	USA	0.50	0.50	2.2-3.0	0.10-0.40	0.30-0.6	0.10	...	0.25	0.15	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	2037	1977	USA	0.50	0.50	1.4-2.2	0.10-0.40	0.30-0.8	0.10	...	0.25	0.15	...	...	...	...	...	...	...	0.05	...	...	0.05	0.15	Ren
	2038	1980	USA	0.50-1.3	0.6	0.8-1.8	0.10-0.40	0.40-1.0	0.20	...	0.50	0.15	...	...	...	0.05	...	...	...	0.05	...	...	0.05	0.15	Ren
	2039	1999	SWITZERLAND	0.20	0.30	4.5-5.5	0.20-0.50	0.40-0.8	...	...	...	0.15	0.05-0.50	...	...	...	...	...	...	...	0.10-0.25	...	0.05	0.15	Ren
	2139	2004	FRANCE	0.10	0.15	4.5-5.5	0.20-0.6	0.20-0.8	0.05	...	0.25	0.15	0.15-0.6	...	...	...	...	...	...	0.05	...	...	0.05	0.15	Ren
	2040	2003	USA	0.08	0.10	4.8-5.4	0.45-0.8	0.7-1.1	...	...	0.25	0.06	0.40-0.7	...	...	...	...	...	...	...	0.08-0.15	0.0001 Be	0.05	0.15	Ren
	2041	2006	SLOVENIA	0.40	0.7	5.0-6.0	...	...	...	...	0.30	...	...	...	0.50-0.7	...	...	0.05	0.50-0.7	...	...	...	0.05	0.15	Ren
	2044	2006	SLOVENIA	0.8	0.7	3.3-4.5	0.20-1.0	0.50-1.3	0.10	0.10	0.50	0.20	...	...	0.20-0.40	...	...	0.05	0.9-1.3	...	...	...	0.05	0.15	Ren
	2045	2006	SLOVENIA	0.8	0.8	3.3-4.6	0.50-1.0	0.40-1.8	0.10	0.10	0.8	0.20	...	...	0.20-0.40	...	...	0.05	0.9-1.3	...	...	...	0.05	0.15	Ren
	2050	2004	USA	0.08	0.10	3.2-3.9	0.20-0.50	0.20-0.6	0.05	0.05	0.25	0.10	0.20-0.7	...	...	0.05	0.7-1.3	...	...	0.05	0.06-0.14	...	0.05	0.15	Ren

See footnotes on page 15.

CHEMICAL COMPOSITION LIMITS[1, 2]

REGISTERED COMPOSITION—Continued

Only composition limits which are identical to those listed herein for a registered designation are applicable to that designation.

	Registered International Designation																				OTHERS[13]		
	No.[17]	Date	By	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ag	B	Bi	Ga	Li	Pb	Sn	V	Zr		Each	Total[3]	Mini
+	2055	2011	USA	0.07	0.10	3.2-4.2	0.10-0.50	0.20-0.6	...	...	0.30-0.7	0.10	0.20-0.7	...	...	...	1.0-1.3	...	...	...	0.05-0.15	...	0.05	0.15	Ren
	2056	2003	FRANCE	0.10	0.12	3.3-4.3	0.10-0.50	0.6-1.4	...	...	0.40-0.8	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
+	2060	2011	USA	0.07	0.07	3.4-4.5	0.10-0.50	0.6-1.1	...	...	0.30-0.50	0.10	0.05-0.50	...	...	...	0.6-0.9	...	...	...	0.05-0.15	...	0.05	0.15	Ren
+	2065	2012	FRANCE	0.10	0.10	3.8-4.7	0.15-0.50	0.25-0.8	...	...	0.30	0.10	0.15-0.50	...	...	...	0.8-1.5	...	...	...	0.05-0.15	...	0.05	0.15	Ren
+	2070	2013	USA	0.12	0.15	2.9-3.8	0.10-0.50	0.05-0.40	...	...	0.10-0.50	0.10	...	...	...	...	1.0-1.4	...	...	...	0.05-0.15	...	0.05	0.15	Ren
+	2076	2012	France	0.10	0.10	2.0-2.7	0.15-0.50	0.20-0.8	...	...	0.30	0.10	0.15-0.40	...	...	...	1.2-1.8	...	...	...	0.05-0.16	...	0.05	0.15	Ren
	2090	1984	USA	0.10	0.12	2.4-3.0	0.05	0.25	0.05	...	0.10	0.15	...	...	...	...	1.9-2.6	...	...	...	0.08-0.15	...	0.05	0.15	Ren
	2091	1985	FRANCE	0.20	0.30	1.8-2.5	0.10	1.1-1.9	0.10	...	0.25	0.10	...	...	...	...	1.7-2.3	...	...	...	0.04-0.16	...	0.05	0.15	Ren
	2094	1990	USA	0.12	0.15	4.4-5.2	0.25	0.25-0.8	...	...	0.25	0.10	0.25-0.6	...	...	...	0.7-1.4	...	...	...	0.04-0.18	...	0.05	0.15	Ren
	2095	1990	USA	0.12	0.15	3.9-4.6	0.25	0.25-0.8	...	...	0.25	0.10	0.25-0.6	...	...	...	0.7-1.5	...	...	...	0.04-0.18	...	0.05	0.15	Ren
	2195	1992	USA	0.12	0.15	3.7-4.3	0.25	0.25-0.8	...	...	0.25	0.10	0.25-0.6	...	...	...	0.8-1.2	...	...	...	0.08-0.16	...	0.05	0.15	Ren
+	2295	2013	USA	0.08	0.08	3.9-4.5	0.10	0.25-0.8	...	...	0.25	0.10	0.10-0.50	...	...	...	0.9-1.3	...	...	...	0.05-0.15	...	0.05	0.15	Ren
	2196	2000	USA	0.12	0.15	2.5-3.3	0.35	0.25-0.8	...	...	0.35	0.10	0.25-0.6	...	...	...	1.4-2.1	...	...	...	0.04-0.18	...	0.05	0.15	Ren
+	2296	2010	FRANCE	0.12	0.15	2.1-2.8	0.05-0.50	0.20-0.8	...	...	0.25	0.10	0.25-0.6	...	...	...	1.3-1.9	...	...	...	0.04-0.18	...	0.05	0.15	Ren
	2097	1993	USA	0.12	0.15	2.5-3.1	0.10-0.6	0.35	...	...	0.35	0.15	...	...	...	...	1.2-1.8	...	...	...	0.08-0.16	...	0.05	0.15	Ren
	2197	1993	USA	0.10	0.10	2.5-3.1	0.10-0.50	0.25	...	...	0.05	0.12	...	...	...	...	1.3-1.7	...	...	...	0.08-0.15	...	0.05	0.15	Ren
	2297	1997	USA	0.10	0.10	2.5-3.1	0.10-0.50	0.25	...	...	0.05	0.12	...	...	...	...	1.1-1.7	...	...	...	0.08-0.15	...	0.05	0.15	Ren
	2397	2002	USA	0.10	0.10	2.5-3.1	0.10-0.50	0.25	...	...	0.05-0.15	0.12	...	...	...	...	1.1-1.7	...	...	...	0.08-0.15	...	0.05	0.15	Ren
	2098	2000	USA	0.12	0.15	3.2-3.8	0.35	0.25-0.8	...	...	0.35	0.10	0.25-0.6	...	...	...	0.8-1.3	...	...	....	0.04-0.18	...	0.05	0.15	Ren
	2198	2005	USA	0.08	0.10	2.9-3.5	0.50	0.25-0.8	0.05	...	0.35	0.10	0.10-0.50	...	...	...	0.8-1.1	...	...	...	0.04-0.18	...	0.05	0.15	Ren
	2099	2003	USA	0.05	0.07	2.4-3.0	0.10-0.50	0.10-0.50	...	...	0.40-1.0	0.10	...	...	...	...	1.6-2.0	...	...	...	0.05-0.12	0.0001 Be	0.05	0.15	Ren
	2199	2005	USA	0.05	0.07	2.3-2.9	0.10-0.50	0.05-0.40	...	...	0.20-0.9	0.10	...	...	...	...	1.4-1.8	...	...	...	0.05-0.12	0.0001 Be	0.05	0.12	Ren
	3002	1961	USA	0.08	0.10	0.15	0.05-0.25	0.05-0.20	...	...	0.05	0.03	...	...	...	...	...	...	...	0.05	...	...	0.03	0.10	Ren
	3102	1972	USA	0.40	0.7	0.10	0.05-0.40	...	...	...	0.30	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	3003	1954	USA	0.6	0.7	0.05-0.20	1.0-1.5	...	...	...	0.10	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	3103	1972	EAA	0.50	0.7	0.10	0.9-1.5	0.30	0.10	...	0.20	...	...	...	...	...	...	...	...	...	...	0.10 Zr+Ti[6]	0.05	0.15	Ren
	3103A	1991	NORWAY	0.50	0.7	0.10	0.7-1.4	0.30	0.10	...	0.20	...	...	...	...	...	...	...	...	...	...	0.10 Zr+Ti	0.05	0.15	Ren
	3103B	2002	USA	0.50-1.3	0.8	0.50	0.7-1.3	0.50	...	...	0.50	0.20	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	3203	1973	AUSTRALIA	0.6	0.7	0.05	1.0-1.5	...	...	...	0.10	...	...	...	...	...	...	...	...	...	...	[6]	0.05	0.15	Ren
	3403	2001	USA	1.3	0.8	0.50	0.8-1.5	0.6	0.10	...	0.40	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	3004	1954	USA	0.30	0.7	0.25	1.0-1.5	0.8-1.3	...	...	0.25	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	3004A	1985	AUSTRALIA	0.40	0.7	0.25	0.8-1.5	0.8-1.5	0.10	...	0.25	0.05	...	...	...	...	...	0.03	...	...	...	...	0.05	0.15	Ren
	3104	1978	USA	0.6	0.8	0.05-0.25	0.8-1.4	0.8-1.3	...	...	0.25	0.10	...	...	...	0.05	...	...	...	0.05	...	...	0.05	0.15	Ren
	3204	1991	USA	0.30	0.7	0.10-0.25	0.8-1.5	0.8-1.5	...	...	0.25	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	3304	2001	USA	0.7	0.8	0.6	0.8-1.4	0.8-1.4	0.10	...	0.40	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	3005	1954	USA	0.6	0.7	0.30	1.0-1.5	0.20-0.6	0.10	...	0.25	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	3005A	1997	NORWAY	0.7	0.8	0.30	1.0-1.5	0.20-0.6	0.10	...	0.40	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	3105	1960	USA	0.6	0.7	0.30	0.30-0.8	0.20-0.8	0.20	...	0.40	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	3105A	1990	FRANCE	0.6	0.7	0.30	0.30-0.8	0.20-0.8	0.20	...	0.25	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	3105B	1997	NORWAY	0.7	0.9	0.30	0.30-0.9	0.20-0.8	0.20	...	0.50	0.10	...	...	...	...	...	0.10	...	...	...	...	0.05	0.15	Ren
	3007	1976	USA	0.50	0.7	0.05-0.30	0.30-0.8	0.6	0.20	...	0.40	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	3107	1977	SPAIN	0.6	0.7	0.05-0.15	0.40-0.9	...	...	...	0.20	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren

See footnotes on page 15.

CHEMICAL COMPOSITION LIMITS[1, 2]

REGISTERED COMPOSITION—Continued

Only composition limits which are identical to those listed herein for a registered designation are applicable to that designation.

	Registered International Designation																				OTHERS[13]		
	No.[17]	Date	By	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ag	B	Bi	Ga	Li	Pb	Sn	V	Zr		Each	Total[3]	Mini
	3207	1979	GERMANY	0.30	0.45	0.10	0.40-0.8	0.10	...	...	0.10	...	...	...	...	...	...	...	...	...	...	...	0.05	0.10	Ren
	3207A	1990	NORWAY	0.35	0.6	0.25	0.30-0.8	0.40	0.20	...	0.25	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	3307	1986	USA	0.6	0.8	0.30	0.50-0.9	0.30	0.20	...	0.40	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	3009	1978	GERMANY	1.0-1.8	0.7	0.10	1.2-1.8	0.10	0.05	0.05	0.05	0.10	...	...	...	...	...	...	...	...	0.10	...	0.05	0.15	Ren
	3010	1978	USA	0.10	0.20	0.03	0.20-0.9	...	0.05-0.40	...	0.05	0.05	...	...	...	...	...	...	...	0.05	...	...	0.03	0.10	Ren
	3110	2004	USA	0.25	0.05-0.35	0.05	0.30-0.7	0.05	0.05-0.25	...	0.05	0.05-0.30	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	3011	1978	USA	0.40	0.7	0.05-0.20	0.8-1.2	...	0.10-0.40	...	0.10	0.10	...	...	...	...	...	...	...	...	0.10-0.30	...	0.05	0.15	Ren
	3012	1983	ARGENTINA	0.6	0.7	0.10	0.50-1.1	0.10	0.20	...	0.10	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	3012A	2006	CANADA	0.30	0.20	0.05	0.7-1.2	0.05	0.05	0.05	0.05	0.05	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	3013	1983	ARGENTINA	0.6	1.0	0.50	0.9-1.4	0.20-0.6	...	...	0.50-1.0		...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	3014	1993	ARGENTINA	0.6	1.0	0.50	1.0-1.5	0.10	...	...	0.50-1.0	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	3015	1986	USA	0.6	0.8	0.30	0.50-0.9	0.20-0.7	0.10	...	0.25	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	3016	1986	USA	0.6	0.8	0.30	0.50-0.9	0.50-0.8	0.10	...	0.25	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	3017	1989	NETHERLANDS	0.25	0.25-0.45	0.25-0.40	0.8-1.2	0.10	0.15	...	0.10	0.05	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	3019	2000	ROMANIA	0.6	0.7	0.9	0.30-0.9	0.20-0.9	0.20	0.10	0.20-0.9	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	3020	1998	USA	0.50	0.6	0.10	0.6-1.2	0.20	0.20	...	0.05-0.50	0.05-0.25	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
+	3021	2012	JAPAN	0.50	0.7	0.20-0.6	0.05-0.8	0.10	0.10	...	0.10	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	3025	1997	USA	0.6	0.50-0.9	0.30	0.40-1.0	0.20-0.8	0.20	0.05	0.25	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	3026	2003	USA	0.25	0.10-0.40	0.05	0.40-0.9	0.10	0.05	...	0.05-0.30	0.05-0.30	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	3030	1996	USA	0.15	0.35	0.10	0.10-0.7	0.05	0.05	...	0.05-0.50	0.05-0.35	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	3130	2002	USA	0.15	0.20	0.05	0.10-0.40	0.05	...	...	0.05-0.30	0.05	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
+	3065	2008	USA	0.30	0.30	0.40-0.8	0.6-0.9	0.25	...	0.05	0.05	0.05	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	4004[15]	1971	USA	9.0-10.5	0.8	0.25	0.10	1.0-2.0	...	...	0.20	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	4104	1974	USA	9.0-10.5	0.8	0.25	0.10	1.0-2.0	...	...	0.20	...	...	...	0.02-0.20	...	...	...	...	...	...	...	0.05	0.15	Ren
	4006	1977	FRANCE	0.8-1.2	0.50-0.8	0.10	0.05	0.01	0.20	...	0.05	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	4007	1978	FRANCE	1.0-1.7	0.40-1.0	0.20	0.8-1.5	0.20	0.05-0.25	0.15-0.7	0.10	0.10	...	...	...	...	...	...	...	...	...	0.05 Co	0.05	0.15	Ren
	4008	1985	USA	6.5-7.5	0.09	0.05	0.05	0.30-0.45	...	...	0.05	0.04-0.15	...	...	...	...	...	...	...	...	...	[6]	0.05	0.15	Ren
	4009	1987	USA	4.5-5.5	0.20	1.0-1.5	0.10	0.45-0.6	...	...	0.10	0.20	...	...	...	...	...	...	...	...	...	[6]	0.05	0.15	Ren
	4010	1988	USA	6.5-7.5	0.20	0.20	0.10	0.30-0.45	...	...	0.10	0.20	...	...	...	...	...	...	...	...	...	[6]	0.05	0.15	Ren
	4013	1988	USA	3.5-4.5	0.35	0.05-0.20	0.03	0.05-0.20	...	...	0.05	0.02	...	...	0.6-1.5	...	...	...	...	...	...	0.05 Cd	0.05	0.15	Ren
	4014	1989	NORWAY	1.4-2.2	0.7	0.20	0.35	0.30-0.8	...	...	0.20	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	4015	1989	NORWAY	1.4-2.2	0.7	0.20	0.6-1.2	0.10-0.50	...	...	0.20	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	4015A	2007	USA	1.4-2.2	0.7	0.35	0.6-1.2	0.10-0.50	0.05	...	0.20	0.05	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	4115	2006	SW\EDEN	1.8-2.2	0.7	0.10-0.50	0.6-1.2	0.10-0.50	...	...	0.20	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	4016	1993	NORWAY	1.4-2.2	0.7	0.20	0.6-1.2	0.10	...	...	0.50-1.3	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	4017	1995	NORWAY	0.6-1.6	0.7	0.10-0.50	0.6-1.2	0.10-0.50	...	...	0.20	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	4018	1995	GERMANY	6.5-7.5	0.20	0.05	0.10	0.50-0.8	...	...	0.10	0.20	...	...	...	...	...	...	...	...	...	[6]	0.05	0.15	Ren

See footnotes on page 15.

CHEMICAL COMPOSITION LIMITS[1, 2]

REGISTERED COMPOSITION—Continued

Only composition limits which are identical to those listed herein for a registered designation are applicable to that designation.

	Registered International Designation																				OTHERS[13]		
	No.[17]	Date	By	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ag	B	Bi	Ga	Li	Pb	Sn	V	Zr		Each	Total[3]	Mini
	4019	1999	UK	18.5-21.5	4.6-5.4	…	…	…	…	1.8-2.2	…	…	…	…	…	…	…	…	…	…	…	…	0.05	0.15	Ren
	4020	2005	AUSTRIA	2.5-3.5	0.20	0.03	0.8-1.2	0.01	0.01	…	…	0.005	…	0.005	…	…	…	…	…	…	0.01	0.005 Na, 0.005 P[6]	0.02	0.10	Ren
+	4021	2011	USA	3.3-4.3	0.20-0.50	0.15	0.40-0.7	0.6-1.1	0.15	…	0.25	0.10	…	…	…	…	…	0.03	…	…	…	…	0.05	0.15	Ren
	4026	2001	USA	9.0-11.5	0.50	2.5-3.5	…	0.7-1.4	…	…	0.10	0.05	…	…	1.0-2.0	…	…	…	…	…	…	…	0.05	0.15	Ren
	4032	1954	USA	11.0-13.5	1.0	0.50-1.3	…	0.8-1.3	0.10	0.50-1.3	0.25	…	…	…	…	…	…	…	…	…	…	…	0.05	0.15	Ren
	4043	1954	USA	4.5-6.0	0.8	0.30	0.05	0.05	…	…	0.10	0.20	…	…	…	…	…	…	…	…	…	[6]	0.05	0.15	Ren
	4043A	1976	EAA	4.5-6.0	0.6	0.30	0.15	0.20	…	…	0.10	0.15	…	…	…	…	…	…	…	…	…	[6]	0.05	0.15	Ren
+	4143	2010	USA	4.7-6.0	0.8	0.30	0.05	0.15-0.30	…	…	0.10	0.20	…	…	…	…	…	…	…	…	…	[6]	0.05	0.15	Ren
	4343	1954	USA	6.8-8.2	0.8	0.25	0.10	…	…	…	0.20		…	…	…	…	…	…	…	…	…	…	0.05	0.15	Ren
	4643	1963	USA	3.6-4.6	0.8	0.10	0.05	0.10-0.30	…	…	0.10	0.15	…	…	…	…	…	…	…	…	…	[6]	0.05	0.15	Ren
+	4943	2011	USA	5.0-6.0	0.40	0.10	0.05	0.10-0.50	…	…	0.10	0.15	…	…	…	…	…	…	…	…	…	[6]	0.05	0.15	Ren
	4044[15]	1969	USA	7.8-9.2	0.8	0.25	0.10	…	…	…	0.20	…	…	…	…	…	…	…	…	…	…	…	0.05	0.15	Ren
	4045	1964	USA	9.0-11.0	0.8	0.30	0.05	0.05	…	…	0.10	0.20	…	…	…	…	…	…	…	…	…	…	0.05	0.15	Ren
	4145	1957	USA	9.3-10.7	0.8	3.3-4.7	0.15	0.15	0.15		0.20	…	…	…	…	…	…	…	…	…	…	[6]	0.05	0.15	Ren
	4145A	1976	UK	9.0-11.0	0.6	3.0-5.0	0.15	0.10	…	…	0.20	0.15	…	…	…	…	…	…	…	…	…	[6]	0.05	0.15	Ren
	4046	1990	EAA	9.0-11.0	0.50	0.03	0.40	0.20-0.50	…	…	0.10	0.15	…	…	…	…	…	…	…	…	…	[6]	0.05	0.15	Ren
	4047	1964	USA	11.0-13.0	0.8	0.30	0.15	0.10	…	…	0.20	…	…	…	…	…	…	…	…	…	…	[6]	0.05	0.15	Ren
	4047A	1976	EAA	11.0-13.0	0.6	0.30	0.15	0.10	…	…	0.20	0.15	…	…	…	…	…	…	…	…	…	[6]	0.05	0.15	Ren
	4147	1989	USA	11.0-13.0	0.8	0.25	0.10	0.10-0.50	…	…	0.20	…	…	…	…	…	…	…	…	…	…	[6]	0.05	0.15	Ren
	5005	1954	USA	0.30	0.7	0.20	0.20	0.50-1.1	0.10	…	0.25	…	…	…	…	…	…	…	…	…	…	…	0.05	0.15	Ren
	5005A	1979	GERMANY	0.30	0.45	0.05	0.15	0.7-1.1	0.10	…	0.20	…	…	…	…	…	…	…	…	…	…	…	0.05	0.15	Ren
	5205	1967	USA	0.15	0.7	0.03-0.10	0.10	0.6-1.0	0.10	…	0.05	…	…	…	…	…	…	…	…	…	…	…	0.05	0.15	Ren
	5305	1990	EAA	0.08	0.08	…	0.03	0.7-1.1	…	…	0.05	0.02	…	…	…	…	…	…	…	…	…	…	0.02	…	Ren
	5505	1990	EAA	0.06	0.04	…	0.03	0.8-1.1	…	…	0.04	0.01	…	…	…	…	…	…	…	…	…	…	0.01	…	Ren
	5605	1990	EAA	0.01	0.008	…	…	0.8-1.1	…	…	0.01	0.008	…	…	…	…	…	…	…	…	…	0.008 Fe+Ti	0.003	…	Ren
	5006	1997	USA	0.40	0.8	0.10	0.40-0.8	0.8-1.3	0.10	…	0.25	0.10	…	…	…	…	…	…	…	…	…	…	0.05	0.15	Ren
	5106	2001	USA	0.40	0.7	0.30	0.40-0.7	0.8-1.2	0.10	…	0.10	0.10	…	…	…	…	…	…	…	…	…	…	0.05	0.15	Ren
	5010	1961	USA	0.40	0.7	0.25	0.10-0.30	0.20-0.6	0.15	…	0.30	0.10	…	…	…	…	…	…	…	…	…	…	0.05	0.15	Ren
	5110	1990	EAA	0.08	0.08	…	0.03	0.30-0.6	…	…	0.05	0.02	…	…	…	…	…	…	…	…	…	…	0.02	…	Ren
	5110A	2005	JAPAN	0.15	0.25	0.20	0.20	0.20-0.6	…	…	0.03	…	…	…	…	…	…	…	…	…	…	…	0.05	0.10	Ren
	5210	1990	EAA	0.06	0.04	…	0.03	0.35-0.6	…	…	0.04	0.01	…	…	…	…	…	…	…	…	…	…	0.01	…	Ren
	5310	1990	EAA	0.01	0.008	…	…	0.35-0.6	…	…	0.01	0.008	…	…	…	…	…	…	…	…	…	0.008 Fe+Ti	0.003	…	Ren
	5016	1982	USA	0.25	0.6	0.20	0.40-0.7	1.4-1.9	0.10	…	0.15	0.05	…	…	…	…	…	…	…	…	…	…	0.05	0.15	Ren
	5017	1986	USA	0.40	0.7	0.18-0.28	0.6-0.8	1.9-2.2	…	…	…	0.09	…	…	…	…	…	…	…	…	…	…	0.05	0.15	Ren
	5018	1992	GERMANY	0.25	0.40	0.05	0.20-0.6	2.6-3.6	0.30	…	0.20	0.15	…	…	…	…	…	…	…	…	…	…	0.05	0.15	Ren
	5018A	1999	ROMANIA	0.40	0.40	0.10	0.35-0.50	3.0-3.6	0.30	…	0.20	0.15	…	…	…	…	…	…	…	…	…	…	0.05	0.15	Ren
	5019[14]	1972	EAA	0.40	0.50	0.10	0.10-0.6	4.5-5.6	0.20	…	0.20	0.20	…	…	…	…	…	…	…	…	…	…	0.05	0.15	Ren
	5019A	1998	USA	0.20	0.35	0.15	0.20-0.50	4.4-5.4	0.10	…	0.25	0.10	…	…	…	…	…	…	…	…	…	…	0.05	0.15	Ren
	5119	1992	GERMANY	0.25	0.40	0.05	0.20-0.6	4.5-5.6	0.30	…	0.20	0.15	…	…	…	…	…	…	…	…	…	…	0.05	0.15	Ren
	5119A	2001	EAA	0.25	0.40	0.05	0.20-0.6	4.5-5.6	0.30	…	0.20	0.15	…	…	…	…	…	…	…	…	…	…	0.05	0.15	Ren
	5021	1993	NORWAY	0.40	0.50	0.15	0.10-0.50	2.2-2.8	0.15	…	0.15	…	…	…	…	…	…	…	…	…	…	…	0.05	0.15	Ren

See footnotes on page 15.

CHEMICAL COMPOSITION LIMITS[1, 2]

REGISTERED COMPOSITION—Continued

Only composition limits which are identical to those listed herein for a registered designation are applicable to that designation.

	Registered International Designation																				OTHERS[13]		
	No.[17]	Date	By	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ag	B	Bi	Ga	Li	Pb	Sn	V	Zr		Each	Total[3]	Mini
	5022	1995	JAPAN	0.25	0.40	0.20-0.50	0.20	3.5-4.9	0.10	...	0.25	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	5023	1995	JAPAN	0.25	0.40	0.20-0.50	0.20	5.0-6.2	0.10	...	0.25	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	5024	2008	GERMANY	0.25	0.40	0.20	0.20	3.9-5.1	0.10	...	0.25	0.20	...	...	...	...	...	...	...	...	0.05-0.20	0.10-0.40Sc	0.05	0.15	Ren
	5026	2001	GERMANY	0.55-1.4	0.20-1.0	0.10-0.8	0.6-1.8	3.9-4.9	0.30	...	1.0	0.20	...	...	...	...	...	...	...	...	0.30	...	0.05	0.15	Ren
	5027	2002	GERMANY	0.05-0.20	0.20-0.40	0.05-0.15	0.40-0.8	4.7-5.4	0.10	...	0.25	0.15	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
+	5028	2014	GERMANY	0.30	0.40	0.20	0.30-1.0	3.2-4.8	0.05-0.15	...	0.05-0.50	0.05-0.15	...	...	...	...	...	...	...	...	0.05-0.15	0.02-0.40 Sc	0.05	0.15	Ren
	5040	1961	USA	0.30	0.7	0.25	0.9-1.4	1.0-1.5	0.10-0.30	...	0.25	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	5140	2001	USA	0.7	0.6	0.6	0.7-1.3	1.1-1.5	0.10	...	0.40	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	5041	2005	JAPAN	0.40	0.40	0.10	0.30-1.0	3.0-4.0	0.50	...	0.10	0.20	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	5042	1980	USA	0.20	0.35	0.15	0.20-0.50	3.0-4.0	0.10	...	0.25	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	5043	1982	USA	0.40	0.7	0.05-0.35	0.7-1.2	0.7-1.3	0.05	...	0.25	0.10	...	...	...	0.05	...	...	...	0.05	...	...	0.05	0.15	Ren
	5049	1979	EAA	0.40	0.50	0.10	0.50-1.1	1.6-2.5	0.30	...	0.20	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	5149	1990	EAA	0.25	0.40	0.05	0.50-1.1	1.6-2.5	0.30	...	0.20	0.15	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	5249	1990	EAA	0.25	0.40	0.05	0.50-1.1	1.6-2.5	0.30	...	0.20	0.15	...	...	...	...	...	...	...	...	0.10-0.20	[6]	0.05	0.15	Ren
	5349	1992	USA	0.40	0.7	0.18-0.28	0.6-1.2	1.7-2.6	...	...	0.20	0.09	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	5449	1994	BELGIUM	0.40	0.7	0.30	0.6-1.1	1.6-2.6	0.30	...	0.30	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
+	5449A	2010	EAA	0.6	1.2	0.30	0.6-1.1	1.6-2.6	0.30	0.10	0.30	0.10	...	...	...	...	...	...	0.10	...	...	...	0.05	0.15	Ren
	5050	1954	USA	0.40	0.7	0.20	0.10	1.1-1.8	0.10	...	0.25	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	5050A	1973	AUSTRALIA	0.40	0.7	0.20	0.30	1.1-1.8	0.10	...	0.25	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
+	5050C	2012	BRAZIL	0.25	0.6	0.50	0.20	1.2-1.8	0.10	...	0.50	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	5150	1972	FRANCE	0.08	0.10	0.10	0.03	1.3-1.7	...	...	0.10	0.06	...	...	...	...	...	...	...	...	...	...	0.03	0.10	Ren
	5051	1967	USA	0.40	0.7	0.25	0.20	1.7-2.2	0.10	...	0.25	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	5051A	1983	GERMANY	0.30	0.45	0.05	0.25	1.4-2.1	0.30	...	0.20	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	5151	1970	USA	0.20	0.35	0.15	0.10	1.5-2.1	0.10	...	0.15	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	5251	1972	EAA	0.40	0.50	0.15	0.10-0.50	1.7-2.4	0.15	...	0.15	0.15	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	5251A	1990	ARGENTINA	0.50	0.7	0.25	0.20-0.7	1.6-2.2	0.10	...	0.25	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	5351	1978	USA	0.08	0.10	0.10	0.10	1.6-2.2	...	...	0.05	...	...	...	...	...	...	...	...	0.05	...	...	0.03	0.10	Ren
	5451	1981	USA	0.25	0.40	0.10	0.10	1.8-2.4	0.15-0.35	0.05	0.10	0.05	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	5052	1954	USA	0.25	0.40	0.10	0.10	2.2-2.8	0.15-0.35	...	0.10	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	5252	1961	USA	0.08	0.10	0.10	0.10	2.2-2.8	...	...	0.05	...	...	...	...	...	...	...	...	0.05	...	...	0.03	0.10	Ren
	5352	1971	USA	...	...	0.10	0.10	2.2-2.8	0.10	...	0.10	0.10	...	...	...	...	...	...	...	...	...	0.45 Si+Fe	0.05	0.15	Ren
	5154[8]	1954	USA	0.25	0.40	0.10	0.10	3.1-3.9	0.15-0.35	...	0.20	0.20	...	...	...	...	...	...	...	...	...	[6]	0.05	0.15	Ren
	5154A	1972	UK	0.50	0.50	0.10	0.50	3.1-3.9	0.25	...	0.20	0.20	...	...	...	...	...	...	...	...	...	0.10-0.50 Mn+Cr[6]	0.05	0.15	Ren
	5154B	1978	ITALY	0.35	0.45	0.05	0.15-0.45	3.2-3.8	0.10	0.01	0.15	0.15	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	5154C	2008	CHINA	0.20	0.30	0.10	0.05-0.25	3.2-3.7	0.01	...	0.01	0.01	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	5254	1954	USA	...	...	0.05	0.01	3.1-3.9	0.15-0.35	...	0.20	0.05	...	...	...	...	...	...	...	...	...	0.45 Si+Fe	0.05	0.15	Ren
	5354	1990	EAA	0.25	0.40	0.05	0.50-1.0	2.4-3.0	0.05-0.20	...	0.25	0.15	...	...	...	...	...	...	...	...	0.10-0.20	...	0.05	0.15	Ren
	5454	1957	USA	0.25	0.40	0.10	0.50-1.0	2.4-3.0	0.05-0.20	...	0.25	0.20	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	5554	1958	USA	0.25	0.40	0.10	0.50-1.0	2.4-3.0	0.05-0.20	...	0.25	0.05-0.20	...	...	...	...	...	...	...	...	...	[6]	0.05	0.15	Ren
	5654	1968	USA	...	...	0.05	0.01	3.1-3.9	0.15-0.35	...	0.20	0.05-0.15	...	...	...	...	...	...	...	...	...	0.45 Si+Fe[6]	0.05	0.15	Ren
	5654A	2001	EAA	...	...	0.05	0.01	3.1-3.9	0.15-0.35	...	0.20	0.05-0.15	...	...	...	...	...	...	...	...	...	0.45 Si+Fe[16]	0.05	0.15	Ren
	5754	1970	USA	0.40	0.40	0.10	0.50	2.6-3.6	0.30	...	0.20	0.15	...	...	...	...	...	...	...	...	...	0.10-0.6 Mn+Cr[6]	0.05	0.15	Ren
+	5854[19]	2009	GERMANY	0.40	0.40	0.10	0.50	2.8-3.6	0.30	...	0.20	0.15	...	...	...	...	0.0009	0.01	...	...	0.05-0.30	0.0009 Ca 0.0009 Na 0.10-0.6 Mn+Cr	0.05	0.15	Ren

See footnotes on page 15.

CHEMICAL COMPOSITION LIMITS[1, 2]

REGISTERED COMPOSITION—Continued

Only composition limits which are identical to those listed herein for a registered designation are applicable to that designation.

Registered International Designation																					OTHERS[13]		
No.[17]	Date	By	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ag	B	Bi	Ga	Li	Pb	Sn	V	Zr		Each	Total[3]	Mini
5954	1988	USA	0.25	0.40	0.10	0.10	3.3-4.1	0.10	...	0.20	0.20	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
5056	1954	USA	0.30	0.40	0.10	0.05-0.20	4.5-5.6	0.05-0.20	...	0.10	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
5356	1954	USA	0.25	0.40	0.10	0.05-0.20	4.5-5.5	0.05-0.20	...	0.10	0.06-0.20	...	...	...	...	...	...	...	...	...	[6]	0.05	0.15	Ren
5356A	2001	EAA	0.25	0.40	0.10	0.05-0.20	4.5-5.5	0.05-0.20	...	0.10	0.06-0.20	...	...	...	...	...	...	...	...	...	[16]	0.05	0.15	Ren
5456	1956	USA	0.25	0.40	0.10	0.50-1.0	4.7-5.5	0.05-0.20	...	0.25	0.20	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
5456A	1992	GERMANY	0.25	0.40	0.05	0.7-1.1	4.5-5.2	0.05-0.25	...	0.25	0.15	...	...	...	...	...	...	...	...	...	[6]	0.05	0.15	Ren
5456B	2001	EAA	0.25	0.40	0.05	0.7-1.1	4.5-5.2	0.05-0.25	...	0.25	0.15	...	...	...	...	...	...	...	...	...	[16]	0.05	0.15	Ren
5556	1956	USA	0.25	0.40	0.10	0.50-1.0	4.7-5.5	0.05-0.20	...	0.25	0.05-0.20	...	...	...	...	...	...	...	...	...	[6]	0.05	0.15	Ren
5556A	1972	UK	0.25	0.40	0.10	0.6-1.0	5.0-5.5	0.05-0.20	...	0.20	0.05-0.20	...	...	...	...	...	...	...	...	...	[6]	0.05	0.15	Ren
5556B	2001	EAA	0.25	0.40	0.10	0.6-1.0	5.0-5.5	0.05-0.20	...	0.20	0.05-0.20	...	...	...	...	...	...	...	...	...	[16]	0.05	0.15	Ren
5556C	2001	FRANCE	0.25	0.40	0.10	0.50-1.0	4.7-5.5	0.05-0.20	...	0.25	0.05-0.20	...	...	...	...	...	...	...	...	...	[16]	0.05	0.15	Ren
5257[8]	1961	USA	0.08	0.10	0.10	0.03	0.20-0.6	...	...	0.03	...	...	...	...	...	...	...	...	...	...	...	0.02	0.05	Ren
5457	1957	USA	0.08	0.10	0.20	0.15-0.45	0.8-1.2	...	...	0.05	...	...	...	...	...	...	...	...	0.05	...	...	0.03	0.10	Ren
5557	1977	USA	0.10	0.12	0.15	0.10-0.40	0.40-0.8	...	...	...	...	...	...	...	...	...	...	...	0.05	...	...	0.03	0.10	Ren
5657	1960	USA	0.08	0.10	0.10	0.03	0.6-1.0	...	...	0.05	...	...	...	...	0.03	...	...	...	0.05	...	...	0.02	0.05	Ren
5058	1991	GERMANY	0.40	0.50	0.10	0.20	4.5-5.6	0.10	...	0.20	0.20	...	...	...	...	...	1.2-1.8	...	...	...	...	0.05	0.15	Ren
5059	1999	GERMANY	0.45	0.50	0.25	0.6-1.2	5.0-6.0	0.25	...	0.40-0.9	0.20	...	...	...	...	...	...	...	...	0.05-0.25	...	0.05	0.15	Ren
5070	2003	BELGIUM	0.25	0.40	0.25	0.40-0.8	3.5-4.5	0.30	...	0.40-0.8	0.15	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
5180	1963	USA	...	...	0.10	0.20-0.7	3.5-4.5	0.10	...	1.7-2.8	0.06-0.20	...	...	...	...	...	...	...	...	0.08-0.25	0.35 Si+Fe[6]	0.05	0.15	Ren
5180A	2001	FRANCE	...	...	0.10	0.20-0.7	3.5-4.5	0.10	...	1.7-2.8	0.06-0.20	...	...	...	...	...	...	...	...	0.08-0.25	0.35 Si+Fe[16]	0.05	0.15	Ren
5082	1963	USA	0.20	0.35	0.15	0.15	4.0-5.0	0.15	...	0.25	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
5182	1967	USA	0.20	0.35	0.15	0.20-0.50	4.0-5.0	0.10	...	0.25	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
5083	1954	USA	0.40	0.40	0.10	0.40-1.0	4.0-4.9	0.05-0.25	...	0.25	0.15	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
5183	1957	USA	0.40	0.40	0.10	0.50-1.0	4.3-5.2	0.05-0.25	...	0.25	0.15	...	...	...	...	...	...	...	...	...	[6]	0.05	0.15	Ren
5183A	2001	EAA	0.40	0.40	0.10	0.50-1.0	4.3-5.2	0.05-0.25	...	0.25	0.15	...	...	...	...	...	...	...	...	...	[16]	0.05	0.15	Ren
5283	1976	FRANCE	0.30	0.30	0.03	0.50-1.0	4.5-5.1	0.05	0.03	0.10	0.03	...	...	...	...	...	...	...	...	0.05	...	0.05	0.15	Ren
5283A	1987	EAA	0.30	0.30	0.03	0.50-1.0	4.5-5.1	0.05	0.03	0.10	0.03	...	...	...	...	...	0.003	...	...	0.05	...	0.05	0.15	Ren
5283B	1999	USA	0.15	0.35	0.15	0.30-0.9	4.2-5.2	0.10	...	0.25	0.15	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
5383	1995	FRANCE	0.25	0.25	0.20	0.7-1.0	4.0-5.2	0.25	...	0.40	0.15	...	...	...	...	...	...	...	...	0.20	...	0.05	0.15	Ren
5483	2001	USA	0.30	0.25	0.10	0.7-1.0	4.3-5.2	0.15	...	0.40	0.15	...	...	...	...	...	...	...	...	0.05-0.20	...	0.05	0.15	Ren
5086	1954	USA	0.40	0.50	0.10	0.20-0.7	3.5-4.5	0.05-0.25	...	0.25	0.15	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
5186	1996	FRANCE	0.40	0.45	0.25	0.20-0.50	3.8-4.8	0.15	...	0.40	0.15	...	...	...	...	...	...	...	...	0.05	...	0.05	0.15	Ren
5087	1990	EAA	0.25	0.40	0.05	0.7-1.1	4.5-5.2	0.05-0.25	...	0.25	0.15	...	...	...	...	...	...	...	...	0.10-0.20	[6]	0.05	0.15	Ren
5187	2001	EAA	0.25	0.40	0.05	0.7-1.1	4.5-5.2	0.05-0.25	...	0.25	0.15	...	...	...	...	...	...	...	...	0.10-0.20	[16]	0.05	0.15	Ren
5088	2002	FRANCE	0.20	0.10-0.35	0.25	0.20-0.50	4.7-5.5	0.15	...	0.20-0.40	...	...	...	...	...	...	...	...	...	0.15	...	0.05	0.15	Ren
6101	1955	USA	0.30-0.7	0.50	0.10	0.03	0.35-0.8	0.03	...	0.10	...	...	0.06	...	...	...	...	...	...	...	...	0.03	0.10	Ren
6101A	1974	UK	0.30-0.7	0.40	0.05	...	0.40-0.9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0.03	0.10	Ren
6101B	1979	GERMANY	0.30-0.6	0.10-0.30	0.05	0.05	0.35-0.6	...	...	0.10	...	...	...	...	...	...	...	...	...	...	...	0.03	0.10	Ren
6201	1960	USA	0.50-0.9	0.50	0.10	0.03	0.6-0.9	0.03	...	0.10	...	...	0.06	...	...	...	...	...	...	...	...	0.03	0.10	Ren
6201A	1973	AUSTRALIA	0.50-0.7	0.50	0.04		0.6-0.9	...	...	...	...	...	0.06	...	...	...	...	...	...	...	...	0.03	0.10	Ren
6401	1990	EAA	0.35-0.7	0.04	0.05-0.20	0.03	0.35-0.7	...	...	0.04	0.01	...	...	...	...	...	...	...	...	...	...	0.01		Ren
6501	2005	SWITZERLAND	0.20-0.6	0.35	0.20	0.05-0.20	0.20-0.6	0.05	...	0.15	0.15	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
6002	1983	ITALY	0.6-0.9	0.25	0.10-0.25	0.10-0.20	0.45-0.7	0.05	...	...	0.08	...	...	...	...	...	...	...	...	0.09-0.14	...	0.05	0.15	Ren
6003[15]	1954	USA	0.35-1.0	0.6	0.10	0.8	0.8-1.5	0.35	...	0.20	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
6103	1984	AUSTRALIA	0.35-1.0	0.6	0.20-0.30	0.8	0.8-1.5	0.35	...	0.20	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren

See footnotes on page 15.

CHEMICAL COMPOSITION LIMITS[1, 2]

REGISTERED COMPOSITION—Continued

Only composition limits which are identical to those listed herein for a registered designation are applicable to that designation.

	Registered International Designation																				OTHERS[13]		
	No.[17]	Date	By	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ag	B	Bi	Ga	Li	Pb	Sn	V	Zr		Each	Total[3]	Mini
	6005	1962	USA	0.6-0.9	0.35	0.10	0.10	0.40-0.6	0.10	...	0.10	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	6005A	1972	FRANCE	0.50-0.9	0.35	0.30	0.50	0.40-0.7	0.30	...	0.20	0.10	...	...	...	...	...	...	...	...	...	0.12-0.50 Mn+Cr	0.05	0.15	Ren
	6005B	1989	NETHERLANDS	0.45-0.8	0.30	0.10	0.10	0.40-0.8	0.10	...	0.10	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	6005C	2005	JAPAN	0.40-0.9	0.35	0.35	0.50	0.40-0.8	0.30	...	0.25	0.10	...	...	...	...	...	...	...	...	...	0.50 Mn+Cr	0.05	0.15	Ren
	6105	1965	USA	0.6-1.0	0.35	0.10	0.15	0.45-0.8	0.10	...	0.10	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	6205	1970	USA	0.6-0.9	0.7	0.20	0.05-0.15	0.40-0.6	0.05-0.15	...	0.25	0.15	...	...	...	...	...	...	...	...	0.05-0.15	...	0.05	0.15	Ren
+	6305	2012	USA	0.6-1.0	0.35	0.10	0.15	0.45-0.8	0.15	...	0.10	0.10	...	...	...	...	...	...	...	...	...	0.12-0.20 Mn+Cr	0.05	0.15	Ren
	6006	1971	USA	0.20-0.6	0.35	0.15-0.30	0.05-0.20	0.45-0.9	0.10	...	0.10	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	6106	1979	FRANCE	0.30-0.6	0.35	0.25	0.05-0.20	0.40-0.8	0.20	...	0.10	...	...	...	...	...	...	...	...	...	...	...	0.05	0.10	Ren
	6206	1984	USA	0.35-0.7	0.35	0.20-0.50	0.13-0.30	0.45-0.8	0.10	...	0.20	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	6306	1991	USA	0.20-0.6	0.10	0.05-0.16	0.10-0.40	0.45-0.9	...	...	0.05	0.05	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	6008	1983	SWITZERLAND	0.50-0.9	0.35	0.30	0.30	0.40-0.7	0.30	...	0.20	0.10	...	...	...	...	...	...	...	0.05-0.20	...	...	0.05	0.15	Ren
	6009	1976	USA	0.6-1.0	0.50	0.15-0.6	0.20-0.8	0.40-0.8	0.10	...	0.25	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	6010	1976	USA	0.8-1.2	0.50	0.15-0.6	0.20-0.8	0.6-1.0	0.10	...	0.25	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	6110	1979	USA	0.7-1.5	0.8	0.20-0.7	0.20-0.7	0.50-1.1	0.04-0.25	...	0.30	0.15	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	6110A	1996	GERMANY	0.7-1.1	0.50	0.30-0.8	0.30-0.9	0.7-1.1	0.05-0.25	...	0.20	...	...	...	...	...	...	...	...	...	...	0.20 Zr+Ti	0.05	0.15	Ren
	6011	1954	USA	0.6-1.2	1.0	0.40-0.9	0.8	0.6-1.2	0.30	0.20	1.5	0.20	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	6111	1982	USA	0.6-1.1	0.40	0.50-0.9	0.10-0.45	0.50-1.0	0.10	...	0.15	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	6012	1979	GERMANY	0.6-1.4	0.50	0.10	0.40-1.0	0.6-1.2	0.30	...	0.30	0.20	...	...	0.7	...	...	0.40-2.0	...	...	...	...	0.05	0.15	Ren
	6012A	1999	ITALY	0.6-1.4	0.50	0.40	0.20-1.0	0.6-1.2	0.30	...	0.30	0.20	...	...	0.7	...	...	...	0.40-2.0	...	...	...	0.05	0.15	Ren
	6013	1983	USA	0.6-1.0	0.50	0.6-1.1	0.20-0.8	0.8-1.2	0.10	...	0.25	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	6113	1991	USA	0.6-1.0	0.30	0.6-1.1	0.10-0.6	0.8-1.2	0.10	...	0.25	0.10	...	...	...	...	...	...	...	...	...	0.05-0.50 O	0.05	0.15	Ren
	6014	1983	SWITZERLAND	0.30-0.6	0.35	0.25	0.05-0.20	0.40-0.8	0.20	...	0.10	0.10	...	...	...	...	...	...	...	0.05-0.20	...	...	0.05	0.15	Ren
	6015	1984	ITALY	0.20-0.40	0.10-0.30	0.10-0.25	0.10	0.8-1.1	0.10	...	0.10	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	6016	1984	SWITZERLAND	1.0-1.5	0.50	0.20	0.20	0.25-0.6	0.10	...	0.20	0.15	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	6016A	1995	FRANCE	0.9-1.5	0.50	0.25	0.20	0.20-0.6	0.10	...	0.20	0.15	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	6116	1996	SWITZERLAND	0.9-1.3	0.25	0.20	0.15	0.25-0.6	0.15	...	0.20	0.15	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	6018	1991	SWITZERLAND	0.50-1.2	0.7	0.15-0.40	0.30-0.8	0.6-1.2	0.10	...	0.30	0.20	...	...	0.40-0.7	...	...	0.40-1.2	...	...	...	...	0.05	0.15	Ren
	6019	1996	USA	0.6-1.0	0.50	0.20-0.6	0.10	0.8-1.2	0.05-0.35	...	0.40-1.0	0.15	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	6020	1995	USA	0.40-0.9	0.50	0.30-0.9	0.35	0.6-1.2	0.15	...	0.20	0.15	...	...	...	...	...	0.05	0.9-1.5	...	...	...	0.05	0.15	Ren
	6021	2000	GERMANY	0.6-1.5	0.40	0.20	0.40-1.0	0.8-1.5	0.25	...	0.20	0.10	...	...	...	...	...	...	0.6-1.5	...	...	...	0.05	0.15	Ren
	6022	1995	USA	0.8-1.5	0.05-0.20	0.01-0.11	0.02-0.10	0.45-0.7	0.10	...	0.25	0.15	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
++	6023	2001	SWITZERLAND	0.6-1.4	0.50	0.20-0.50	0.20-0.6	0.40-0.9	...	...	...	...	...	...	0.30-0.8	...	...	...	0.6-1.2	...	...	...	0.05	0.15	Ren
	6024	2001	KOREA	0.7-1.3	0.05-0.7	0.30-0.9	0.30-1.2	0.30-1.0	0.20	...	0.20	0.20	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
++	6025	2002	GERMANY	0.8-1.5	0.7	0.20-0.7	0.6-1.4	2.1-3.0	0.20	...	0.50	0.20	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	6026	2004	ITALY	0.6-1.4	0.7	0.20-0.50	0.20-1.0	0.6-1.2	0.30	...	0.30	0.20	...	...	0.50-1.5	...	...	0.40	0.05	...	...	...	0.05	0.15	Ren
+	6027	2010	CHINA	0.55-0.8	0.30	0.15	0.10-0.30	0.8-1.1	0.10	...	0.10-0.30	0.15	...	...	...	...	...	...	...	...	...	...	0.15	0.15	Ren
	6028	2006	SLOVENIA	1.0-1.3	0.50	0.25-0.40	0.6-0.9	0.7-1.0	0.04-0.10	...	0.30	0.20	...	...	0.6-0.8	...	...	...	0.6-0.8	...	...	...	0.05	0.15	Ren
+	6031	2014	USA	0.50-0.8	0.25	0.10-0.25	0.40-0.6	0.6-0.8	0.10-0.20	...	0.05	0.05	...	...	...	...	...	...	...	...	...	...	0.03	0.15	Ren
+	6032	2014	USA	0.45-0.7	0.25	0.03	0.10-0.20	0.45-0.7	0.03	...	0.05	0.08-0.12	...	...	...	...	...	...	...	...	...	...	0.03	0.15	Ren

See footnotes on page 15.

CHEMICAL COMPOSITION LIMITS[1, 2]

REGISTERED COMPOSITION—Continued

Only composition limits which are identical to those listed herein for a registered designation are applicable to that designation.

	Registered International Designation																				OTHERS[13]		
	No.[17]	Date	By	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ag	B	Bi	Ga	Li	Pb	Sn	V	Zr		Each	Total[3]	Mini
	6033	2002	USA	0.8-1.3	0.50	0.40-1.0	0.05	0.7-1.3	0.10	...	0.50-1.0	0.15	...	...	0.30-1.0	...	...	0.05	...	...	...	...	0.05	0.15	Ren
	6040	2002	USA	0.40-0.8	0.7	0.20-0.8	0.15	0.8-1.2	0.15	...	0.25	0.15	...	...	0.15-0.7	...	...	...	0.30-1.2	...	...	...	0.05	0.15	Ren
	6041	2006	USA	0.50-0.9	0.15-0.7	0.15-0.6	0.05-0.20	0.8-1.2	0.05-0.15	...	0.25	0.15	...	...	0.30-0.9	...	...	...	0.35-1.2	...	...	...	0.05	0.15	Ren
	6042	2006	USA	0.50-1.2	0.7	0.20-0.6	0.40	0.7-1.2	0.04-0.35	...	0.25	0.15	...	...	0.20-0.8	...	...	0.15-0.40	...	...	...	...	0.05	0.15	Ren
	6043	2006	CHINA	0.40-0.9	0.50	0.30-0.9	0.35	0.6-1.2	0.15	...	0.20	0.15	...	...	0.40-0.7	...	...	...	0.20-0.40	...	...	...	0.05	0.15	Ren
	6151	1954	USA	0.6-1.2	1.0	0.35	0.20	0.45-0.8	0.15-0.35	...	0.25	0.15	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	6351	1958	USA	0.7-1.3	0.50	0.10	0.40-0.8	0.40-0.8	...	...	0.20	0.20	...	...	...	...	...	...	...	...	...	..	0.05	0.15	Ren
	6351A	1988	FRANCE	0.7-1.3	0.50	0.10	0.40-0.8	0.40-0.8	...	...	0.20	0.20	...	...	...	...	...	0.003	...	...	...	...	0.05	0.15	Ren
	6451	2005	USA	0.6-1.0	0.40	0.40	0.05-0.40	0.40-0.8	0.10	...	0.15	...	...	...	...	...	...	...	...	0.10	...	...	0.05	0.15	Ren
	6951	1954	USA	0.20-0.50	0.8	0.15-0.40	0.10	0.40-0.8	...	...	0.20	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	6053	1954	USA	[9]	0.35	0.10	...	1.1-1.4	0.15-0.35	...	0.10	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
+	6055	2012	USA	0.6-1.2	0.30	0.50-1.0	0.10	0.7-1.1	0.20-0.30	...	0.55-0.9	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	6056	1988	FRANCE	0.7-1.3	0.50	0.50-1.1	0.40-1.0	0.6-1.2	0.25	...	0.10-0.7	...	...	...	...	...	...	...	...	...	...	0.20 Zr+Ti	0.05	0.15	Ren
	6156	2003	FRANCE	0.7-1.3	0.20	0.7-1.1	0.40-0.7	0.6-1.2	0.25	...	0.10-0.7	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	6060	1972	EAA	0.30-0.6	0.10-0.30	0.10	0.10	0.35-0.6	0.05	...	0.15	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	6160	1993	USA	0.30-0.6	0.15	0.20	0.05	0.35-0.6	0.05	...	0.05	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	6260	1996	USA	0.40-0.6	0.15-0.40	0.10	0.03	0.45-0.7	0.03	...	0.05	0.10	...	...	...	...	...	...	...	0.10-0.25	0.05	...	0.05	0.15	Ren
	6360	2001	USA	0.35-0.8	0.10-0.30	0.15	0.02-0.15	0.25-0.45	0.05	...	0.10	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	6460	2001	USA	0.30-0.7	0.15	0.20	0.20	0.20-0.6	0.05	...	0.05	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
+	6460B	2010	BRAZIL	0.20-0.7	0.20	0.10	0.10	0.20-0.40	0.03	...	0.04	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	6560	2001	USA	0.30-0.7	0.10-0.30	0.05-0.20	0.20	0.20-0.6	0.05	...	0.15	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
+	6660	2011	USA	0.40-0.8	0.15-0.30	0.10	0.03-0.20	0.30-0.6	0.05	0.05	0.10	0.10	...	...	...	0.05	...	...	...	0.05	...	...	0.05	0.15	Ren
	6061	1954	USA	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	Ren
	6061A	1991	EAA	0.40-0.8	0.7	0.15-0.40	0.15	0.8-1.2	0.04-0.35	...	0.25	0.15	...	...	...	...	...	0.003	...	...	...	...	0.05	0.15	Ren
	6261	1968	USA	0.40-0.7	0.40	0.15-0.40	0.20-0.35	0.7-1.0	0.10	...	0.20	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
+	6361	2013	USA	0.6-0.9	0.40	0.20-0.50	0.10-0.20	1.0-1.4	0.10-0.30	...	0.25	0.15	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	6162	1959	USA	0.40-0.8	0.50	0.20	0.10	0.7-1.1	0.10	...	0.25	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	6262	1960	USA	0.40-0.8	0.7	0.15-0.40	0.15	0.8-1.2	0.04-0.14	...	0.25	0.15	...	...	0.40-0.7	...	...	0.40-0.7	...	...	...	...	0.05	0.15	Ren
	6262A	2005	BELGIUM	0.40-0.8	0.7	0.15-0.40	0.15	0.8-1.2	0.04-0.14	...	0.25	0.10	...	...	0.40-0.9	...	...	...	0.40-1.0	...	...	...	0.05	0.15	Ren
	6063	1954	USA	0.20-0.6	0.35	0.10	0.10	0.45-0.9	0.10	...	0.10	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	6063A	1979	UK	0.30-0.6	0.15-0.35	0.10	0.15	0.6-0.9	0.05	...	0.15	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	6463	1957	USA	0.20-0.6	0.15	0.20	0.05	0.45-0.9	...	...	0.05	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	6463A	1973	AUSTRALIA	0.20-0.6	0.15	0.25	0.05	0.30-0.9	...	...	0.05	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	6763	1972	USA	0.20-0.6	0.08	0.04-0.16	0.03	0.45-0.9	...	...	0.03	...	...	...	...	...	...	...	...	0.05	...	...	0.03	0.10	Ren
	6963	1994	USA	0.40-0.6	0.25	0.15-0.25	0.05	0.35-0.7	0.10	...	0.10	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	6064	2006	SLOVENIA	0.40-0.8	0.7	0.15-0.40	0.15	0.8-1.2	0.05-0.14	...	0.25	0.15	...	...	0.50-0.7	...	...	0.20-0.40	...	...	...	...	0.05	0.15	Ren
	6064A	2007	SWITZERLAND	0.40-0.8	0.7	0.15-0.40	0.15	0.8-1.2	0.04-0.14	...	0.25	0.15	...	...	0.40-0.8	...	...	0.20-0.40	...	...	...	...	0.05	0.15	Ren
	6065	2005	BELGIUM	0.40-0.8	0.7	0.15-0.40	0.15	0.8-1.2	0.15	...	0.25	0.10	...	...	0.50-1.5	...	...	0.05	...	...	0.15	...	0.05	0.15	Ren
	6066	1954	USA	0.9-1.8	0.50	0.7-1.2	0.6-1.1	0.8-1.4	0.40	...	0.25	0.20	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
+	6068	2009	SWITZERLAND	0.6-1.4	0.50	0.10	0.40-1.0	0.6-1.2	0.30	0.05	0.30	0.20	...	...	0.6-1.1	0.03	...	0.20-0.40	...	0.05	...	...	0.05	0.15	Ren
	6069	1994	USA	0.6-1.2	0.40	0.55-1.0	0.05	1.2-1.6	0.05-0.30	...	0.05	0.10	...	...	...	...	...	...	...	0.10-0.30	...	0.05 Sr	0.05	0.15	Ren
	6070	1962	USA	1.0-1.7	0.50	0.15-0.40	0.40-1.0	0.50-1.2	0.10	...	0.25	0.15	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren

See footnotes on page 15.

CHEMICAL COMPOSITION LIMITS[1, 2]

REGISTERED COMPOSITION—Continued

Only composition limits which are identical to those listed herein for a registered designation are applicable to that designation.

Registered International Designation																				OTHERS[13]		
No.[17]	Date	By	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ag	B	Bi	Ga	Li	Pb	Sn	V	Zr		Each	Total[3]	Mini
6081	1972	FRANCE	0.7-1.1	0.50	0.10	0.10-0.45	0.6-1.0	0.10	...	0.20	0.15	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
6181	1972	EAA	0.8-1.2	0.45	0.10	0.15	0.6-1.0	0.10	...	0.20	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
6181A	1997	SWITZERLAND	0.7-1.1	0.15-0.50	0.25	0.40	0.6-1.0	0.15	...	0.30	0.25	...	...	...	...	...	...	...	0.10	...	...	0.05	0.15	Ren
6082	1972	EAA	0.7-1.3	0.50	0.10	0.40-1.0	0.6-1.2	0.25	...	0.20	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
6082A	1987	FRANCE	0.7-1.3	0.50	0.10	0.40-1.0	0.6-1.2	0.25	...	0.20	0.10	...	...	...	...	...	0.003	...	...	...	...	0.05	0.15	Ren
6182	2005	BELGIUM	0.9-1.3	0.50	0.10	0.50-1.0	0.7-1.2	0.25	...	0.20	0.10	...	...	...	...	...	...	...	...	0.05-0.20	...	0.05	0.15	Ren
6091	1992	USA	0.40-0.8	0.7	0.15-0.40	0.15	0.8-1.2	0.15	...	0.25	0.15	...	...	...	...	...	...	...	...	...	0.05-0.50 O	0.05	0.15	Ren
6092	1992	USA	0.40-0.8	0.30	0.7-1.0	0.15	0.8-1.2	0.15	...	0.25	0.15	...	...	...	...	...	...	...	...	...	0.05-0.50 O	0.05	0.15	Ren
7003	1975	JAPAN	0.30	0.35	0.20	0.30	0.50-1.0	0.20	...	5.0-6.5	0.20	...	...	...	...	...	...	...	...	0.05-0.25	...	0.05	0.15	Ren
7004	1964	USA	0.25	0.35	0.05	0.20-0.7	1.0-2.0	0.05	...	3.8-4.6	0.05	...	...	...	...	...	...	...	...	0.10-0.20	...	0.05	0.15	Ren
7204	2005	JAPAN	0.30	0.35	0.20	0.20-0.7	1.0-2.0	0.30	...	4.0-5.0	0.20	...	...	...	...	...	...	...	0.10	0.25	...	0.05	0.15	Ren
7005	1962	USA	0.35	0.40	0.10	0.20-0.7	1.0-1.8	0.06-0.20	...	4.0-5.0	0.01-0.06	...	...	...	...	...	...	...	...	0.08-0.20	...	0.05	0.15	Ren
7108[15]	1983	USA	0.10	0.10	0.05	0.05	0.7-1.4	...	...	4.5-5.5	0.05	...	...	...	...	...	...	...	...	0.12-0.25	...	0.05	0.15	Ren
7108A	1987	NORWAY	0.20	0.30	0.05	0.05	0.7-1.5	0.04	...	4.8-5.8	0.03	...	...	...	0.03	...	...	...	...	0.15-0.25	...	0.05	0.15	Ren
7009	1974	GERMANY	0.20	0.20	0.6-1.3	0.10	2.1-2.9	0.10-0.25	...	5.5-6.5	0.20	0.25-0.40	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
7010	1975	UK	0.12	0.15	1.5-2.0	0.10	2.1-2.6	0.05	0.05	5.7-6.7	0.06	...	...	...	...	...	...	...	...	0.10-0.16	...	0.05	0.15	Ren
7012	1975	ITALY	0.15	0.25	0.8-1.2	0.08-0.15	1.8-2.2	0.04	...	5.8-6.5	0.02-0.08	...	...	...	...	...	...	...	...	0.10-0.18	...	0.05	0.15	Ren
7014	1977	UK	0.50	0.50	0.30-0.7	0.30-0.7	2.2-3.2	...	0.10	5.2-6.2	...	...	...	...	...	...	...	...	...	...	0.20 Zr+Ti	0.05	0.15	Ren
7015	1977	SPAIN	0.20	0.30	0.06-0.15	0.10	1.3-2.1	0.15	...	4.6-5.2	0.10	...	...	...	...	...	...	...	...	0.10-0.20	...	0.05	0.15	Ren
7016	1972	USA	0.10	0.12	0.45-1.0	0.03	0.8-1.4	...	...	4.0-5.0	0.03	...	...	...	...	...	...	...	0.05	...	...	0.03	0.10	Ren
7116	1975	USA	0.15	0.30	0.50-1.1	0.05	0.8-1.4	...	...	4.2-5.2	0.05	...	...	...	0.03	...	...	...	0.05	...	...	0.05	0.15	Ren
7017	1978	UK	0.35	0.45	0.20	0.05-0.50	2.0-3.0	0.35	0.10	4.0-5.2	0.15	...	...	...	...	...	...	...	...	0.10-0.25	0.15 min Mn+Cr	0.05	0.15	Ren
7018	1978	UK	0.35	0.45	0.20	0.15-0.50	0.7-1.5	0.20	0.10	4.5-5.5	0.15	...	...	...	...	...	...	...	...	0.10-0.25	...	0.05	0.15	Ren
7019	1978	UK	0.35	0.45	0.20	0.15-0.50	1.5-2.5	0.20	0.10	3.5-4.5	0.15	...	...	...	...	...	...	...	...	0.10-0.25	...	0.05	0.15	Ren
7019A	1983	ARGENTINA	0.30	0.40	0.10	0.10-0.6	1.5-2.5	0.05-0.35	...	3.0-5.0	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
7020	1972	EAA	0.35	0.40	0.20	0.05-0.50	1.0-1.4	0.10-0.35	...	4.0-5.0	...	...	...	...	...	...	...	...	...	0.08-0.20	0.08-0.25 Zr+Ti	0.05	0.15	Ren
7021	1976	USA	0.25	0.40	0.25	0.10	1.2-1.8	0.05	...	5.0-6.0	0.10	...	...	...	...	...	...	...	...	0.08-0.18	...	0.05	0.15	Ren
7022	1979	EAA	0.50	0.50	0.50-1.0	0.10-0.40	2.6-3.7	0.10-0.30	...	4.3-5.2	...	...	...	...	...	...	...	...	...	...	0.20 Zr+Ti	0.05	0.15	Ren
7122	2000	SWITZERLAND	0.25	0.35	0.50-1.0	0.10	2.6-3.7	0.10	...	4.3-5.2	0.15	...	...	...	...	...	...	...	...	0.10-0.25	...	0.05	0.15	Ren
7023	1983	ARGENTINA	0.50	0.50	0.50-1.0	0.10-0.6	2.0-3.0	0.05-0.35	...	4.0-6.0	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
7024	1983	ARGENTINA	0.30	0.40	0.10	0.10-0.6	0.50-1.0	0.05-0.35	...	3.0-5.0	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
7025	1983	ARGENTINA	0.30	0.40	0.10	0.10-0.6	0.8-1.5	0.05-0.35	...	3.0-5.0	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
7026	1983	ITALY	0.08	0.12	0.6-0.9	0.05-0.20	1.5-1.9	...	...	4.6-5.2	0.05	...	...	...	...	...	...	...	...	0.09-0.14	...	0.03	0.10	Ren
7028	1987	SPAIN	0.35	0.50	0.10-0.30	0.15-0.6	1.5-2.3	0.20	...	4.5-5.2	0.05	...	...	...	...	...	...	...	...	...	0.08-0.25 Zr+Ti	0.05	0.15	Ren
7029	1975	USA	0.10	0.12	0.50-0.9	0.03	1.3-2.0	...	...	4.2-5.2	0.05	...	...	...	...	...	...	...	0.05	...	...	0.03	0.10	Ren
7129	1977	USA	0.15	0.30	0.50-0.9	0.10	1.3-2.0	0.10	...	4.2-5.2	0.05	...	...	...	0.03	...	...	...	0.05	...	...	0.05	0.15	Ren
7229	1988	USA	0.06	0.08	0.50-0.9	0.03	1.3-2.0	...	...	4.2-5.2	0.05	...	...	...	...	...	...	...	0.05	...	...	0.03	0.10	Ren
7030	1987	NORWAY	0.20	0.30	0.20-0.40	0.05	1.0-1.5	0.04	...	4.8-5.9	0.03	...	...	...	0.03	...	...	...	...	0.03	...	0.05	0.15	Ren

See footnotes on page 15.

CHEMICAL COMPOSITION LIMITS[1, 2]

REGISTERED COMPOSITION—Continued

Only composition limits which are identical to those listed herein for a registered designation are applicable to that designation.

	Registered International Designation																				OTHERS[13]		
	No.[17]	Date	By	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ag	B	Bi	Ga	Li	Pb	Sn	V	Zr		Each	Total[3]	Mini
	7031	1988	USA	0.30	0.8-1.4	0.10	0.10-0.40	0.10	...	...	0.8-1.8	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	7032	1995	USA	0.10	0.12	1.7-2.3	0.05	1.5-2.5	0.15-0.25	...	5.5-6.5	0.10	...	...	0.01	...	...	0.01	...	...	...	...	0.05	0.15	Ren
	7033	1996	USA	0.15	0.30	0.7-1.3	0.10	1.3-2.2	0.20	...	4.6-5.6	0.10	...	...	...	0.03	...	...	...	0.05	0.08-0.15	...	0.05	0.15	Ren
	7034	1999	UK	0.10	0.12	0.8-1.2	0.25	2.0-3.0	0.20	...	11.0-12.0	...	...	...	...	...	...	...	...	...	0.08-0.30	...	0.05	0.15	Ren
	7035	2003	SWITZERLAND	0.15	0.25	0.05-0.30	0.10	2.5-3.5	0.05	...	4.3-5.5	0.02-0.05	...	...	...	...	...	...	...	...	0.08-0.20	...	0.05	0.15	Ren
	7035A	2008	FRANCE	0.15	0.25	0.05-0.30	0.10	2.5-3.5	0.05	...	4.3-5.5	0.02-0.05	...	...	...	...	...	...	...	...	0.04-0.20	...	0.05	0.15	Ren
	7036	2004	USA	0.12	0.15	1.9-2.5	0.05	1.8-2.5	0.08-0.13	...	8.4-9.4	0.10	...	...	...	...	...	...	...	...	0.10-0.20	...	0.05	0.15	Ren
	7136	2004	USA	0.12	0.15	1.9-2.5	0.05	1.8-2.5	0.05	...	8.4-9.4	0.10	...	...	...	...	...	...	...	...	0.10-0.20	...	0.05	0.15	Ren
	7037	2006	GERMANY	0.10	0.10	0.6-1.1	0.50	1.3-2.1	0.04	...	7.8-9.0	0.10	...	...	...	...	...	...	...	...	0.06-0.25	...	0.05	0.15	Ren
	7039	1962	USA	0.30	0.40	0.10	0.10-0.40	2.3-3.3	0.15-0.25	...	3.5-4.5	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	7040	1996	FRANCE	0.10	0.13	1.5-2.3	0.04	1.7-2.4	0.04	...	5.7-6.7	0.06	...	...	...	...	...	...	...	...	0.05-0.12	...	0.05	0.15	Ren
	7140	2005	FRANCE	0.10	0.13	1.3-2.3	0.04	1.5-2.4	0.04	...	6.2-7.0	0.06	...	...	...	...	...	...	...	...	0.05-0.12	...	0.05	0.15	Ren
	7041	2008	FRANCE	0.15	0.25	0.40-0.9	0.04	1.5-2.3	0.04	...	5.7-6.7	0.06	...	...	...	...	...	...	...	...	0.05-0.12	...	0.05	0.15	Ren
+	7042	2009	USA	0.20	0.20	1.3-1.9	0.20-0.40	2.0-2.8	0.05	...	6.5-7.9	...	...	...	...	...	...	...	...	...	0.11-0.20	0.18-.050 Sc	0.05	0.15	Ren
	7046	1973	USA	0.20	0.40	0.25	0.30	1.0-1.6	0.20	...	6.6-7.6	0.06	...	...	...	...	...	...	...	...	0.10-0.18	...	0.05	0.15	Ren
	7046A	1999	NORWAY	0.20	0.40	0.35	0.30	0.8-1.6	0.20	...	6.1-7.3	0.06	...	...	...	...	...	...	...	...	0.10-0.25	...	0.05	0.15	Ren
+	7047	2010	USA	0.12	0.15	0.04	0.04	1.3-1.8	0.05	...	7.0-8.0	0.08	0.25-0.50	...	...	...	...	...	...	...	0.07-0.13	...	0.05	0.15	Ren
	7049	1968	USA	0.25	0.35	1.2-1.9	0.20	2.0-2.9	0.10-0.22	...	7.2-8.2	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	7049A	1972	FRANCE	0.40	0.50	1.2-1.9	0.50	2.1-3.1	0.05-0.25	...	7.2-8.4	...	...	...	...	...	...	...	...	...	...	0.25 Zr+Ti	0.05	0.15	Ren
	7149	1975	USA	0.15	0.20	1.2-1.9	0.20	2.0-2.9	0.10-0.22	...	7.2-8.2	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	7249	1992	USA	0.10	0.12	1.3-1.9	0.10	2.0-2.4	0.12-0.18	...	7.5-8.2	0.06	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	7349	1994	FRANCE	0.12	0.15	1.4-2.1	0.20	1.8-2.7	0.10-0.22	...	7.5-8.7	...	...	...	...	...	...	...	...	...	...	0.25 Zr+Ti	0.05	0.15	Ren
	7449	1994	FRANCE	0.12	0.15	1.4-2.1	0.20	1.8-2.7	...	...	7.5-8.7	...	...	...	...	...	...	...	...	...	...	0.25 Zr+Ti	0.05	0.15	Ren
	7050	1971	USA	0.12	0.15	2.0-2.6	0.10	1.9-2.6	0.04	...	5.7-6.7	0.06	...	...	...	...	...	...	...	...	0.08-0.15	...	0.05	0.15	Ren
	7050A	1996	FRANCE	0.12	0.15	1.7-2.4	0.04	1.7-2.6	0.04	0.03	5.7-6.9	0.06	...	...	...	...	...	...	...	...	0.05-0.12	...	0.05	0.15	Ren
	7150	1978	USA	0.12	0.15	1.9-2.5	0.10	2.0-2.7	0.04	...	5.9-6.9	0.06	...	...	...	...	...	...	...	...	0.08-0.15	...	0.05	0.15	Ren
	7055	1991	USA	0.10	0.15	2.0-2.6	0.05	1.8-2.3	0.04	...	7.6-8.4	0.06	...	...	...	...	...	...	...	...	0.08-0.25	...	0.05	0.15	Ren
	7155	2008	USA	0.25	0.25	2.0-2.6	0.10	1.8-2.3	0.05	...	7.6-8.4	0.10	...	...	...	...	...	...	...	...	0.08-0.15	...	0.05	0.15	Ren
+	7255	2009	USA	0.06	0.09	2.0-2.6	0.05	1.8-2.3	0.04	...	7.6-8.4	0.06	...	...	...	...	...	...	...	...	0.08-0.15	...	0.05	0.15	Ren
	7056	2004	FRANCE	0.10	0.12	1.2-1.9	0.20	1.5-2.3	...	...	8.5-9.7	0.08	...	...	...	...	...	...	...	...	0.05-0.15	...	0.05	0.15	Ren
	7060	1986	FRANCE	0.15	0.20	1.8-2.6	0.20	1.3-2.1	0.15-0.25	...	6.1-7.5	0.05	...	...	...	...	...	0.003	...	...	0.05	...	0.05	0.15	Ren
	7064	1985	USA	0.12	0.15	1.8-2.4	...	1.9-2.9	0.06-0.25	...	6.8-8.0	...	...	...	...	...	...	...	...	...	0.10-0.50	0.10-0.40 Co, 0.05-0.30 O	0.05	0.15	Ren
+	7065	2012	USA	0.06	0.08	1.9-2.3	0.04	1.5-1.8	0.04	...	7.1-8.3	0.06	...	...	...	...	...	...	...	...	0.05-0.15	...	0.05	0.15	Ren
	7068	1996	USA	0.12	0.15	1.6-2.4	0.10	2.2-3.0	0.05	...	7.3-8.3	0.10	...	...	...	...	...	...	...	...	0.05-0.15	...	0.05	0.15	Ren
	7168	2002	USA	0.10	0.12	1.6-2.4	0.05	2.0-2.8	0.04	...	7.8-8.8	0.10	...	...	...	...	...	...	...	...	0.05-0.15	...	0.05	0.15	Ren
	7072[15]	1954	USA	...	...	0.10	0.10	0.10	...	...	0.8-1.3	...	...	...	...	...	...	...	...	...	...	0.7 Si+Fe	0.05	0.15	Ren
	7075	1954	USA	0.40	0.50	1.2-2.0	0.30	2.1-2.9	0.18-0.28	...	5.1-6.1	0.20	...	...	...	...	...	...	...	...	...	[10]	0.05	0.15	Ren
	7175	1957	USA	0.15	0.20	1.2-2.0	0.10	2.1-2.9	0.18-0.28	...	5.1-6.1	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
	7475	1969	USA	0.10	0.12	1.2-1.9	0.06	1.9-2.6	0.18-0.25	...	5.2-6.2	0.06	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren

See footnotes on page 15.

CHEMICAL COMPOSITION LIMITS[1, 2]

REGISTERED COMPOSITION—Continued

Only composition limits which are identical to those listed herein for a registered designation are applicable to that designation.

Registered International Designation																					OTHERS[13]		
No.[17]	Date	By	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ag	B	Bi	Ga	Li	Pb	Sn	V	Zr		Each	Total[3]	Mini
7076	1954	USA	0.40	0.6	0.30-1.0	0.30-0.8	1.2-2.0	...	...	7.0-8.0	0.20	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
7178[8]	1954	USA	0.40	0.50	1.6-2.4	0.30	2.4-3.1	0.18-0.28	...	6.3-7.3	0.20	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
7278	1981	NORWAY	0.15	0.20	1.6-2.2	0.02	2.5-3.2	0.17-0.25	...	6.6-7.4	0.03	...	...	...	0.03	...	...	...	0.05	...	...	0.03	0.10	Ren
7278A	1991	SWITZERLAND	0.12	0.15	1.3-2.1	0.25	2.3-3.2	0.05	...	6.4-7.4	0.05	...	...	...	...	...	...	...	...	0.05-0.25	...	0.05	0.15	Ren
7081	2005	GERMANY	0.12	0.15	1.2-1.8	0.25	1.8-2.2	0.04	...	6.9-7.5	0.06	...	...	...	...	...	...	...	...	0.06-0.15	...	0.05	0.15	Ren
+ 7181	2009	GERMANY	0.08	0.10	1.2-1.9	0.15	1.7-2.2	0.04	...	6.7-7.9	0.06	...	...	...	...	...	...	...	...	0.08-0.18	...	0.05	0.15	Ren
7085	2002	USA	0.06	0.08	1.3-2.0	0.04	1.2-1.8	0.04	...	7.0-8.0	0.06	...	...	...	...	...	...	...	...	0.08-0.15	...	0.05	0.15	Ren
+ 7185	2010	USA	0.25	0.25	1.3-2.0	0.10	1.2-1.8	0.10	...	7.0-8.2	0.06	...	...	...	...	...	...	...	...	0.08-0.15	...	0.05	0.15	Ren
7090	1980	USA	0.12	0.15	0.6-1.3	...	2.0-3.0	...	...	7.3-8.7	...	...	...	...	...	...	...	...	...	...	1.0-1.9 Co, 0.20-0.50 O	0.05	0.15	Ren
7093	1990	USA	0.12	0.15	1.1-1.9	...	2.0-3.0	...	0.04-0.16	8.3-9.7	...	...	...	...	...	...	...	...	...	0.08-0.20	0.05-0.50 O	0.05	0.15	Ren
7095	2005	USA	0.10	0.12	2.0-2.8	0.05	1.4-2.0	...	...	8.6-9.8	0.06	...	...	...	...	...	...	...	...	0.08-0.15	...	0.05	0.15	Ren
+ 7099	2011	USA	0.12	0.15	1.4-2.1	0.04	1.6-2.3	0.04	...	7.4-8.4	0.06	...	...	...	...	...	...	...	...	0.05-0.15	...	0.05	0.15	Ren
+ 7199	2014	USA	0.10	0.12	1.4-2.1	0.04	1.6-2.3	0.04	...	7.4-8.4	0.06	...	...	...	...	...	...	...	...	0.05-0.15	...	0.05	0.15	Ren
8005	1976	ITALY	0.20-0.50	0.40-0.8	0.05	...	0.05	...	...	0.05	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
8006	1978	USA	0.40	1.2-2.0	0.30	0.30-1.0	0.10	...	...	0.10	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
8007	1978	USA	0.40	1.2-2.0	0.10	0.30-1.0	0.10	...	...	0.8-1.8	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
8008	1979	SPAIN	0.6	0.9-1.6	0.20	0.50-1.0	...	...	...	0.10	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
8010	1988	USA	0.40	0.35-0.7	0.10-0.30	0.10-0.8	0.10-0.50	0.20	...	0.40	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
8011	1970	USA	0.50-0.9	0.6-1.0	0.10	0.20	0.05	0.05	...	0.10	0.08	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
8011A	1979	GERMANY	0.40-0.8	0.50-1.0	0.10	0.10	0.10	0.10	...	0.10	0.05	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
8111	1979	USA	0.30-1.1	0.40-1.0	0.10	0.10	0.05	0.05	...	0.10	0.08	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
8211	1990	NETHERLANDS	0.40-0.8	0.50-1.0	0.10	0.05-0.20	0.10	0.15	...	0.10	0.05	...	...	...	...	...	...	...	...	...	...	0.06	0.15	Ren
8112[8]	1954	USA	1.0	1.0	0.40	0.6	0.7	0.20	...	1.0	0.20	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
8014	1983	USA	0.30	1.2-1.6	0.20	0.20-0.6	0.10	...	...	0.10	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
8015	1988	USA	0.30	0.8-1.4	0.10	0.10-0.40	0.10	...	...	0.10	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
8016	1989	NORWAY	0.20	0.7-1.1	0.10	0.10-0.30	0.10	...	...	0.10	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
8017	1983	USA	0.10	0.55-0.8	0.10-0.20	...	0.01-0.05	...	...	0.05	...	...	0.04	...	...	0.003	...	...	...	...	...	0.03	0.10	Ren
8018	1989	UK	0.50-0.9	0.6-1.0	0.30-0.6	0.30	...	...	...	...	0.006-0.06	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
8019	1990	USA	0.20	7.3-9.3	...	0.05	...	...	...	0.05	0.05	...	...	...	...	...	...	...	...	...	3.5-4.5 Ce, 0.05-0.50 O	0.05	0.15	Ren
8021	1992	JAPAN	0.15	1.2-1.7	0.05	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Ren
8021A	1992	UK	0.20	1.2-1.7	0.05	0.03	0.02	...	...	0.05	0.05	...	...	...	...	...	...	...	...	...	...	0.02	0.15	Ren
8021B	1996	EAA	0.40	1.1-1.7	0.05	0.03	0.01	0.03	...	0.05	0.05	...	...	...	...	...	...	...	...	...	...	0.03	0.10	Ren
8022	1991	USA	1.2-1.4	6.2-6.8	...	0.10	...	0.10	...	0.25	0.10	...	...	...	...	...	...	...	0.40-0.8	...	0.05-0.20 O	0.05	0.15	Ren
8023	1997	BRAZIL	0.20	1.3-1.6	0.10-0.40	0.30-0.6	0.005	0.02	...	...	0.05-0.10	...	0.01-0.02	...	...	...	...	...	...	...	...	0.05	0.15	Ren
8024	1999	UK	0.10	0.12	...	...	...	...	...	...	...	...	...	...	...	3.4-4.2	...	...	...	0.08-0.25	...	0.05	0.15	Ren
8025	2000	SKAN ALUMINIUM	0.05-0.15	0.06-0.25	0.20	0.03-0.10	0.05	0.18	...	0.50	0.005-0.02	...	...	...	...	...	...	...	...	0.02-0.20	...	0.05	0.15	Ren

See footnotes on page 15.

CHEMICAL COMPOSITION LIMITS[1, 2]

REGISTERED COMPOSITION—Continued

Only composition limits which are identical to those listed herein for a registered designation are applicable to that designation.

	Registered International Designation																				OTHERS[13]		
	No.[17]	Date	By	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ag	B	Bi	Ga	Li	Pb	Sn	V	Zr		Each	Total[3]	Mini
	8026	2007	GERMANY	0.6	0.6-1.2	0.30	0.40-1.0	0.20-0.6	0.20	…	0.25	0.10	…	…	…	…	…	…	…	…	…	…	0.05	0.15	Ren
	8030	1975	USA	0.10	0.30-0.8	0.15-0.30	…	0.05	…	…	0.05	…	…	0.001-0.04	…	…	…	…	…	…	…	…	0.03	0.10	Ren
	8130	1976	USA	0.15	0.40-1.0	0.05-0.15	…	…	…	…	0.10	…	…	…	…	…	…	…	…	…	…	1.0 Si+Fe	0.03	0.10	Ren
	8040	1962	USA	…	…	0.20	0.05	…	…	…	0.20	…	…	…	…	…	…	…	…	…	0.10-0.30	1.0 Si+Fe	0.05	0.15	Ren
	8050	1988	EAA	0.15-0.30	1.1-1.2	0.05	0.45-0.55	0.05	0.05	…	0.10	…	…	…	…	…	…	…	…	…	…	…	0.05	0.15	Ren
	8150	1998	AUSTRALIA	0.30	0.9-1.3	…	0.20-0.7	…	…	…	…	0.05	…	…	…	…	…	…	…	…	…	…	0.05	0.15	Ren
+	8076	1972	USA	0.10	0.6-0.9	0.04	…	0.08-0.22	…	…	0.05	…	…	0.04	…	…	…	…	…	…	…	…	0.03	0.10	Ren
	8076A	2005	GERMANY	0.10	0.40-0.8	0.04	0.02	0.06-0.25	0.02	…	0.05	0.02	…	…	…	…	…	…	…	…	…	…	0.03	0.10	Ren
	8176	1976	USA	0.03-0.15	0.40-1.0	…	…	…	…	…	0.10	…	…	…	…	0.03	…	…	…	…	…	…	0.05	0.15	Ren
	8077	1975	USA	0.10	0.10-0.40	0.05	…	0.10-0.30	…	…	0.05	…	…	0.05	…	…	…	…	…	…	0.02-0.08	…	0.03	0.10	Ren
+	8177	1981	USA	0.10	0.25-0.45	0.04	…	0.04-0.12	…	…	0.05	…	…	0.04	…	…	…	…	…	…	…	…	0.03	0.10	Ren
	8079	1969	USA	0.05-0.30	0.7-1.3	0.05	…	…	…	…	0.10	…	…	…	…	…	…	…	…	…	…	…	0.05	0.15	Ren
	8090	1984	EAA	0.20	0.30	1.0-1.6	0.10	0.6-1.3	0.10	…	0.25	0.10	…	…	…	…	2.2-2.7	…	…	…	0.04-0.16	…	0.05	0.15	Ren
	8091	1985	UK	0.30	0.50	1.6-2.2	0.10	0.50-1.2	0.10	…	0.25	0.10	…	…	…	…	2.4-2.8	…	…	…	0.08-0.16	…	0.05	0.15	Ren
	8093	1990	FRANCE	0.10	0.10	1.0-1.6	0.10	0.9-1.6	0.10	…	0.25	0.10	…	…	…	…	1.9-2.6	…	…	…	0.04-0.14	…	0.05	0.15	Ren

See footnotes on page 15.

FOOTNOTES

1. 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 percent 0.000X
   0.001 but less than 0.01 percent 0.00X
   0.01 but less than 0.10 percent
   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 percent 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 percent .....0.X, X.X, etc.
   (except that combined Si +Fe limits for 1xxx designations must be expressed as 0.XX or 1.XX).

2. 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 place of digits 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 is even. Increase by 1 the digit in the last place retained if there are non-zero digits beyond this 5.

3. The sum of those "Others" metallic elements 0.010 or more each, expressed to the second decimal before determining the sum.

4. The aluminum content for unalloyed aluminum not made by a refining process is the difference between 100.00 percent 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 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".

5. The aluminum content for unalloyed aluminum made by a refining process is the difference between 100.00 percent and the sum of all other metallic elements together with silicon present in amounts of 0.0010 percent or more each, expressed to the third decimal before determining the sum, which is rounded to the second decimal before subtracting. 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".

6. 0.0003 max Be for welding electrode, welding rod and filler wire.

7. A Zr+Ti limit of 0.20 percent maximum may be used with this alloy designation for extruded and forged products only, but only when the supplier or producer and the purchaser have mutually so agreed. Agreement may be indicated, for example, by reference to a standard, by letter, by order note, or other means which allow the Zr+Ti limit.

8. This designation is considered the original alloy. See Recommendation footnote 5.

9. 45-65% of Mg.

10. A Zr +Ti limit of 0.25 percent maximum may be used with this alloy designation for extruded and forged products only, but only when the supplier or producer and the purchaser have mutually so agreed. Agreement may be indicated, for example, by reference to a standard, by letter, by order note, or other means which allow the Zr +Ti limit.

11. Formerly designated EC.

12. Inactive alloys can be reactivated with their previously assigned designation and registered chemical composition limits. An inactive experimental alloy can only be reactivated with the removal of the experimental alloy status.

13. "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 "other" 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.

14. Alloy 5056A redesignated 5019.

15. Cladding is a main use.

16. 0.0005 max Be for welding electrode, welding rod and filler wire.

17. Various organizations include a prefix to these registered designations that do not change the registered composition and should be considered equivalent to those listed in this document. Examples of such equivalent designations are the AW-xxxx used in European EN standards and the A9xxxx designations used in the Unified Numbering System.

18. Designation listed for informational purposes only. Alloy 6064 is considered the original alloy for this alloy family.

19. This alloy designation was previously deactivated but has been reassigned to a new composition which is listed in the “Chemical Composition Limits” table. The designation remains in the “Previously Assigned but Presently Inactive Alloy Designation” list for historical purposes only.

20. Prior to 2009, the nominal density of alloys having a combination of elements may not have been calculated according to the current Aluminum and Aluminum Alloy Density Calculation Procedure appearing on Pages 2-12 and 2-13 of Aluminum Standards and Data. However, the nominal density of alloys published prior to 2009 shall not be revised.

21. Not a modification of original alloy 2016. The designation remains in the Previously Assigned but Presently Inactive Alloy Designation list for historical purposes.

\+ Designation added since previous issue.
++ Composition limits revised since previous issue.
* "X" removed from designation since previous issue.

CALCULATED NOMINAL DENSITIES FOR ACTIVE WROUGHT ALUMINUM AND WROUGHT ALUMINUM ALLOYS

Density is dependent upon composition and nominal density is determined by computation rather than by a weight method. The values shown below have been computed in accordance with the Aluminum and Aluminum Alloy Density Calculation Procedure appearing on pages 2-12 and 2-13 of Aluminum Standards and Data.[20] These calculated densities are nominal values and should not be specified as engineering requirements but may be used in calculating nominal values for weight per unit length, weight per unit area, covering area, etc.

Limiting the expression of nominal density to the number of decimal places indicated is based on the fact that composition variations are discernible from one cast to another for most alloys. The expression of nominal density to more decimal places than allowed by the following implies higher precision than is justified and should not be used.

1. Alloys listed below which have a minimum aluminum content of 99.35% or greater have nominal density values which are rounded in the US customary system (lbs/in^3) to the nearest multiple of 0.0005 and in the metric system [$(kg/m^3) \times 10^3$] to the nearest multiple of 0.005.

2. Alloys listed below which have a minimum aluminum content of less than 99.35% have nominal density values which are rounded in the US customary system (lbs/in^3) to the nearest multiple of 0.001 and in the metric system [$(kg/m^3) \times 10^3$] to the nearest multiple of 0.01.

The US customary (lbs/in^3) unit values are derived from metric values and subsequently rounded and are not to be back-converted to metric values.

Designation	Density	
	$lbs/in.^3$	$(kg/m^3) \times 10^3$
1050	0.0975	2.705
1050A	0.0975	2.705
1060	0.0975	2.705
1065	0.0975	2.700
1070	0.0975	2.700
1070A	0.0975	2.700
1080	0.0975	2.700
1080A	0.0975	2.700
1085	0.0975	2.700
1090	0.0975	2.700
1098	0.0975	2.700
1100	0.098	2.71
1100A	0.098	2.71
1200	0.098	2.70
1200A	0.098	2.71
1300	0.098	2.71
1110	0.098	2.70
1120	0.098	2.71
1230	0.098	2.70
1230A	0.098	2.70
1235	0.0975	2.705
1435	0.0980	2.710
1145	0.0975	2.700
1345	0.0975	2.705
1445	0.0975	2.700
1150	0.0975	2.705
1350	0.0975	2.705
1350A	0.0975	2.700
1450	0.0975	2.705
1370	0.0975	2.700
1275	0.0975	2.705

Designation	Density	
	$lbs/in.^3$	$(kg/m^3) \times 10^3$
1185	0.0975	2.700
1285	0.0975	2.700
1385	0.0975	2.700
1188	0.0975	2.700
1190	0.0975	2.700
1290	0.0975	2.700
1193	0.0975	2.700
1198	0.0975	2.700
1199	0.0975	2.700
2001	0.102	2.82
2002	0.099	2.73
2004	0.102	2.82
2005	0.102	2.83
2006	0.099	2.74
2007	0.102	2.82
2007A	0.102	2.81
2007B	0.102	2.81
2008	0.098	2.72
2009	0.099	2.75
2010	0.098	2.72
2011	0.102	2.83
2011A	0.102	2.82
2111	0.102	2.83
2111A	0.102	2.83
2111B	0.102	2.83
2012	0.102	2.82
2013	0.099	2.73
2014	0.101	2.80
2014A	0.101	2.80
2214	0.101	2.80

CALCULATED NOMINAL DENSITIES FOR ACTIVE WROUGHT ALUMINUM AND WROUGHT ALUMINUM ALLOYS (continued)

Designation	Density lbs/in.^{3}	Density (kg/m^3) x 10^3
2015	0.102	2.83
2016	0.101	2.79
2017	0.101	2.79
2017A	0.101	2.79
2117	0.099	2.75
2018	0.102	2.82
2218	0.101	2.81
2618	0.100	2.76
2618A	0.100	2.77
2219	0.103	2.84
2319	0.103	2.84
2419	0.102	2.84
2519	0.102	2.82
2021	0.103	2.84
2022	0.101	2.80
2023	0.100	2.77
2024	0.100	2.78
2024A	0.100	2.77
2124	0.100	2.78
2224	0.100	2.77
2224A	0.100	2.78
2324	0.100	2.77
2424	0.100	2.77
2524	0.100	2.78
+ 2624	0.100	2.77
+ 2724	0.100	2.78
+ 2824	0.100	2.77
2025	0.101	2.81
2026	0.100	2.77
2027	0.101	2.79
2028	0.102	2.83
2028A	0.101	2.80
2028B	0.102	2.81
2028C	0.102	2.82
+ 2029	0.100	2.77
2030	0.102	2.81
2031	0.100	2.77
2032	0.100	2.76
2034	0.101	2.79
2036	0.100	2.75
2037	0.099	2.74
2038	0.099	2.73
2039	0.101	2.81
2139	0.102	2.81
2040	0.102	2.81
2041	0.103	2.84
2044	0.102	2.81
2045	0.102	2.82
2050	0.098	2.70
+ 2055	0.097	2.70
2056	0.100	2.78
+ 2060	0.098	2.72
+ 2065	0.097	2.70
+ 2070	0.097	2.68
+ 2076	0.095	2.64
2090	0.093	2.59
2091	0.093	2.58
2094	0.098	2.72
2095	0.098	2.70
2195	0.098	2.71
+ 2295	0.097	2.70
2196	0.095	2.63
+ 2296	0.095	2.63
2097	0.096	2.65
2197	0.095	2.64
2297	0.096	2.65
2397	0.096	2.65
2098	0.097	2.70
2198	0.097	2.69
2099	0.095	2.63
2199	0.095	2.64
3002	0.098	2.70
3102	0.098	2.71
3003	0.099	2.73
3103	0.099	2.73
3103A	0.098	2.72
3103B	0.098	2.73
3203	0.098	2.73
3403	0.099	2.73
3004	0.098	2.72
3004A	0.098	2.71
3104	0.098	2.72
3204	0.098	2.71
3304	0.098	2.72
3005	0.098	2.73
3005A	0.099	2.73
3105	0.098	2.72
3105A	0.098	2.71
3105B	0.098	2.72
3007	0.098	2.72
3107	0.098	2.72
3207	0.098	2.71
3207A	0.098	2.72
3307	0.098	2.72
3009	0.099	2.73
3010	0.098	2.72
3110	0.098	2.72
3011	0.099	2.73
3012	0.098	2.72
3012A	0.098	2.72
3013	0.099	2.74
3014	0.099	2.75

CALCULATED NOMINAL DENSITIES FOR ACTIVE WROUGHT ALUMINUM AND WROUGHT ALUMINUM ALLOYS (continued)

Designation	Density lbs/in.^{3}	Density (kg/m^3) x 10^3
3015	0.098	2.72
3016	0.098	2.72
3017	0.099	2.73
3019	0.099	2.73
3020	0.099	2.73
+ 3021	0.098	2.72
3025	0.098	2.72
3026	0.098	2.72
3030	0.098	2.72
3130	0.098	2.71
+ 3065	0.098	2.73
4004	0.096	2.65
4104	0.096	2.65
4006	0.098	2.71
4007	0.099	2.74
4008	0.096	2.67
4009	0.097	2.70
4010	0.096	2.67
4013	0.098	2.71
4014	0.097	2.70
4015	0.098	2.71
4015A	0.098	2.71
4115	0.098	2.72
4016	0.099	2.73
4017	0.098	2.72
4018	0.096	2.67
4019	0.099	2.74
4020	0.098	2.71
+ 4021	0.097	2.69
4026	0.099	2.73
4032	0.097	2.68
4043	0.097	2.69
4043A	0.097	2.69
+ 4143	0.097	2.69
4343	0.097	2.68
4643	0.097	2.69
+ 4943	0.097	2.68
4044	0.097	2.67
4045	0.096	2.67
4145	0.099	2.74
4145A	0.099	2.74
4046	0.096	2.66
4047	0.096	2.66
4047A	0.096	2.66
4147	0.096	2.66
5005	0.098	2.70
5005A	0.097	2.69

Designation	Density lbs/in.^{3}	Density (kg/m^3) x 10^3
5205	0.097	2.70
5305	0.097	2.69
5505	0.097	2.69
5605	0.097	2.69
5006	0.098	2.71
5106	0.098	2.71
5010	0.098	2.71
5110	0.097	2.69
5110A	0.098	2.70
5210	0.097	2.69
5310	0.097	2.69
5016	0.097	2.70
5017	0.097	2.69
5018	0.096	2.67
5018A	0.097	2.67
5019	0.096	2.65
5019A	0.096	2.65
5119	0.096	2.65
5119A	0.096	2.65
5021	0.097	2.68
5022	0.096	2.66
5023	0.095	2.64
5024	0.096	2.65
5026	0.097	2.69
5027	0.096	2.65
+ 5028	0.097	2.67
5040	0.098	2.72
5140	0.098	2.71
5041	0.097	2.67
5042	0.096	2.67
5043	0.098	2.72
5049	0.097	2.70
5149	0.097	2.69
5249	0.097	2.70
5349	0.097	2.70
5449	0.097	2.70
+ 5449A	0.098	2.70
5050	0.097	2.69
5050A	0.097	2.69
+ 5050C	0.097	2.70
5150	0.097	2.68
5051	0.097	2.69
5051A	0.097	2.69
5151	0.097	2.68
5251	0.097	2.69
5251A	0.097	2.69
5351	0.097	2.68
5451	0.097	2.68
5052	0.097	2.68
5252	0.096	2.67
5352	0.097	2.67
5154	0.096	2.66
5154A	0.096	2.67

CALCULATED NOMINAL DENSITIES FOR ACTIVE WROUGHT ALUMINUM AND WROUGHT ALUMINUM ALLOYS (continued)

Designation	Density lbs/in.^{3}	Density (kg/m^3) x 10^3
5154B	0.096	2.67
5154C	0.096	2.66
5254	0.096	2.66
5354	0.097	2.69
5454	0.097	2.69
5554	0.097	2.69
5654	0.096	2.66
5654A	0.096	2.66
5754	0.097	2.67
+ 5854	0.097	2.67
5954	0.096	2.66
5056	0.095	2.64
5356	0.096	2.64
5356A	0.096	2.64
5456	0.096	2.66
5456A	0.096	2.66
5456B	0.096	2.66
5556	0.096	2.66
5556A	0.096	2.65
5556B	0.096	2.65
5556C	0.096	2.66
5257	0.097	2.70
5457	0.097	2.69
5557	0.097	2.70
5657	0.097	2.69
5058	0.097	2.67
5059	0.096	2.66
5070	0.097	2.68
5180	0.097	2.70
5180A	0.097	2.70
5082	0.096	2.65
5182	0.096	2.65
5083	0.096	2.66
5183	0.096	2.66
5183A	0.096	2.66
5283	0.096	2.65
5283A	0.096	2.65
5283B	0.096	2.66
5383	0.096	2.66
5483	0.096	2.66
5086	0.096	2.66
5186	0.096	2.66
5087	0.096	2.66
5187	0.096	2.66
5088	0.096	2.65
6101	0.097	2.70
6101A	0.097	2.69
6101B	0.097	2.70
6201	0.097	2.69
6201A	0.097	2.69
6401	0.097	2.69
6501	0.098	2.70
6002	0.097	2.70
6003	0.097	2.70
6103	0.098	2.70
6005	0.097	2.70
6005A	0.098	2.70
6005B	0.097	2.70
6005C	0.098	2.70
6105	0.097	2.70
6205	0.098	2.71
+ 6305	0.097	2.70
6006	0.098	2.70
6106	0.098	2.70
6206	0.098	2.71
6306	0.097	2.70
6008	0.098	2.70
6009	0.098	2.71
6010	0.098	2.71
6110	0.098	2.71
6110A	0.098	2.71
6011	0.099	2.73
6111	0.098	2.71
6012	0.099	2.74
6012A	0.099	2.74
6013	0.098	2.71
6113	0.098	2.71
6014	0.098	2.70
6015	0.097	2.69
6016	0.098	2.70
6016A	0.098	2.70
6116	0.097	2.70
6018	0.099	2.74
6019	0.098	2.71
6020	0.099	2.73
6021	0.098	2.72
6022	0.097	2.69
6023	0.099	2.73
6024	0.098	2.72
6025	0.097	2.70
6026	0.099	2.74
+ 6027	0.097	2.70
6028	0.099	2.74
+ 6031	0.098	2.70
+ 6032	0.097	2.70
6033	0.099	2.73
6040	0.099	2.73
6041	0.099	2.73
6042	0.098	2.72
6043	0.098	2.72
6151	0.098	2.71
6351	0.098	2.71
6351A	0.098	2.71
6451	0.098	2.70
6951	0.098	2.70

CALCULATED NOMINAL DENSITIES FOR ACTIVE WROUGHT ALUMINUM AND WROUGHT ALUMINUM ALLOYS (continued)

Designation	Density lbs/in.^{3}	Density (kg/m^3) x 10^3
6053	0.097	2.69
+ 6055	0.098	2.72
6056	0.098	2.72
6156	0.098	2.72
6060	0.097	2.70
6160	0.097	2.70
6260	0.098	2.70
6360	0.098	2.70
6460	0.097	2.70
+ 6460B	0.097	2.70
6560	0.098	2.70
+ 6660	0.098	2.70
6061	0.098	2.70
6061A	0.098	2.70
6261	0.098	2.70
+ 6361	0.097	2.70
6162	0.097	2.70
6262	0.098	2.72
6262A	0.098	2.72
6063	0.097	2.70
6063A	0.097	2.70
6463	0.097	2.69
6463A	0.097	2.69
6763	0.097	2.69
6963	0.097	2.70
6064	0.098	2.72
6064A	0.098	2.72
6065	0.098	2.72
6066	0.098	2.72
+ 6068	0.099	2.73
6069	0.098	2.70
6070	0.098	2.71
6081	0.097	2.70
6181	0.097	2.69
6181A	0.098	2.70
6082	0.098	2.70
6082A	0.098	2.70
6182	0.098	2.71
6091	0.097	2.70
6092	0.098	2.70
7003	0.101	2.80
7004	0.100	2.77
7204	0.100	2.78
7005	0.100	2.77
7108	0.100	2.78
7108A	0.101	2.78
7009	0.101	2.80
7010	0.102	2.82
7012	0.101	2.81
7014	0.101	2.79
7015	0.100	2.77
7016	0.100	2.78
7116	0.101	2.78
7017	0.100	2.76
7018	0.101	2.79
7019	0.100	2.76
7019A	0.100	2.75
7020	0.100	2.78
7021	0.101	2.78
7022	0.100	2.77
7122	0.100	2.76
7023	0.100	2.78
7024	0.100	2.77
7025	0.100	2.77
7026	0.100	2.78
7028	0.100	2.77
7029	0.100	2.77
7129	0.100	2.78
7229	0.100	2.77
7030	0.101	2.79
7031	0.099	2.74
7032	0.102	2.82
7033	0.101	2.79
7034	0.105	2.90
7035	0.099	2.75
7035A	0.099	2.75
7036	0.104	2.88
7136	0.104	2.88
7037	0.103	2.85
7039	0.099	2.74
7040	0.102	2.82
7140	0.102	2.83
7041	0.101	2.80
+ 7042	0.102	2.84
7046	0.102	2.82
7046A	0.102	2.81
+ 7047	0.102	2.82
7049	0.103	2.84
7049A	0.103	2.84
7149	0.103	2.84
7249	0.103	2.84
7349	0.103	2.85
7449	0.103	2.85
7050	0.102	2.83
7050A	0.102	2.82
7150	0.102	2.83
7055	0.103	2.86
7155	0.104	2.87
+ 7255	0.103	2.86
7056	0.104	2.87

CALCULATED NOMINAL DENSITIES FOR ACTIVE WROUGHT ALUMINUM AND WROUGHT ALUMINUM ALLOYS (continued)

Designation	Density lbs/in.^{3}	Density (kg/m^3) x 10^3
7060	0.103	2.85
7064	0.103	2.85
+ 7065	0.103	2.86
7068	0.103	2.85
7168	0.103	2.86
7072	0.098	2.72
7075	0.101	2.81
7175	0.101	2.80
7475	0.101	2.81
7076	0.102	2.84
7178	0.102	2.83
7278	0.102	2.83
7278A	0.102	2.82
7081	0.102	2.83
+ 7181	0.102	2.84
7085	0.103	2.85
+ 7185	0.103	2.85
7090	0.103	2.85
7093	0.103	2.86
7095	0.104	2.89
+ 7099	0.103	2.85
+ 7199	0.103	2.85
8005	0.098	2.71
8006	0.099	2.74
8007	0.100	2.76
8008	0.099	2.74
8010	0.098	2.72
8011	0.098	2.71
8011A	0.098	2.71
8111	0.098	2.71
8211	0.098	2.72
8112	0.098	2.72
8014	0.099	2.73
8015	0.098	2.72
8016	0.098	2.72
8017	0.098	2.71
8018	0.098	2.72
8019	0.106	2.92
8021	0.098	2.73
8021A	0.098	2.72
8021B	0.098	2.72
8022	0.102	2.83
8023	0.099	2.74
8024	0.088	2.43
8025	0.098	2.71
8026	0.099	2.73
8030	0.098	2.71
8130	0.098	2.71
8040	0.098	2.71
8050	0.099	2.73
8150	0.098	2.73
+ 8076	0.098	2.71
8076A	0.098	2.71
8176	0.098	2.71
8077	0.098	2.70
+ 8177	0.098	2.70
8079	0.098	2.72
8090	0.092	2.54
8091	0.092	2.54
8093	0.092	2.55

PREVIOUSLY ASSIGNED BUT PRESENTLY INACTIVE ALLOY DESIGNATIONS[12]

DESIGNATION	DATE RECLASSIFIED
1030	1988-05-23
1035	2005-04-13
1040	2005-04-13
1045	2005-04-13
1130	1966-09-09
1330	1964-12-18
1135	1997-02-03
1335	1966-09-09
1245	1966-09-09
1250	1988-05-23
1055	1988-05-23
1160 (Superseded by 1060)	1958-04-22
1260	2005-04-13
1360	1965-12-09
1165	1966-07-12
1170	1997-02-03
1270	1966-07-12
1075	1988-05-23
1175	1997-02-03
1180	1997-02-03
1187 (Superseded by 1188)	1958-09-10
1095	1988-05-23
1197 (Superseded by 1199)	1958-09-10
1099	1965-12-09
2003	1997-11-28
X2316[21]	1965-03-31
X2119	1966-03-07
2020	1974-11-01
2225	1966-07-12
2048	2005-04-13
2053	1983-11-09
2080	2005-06-02
X2096	2000-12-08
3303	1997-02-03
3205	1965-11-05
3006	2005-04-13
3008	1996-03-15
3018	1998-01-16
4001	1965-11-05
4101	1965-11-05
4002	1981-05-29
X4003	1975-01-27
X4005	1977-06-01
4011	2005-06-02
4012	1965-11-05

DESIGNATION	DATE RECLASSIFIED
4543	1997-02-03
4245 (Redesignated 4048)	1968-08-19
4048	2005-04-13
X5002	1963-06-03
5004	1967-04-26
5105	1960-04-28
5405	1966-07-12
5007	1968-05-13
5008	1968-05-13
5009	1968-05-13
5011	1967-04-26
X5012	1970-06-30
5013	1996-10-02
5014	1997-11-28
X5015	1968-08-19
X5020	1977-08-04
X5220	1962-01-11
5025	2005-06-02
5034	1973-08-09
5039	1975-11-24
5250	2005-04-13
5050B	1996-03-15
5152	1963-06-03
X5452	1971-06-17
5552	1997-02-03
5652	2005-04-13
5053	1968-08-19
X5153	1967-04-26
5854[19]	1996-10-02
X5055	1956-10-19
5155	1971-07-14
5056A[14]	1992-02-21
5357	2005-04-13
5757	1963-05-14
5857	1963-06-10
5957	1963-06-03
X5080	1963-10-22
5280	1996-10-02
X5084	1965-04-27
X5184	1965-04-27
X5085	1977-08-04
X5090	1977-07-18
5091	2000-04-26
6001	1955-07-08
6301	2005-04-13
6004	2005-04-13
6007	2005-04-13

See footnotes on page 15.

PREVIOUSLY ASSIGNED BUT PRESENTLY INACTIVE ALLOY DESIGNATIONS[12] (continued)

DESIGNATION	DATE RECLASSIFIED
6017	1997-02-03
X6030	2001-01-25
6051	1963-12-12
X6251	1965-03-31
6253	2002-05-22
6460A	2011-01-03
X6161	1963-06-03
6062	1964-09-04
X6163	1964-12-18
6263	1955-07-12
6363	1964-12-18
6563	1967-04-26
6663	1967-04-26
6863	1996-10-02
X6064[18]	1965-03-31
X6067	1974-11-01
6071	1966-07-12
6090	1992-06-01
7001	1997-02-03
7002	1966-07-12
7104	1988-05-23
X7006	1963-09-10
X7106	1980-04-16
X7007	1972-02-16
7008	2005-04-13
7109	1996-03-15
7011	1999-06-17
7013	1997-02-03
7027	1996-06-26
X7038	1967-04-26
7139	1966-09-09
7146	1997-02-03
7250	2014-10-16
7051	1996-10-02
7070	1988-05-23
X7272	1965-03-31
7472	1997-02-03
X7275	1963-06-03
7277[8]	2000-11-06
7079	1989-03-22
7179	1989-06-06
X7279	1963-06-03
X7080	1971-01-04
7091	1997-02-03
8001	1997-02-03
X8002	1964-12-18
X8003	1964-12-18
8004	1996-10-02
8009	2000-06-19
8212	1967-04-26
8013	1971-11-01
8020	2005-04-13
8276	1996-10-02
8280[8]	2005-04-13
X8380	1964-12-18
X8480	1964-12-18
8081	1997-02-03
X8090A	1989-01-13
X8092	1991-10-24
X8192	1991-10-24

See footnotes on page 15.

REGISTERED CHEMICAL COMPOSITION LIMITS OF INACTIVE ORIGINAL ALLOYS[1,2]

	Registered International Designation																				OTHERS[13]		
	No.[17]	By	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ag	B	Bi	Ga	Li	Pb	Sn	V	Zr		Each	Total[3]	Min
	1030	USA	0.35	0.6	0.10	0.05	0.05	...	...	0.10	0.03	...	...	...	...	...	...	...	0.05	...	...	0.03	...	99.
	1035	USA	0.35	0.6	0.10	0.05	0.05	...	...	0.10	0.03	...	...	...	...	...	...	...	0.05	...	...	0.03	...	99.
	1040	USA	0.30	0.50	0.10	0.05	0.05	...	...	0.10	0.03	...	...	...	...	...	...	...	0.05	...	...	0.03	...	99.
	1045	USA	0.30	0.45	0.10	0.05	0.05	...	...	0.05	0.03	...	...	...	...	...	...	...	0.05	...	...	0.03	...	99.
+	1055	USA	0.25	0.40	0.05	0.05	0.05	...	...	0.05	0.03	...	...	...	...	...	...	...	0.05	...	...	0.03	...	99.
	1075	USA	0.20	0.20	0.04	0.03	0.03	...	...	0.04	0.03	...	...	...	...	...	...	...	0.05	...	...	0.03	...	99.
+	1095	USA	0.030	0.040	0.010	0.010	0.010	...	...	0.010	0.005	...	...	...	...	...	...	...	...	...	...	0.005	...	99.
	1099	USA	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	99.
	2003	EAA	0.30	0.30	4.0-5.0	0.30-0.8	0.02	...	...	0.10	0.15	...	...	...	...	...	...	...	0.05-0.20	0.10-0.25	0.05-0.20 Cd	0.05	0.15	Re
+	2020	USA	0.40	0.40	4.0-5.0	0.30-0.8	0.03	...	...	0.25	0.10	...	...	...	...	0.9-1.7	...	...	...	...	0.10-0.35 Cd	0.05	0.15	Re
	2048	USA	0.15	0.20	2.8-3.8	0.20-0.6	1.2-1.8	...	...	0.25	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Re
+	2053	SWITZERLAND	0.30	0.50	1.2-1.8	0.20	0.20-0.50	...	...	0.10	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Re
	2080	USA	0.10	0.20	3.3-4.1	0.25	1.5-2.2	...	...	0.10	...	...	...	...	...	...	...	...	...	0.08-0.25	0.005 Be, 0.05-0.50 O	0.05	0.15	Re
	X2096	USA	0.12	0.15	2.3-3.0	0.25	0.25-0.8	...	...	0.25	0.10	0.25-0.6	...	...	...	1.3-1.9	...	...	...	0.04-0.18	...	0.05	0.15	Re
	3006	USA	0.50	0.7	0.10-0.30	0.50-0.8	0.30-0.6	0.20	...	0.15-0.40	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Re
+	3008	GERMANY	0.40	0.7	0.10	1.2-1.8	0.01	0.05	0.05	0.05	0.10	...	...	...	...	...	...	...	...	0.10-0.50	...	0.05	0.15	Re
+	3018	FRANCE	0.30	0.15-0.25	0.10-0.30	1.1-1.4	0.8-1.4	0.10	...	0.25	0.10	...	...	...	...	...	0.01	...	...	...	...	0.05	0.15	Re
+	4001	USA	1.5-2.5	0.8	0.20	0.10	0.05	...	...	0.10	0.15	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Re
+	4002	USA	3.5-4.5	0.35	0.05-0.15	0.03	0.05-0.15	...	...	0.15	0.02	...	...	...	...	...	...	...	...	...	0.8-1.4 Cd	0.05	0.15	Re
+	X4003	USA	6.8-8.2	0.8	0.25	0.10	2.0-3.0	...	...	0.20	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Re
+	X4005	USA	9.5-11.0	0.8	0.25	0.10	0.20-1.0	...	...	0.20	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Re
	4011	USA	6.5-7.5	0.20	0.20	0.10	0.45-0.7	...	...	0.10	0.04-0.20	...	...	...	...	...	...	...	...	...	0.04-0.07 Be	0.05	0.15	Re
+	4012	USA	11.0-13.0	0.8	1.0-2.0	0.5-0.9	0.45-1.0	...	...	1.0	...	...	...	...	...	...	...	...	...	...	...	...	...	Re
	4048	USA	9.3-10.7	0.8	3.3-4.7	0.07	0.07	0.07	...	9.3-10.7	...	...	...	...	...	...	...	...	...	...	[6]	0.05	0.15	Re
+	X5002	USA	0.10	0.15	0.10-0.20	...	0.9-1.5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Re
+	5004	USA	0.40	0.7	0.40	0.30	0.7-1.4	0.10	...	1.0	0.15	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Re
+	5007	USA	0.006	0.006	0.006	0.001	0.40-0.6	0.001	0.001	0.003	0.002	...	...	...	...	...	...	...	...	...	...	0.002	...	99.
+	5008	USA	0.006	0.006	0.006	0.001	0.9-1.1	0.001	0.001	0.003	0.002	...	...	...	...	...	...	...	...	...	...	0.002	...	98.
+	5009	USA	0.006	0.006	0.006	0.001	1.8-2.2	0.001	0.001	0.003	0.002	...	...	...	...	...	...	...	...	...	...	0.002	...	97.
+	5011	USA	0.6	0.7	0.20	0.40-0.8	0.6-1.0	0.10	...	0.10	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Re
+	X5012	USA	0.08	0.10	0.10	0.05	1.6-2.1	...	...	0.03	0.03	...	...	...	...	...	...	...	...	...	...	0.03	0.10	Re
+	5013	FRANCE	0.20	0.25	0.03	0.30-0.50	3.2-3.8	0.03	0.03	0.10	0.10	...	...	...	...	...	0.003	...	...	0.05	...	0.05	0.15	Re
	5014	EAA	0.40	0.40	0.20	0.20-0.9	4.0-5.5	0.20	...	0.7-1.5	0.20	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Re
+	X5015	USA	...	...	0.03-0.10	0.03-0.15	0.50-1.0	...	...	...	0.02	...	...	...	...	...	...	...	...	...	0.03 Si+Fe	0.01	0.02	Re
+	X5020	USA	0.30	0.7	1.3-1.9	0.10-0.50	2.4-3.2	0.20	...	0.20	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Re
	5025	USA	0.25	0.25	0.10	0.20	4.5-6.0	0.20	...	0.25	0.05-0.20	...	...	...	...	...	...	...	...	0.10-0.25	0.0008 Be, 0.05-0.55 Sc	0.05	0.15	Re
+	5034	USA	0.40	0.40-0.9	0.40	0.20-0.50	0.6-1.1	0.10	...	0.40	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Re
+	5039	USA	0.10	0.40	0.03	0.30-0.50	3.3-4.3	0.10-0.20	...	2.4-3.2	0.10	...	...	...	...	...	...	...	...	...	[6]	0.05	0.10	Re
+	5053	USA	...	...	0.03-0.10	0.03-0.10	3.1-3.9	...	...	...	0.02	...	...	...	...	...	...	...	...	...	0.03 Si+Fe	0.01	0.02	Re

See footnotes on page 15.

REGISTERED CHEMICAL COMPOSITION LIMITS OF INACTIVE ORIGINAL ALLOYS[1,2]

	Registered International Designation																				OTHERS[13]		
	No.[17]	By	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ag	B	Bi	Ga	Li	Pb	Sn	V	Zr		Each	Total[3]	Min
+	X5055	USA	0.30	0.7	0.25	0.30-0.8	4.0-5.0	0.25	...	0.25	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Re
	X5080	USA	...	...	0.10	0.20-0.7	3.5-4.5	0.05-0.20	...	1.7-2.8	0.20	...	...	...	...	...	...	...	...	...	0.35 Si + Fe	0.05	0.15	Re
+	X5084	USA	0.40	0.40	...	0.9	5.0 (Nom.)	0.10 (Nom.)	...	2.0 (Nom.)	...	...	...	...	...	...	...	...	...	...	...	...	...	Re
+	X5085	USA	0.30	0.40	0.15	0.20	5.8-6.8	0.20	...	0.20	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Re
+	X5090	USA	0.50	0.50	0.25	0.35	6.0-8.0	0.05-0.30	...	0.20	0.02	...	0.001-0.05	...	...	...	...	...	...	...	0.001-0.02 Be	0.05	0.15	Re
	5091	USA	0.20	0.30	...	...	3.7-4.2	...	...	...	...	...	...	...	...	1.2-1.4	...	...	...	...	1.0-1.3 C, 0.20-0.7 O	0.05	0.15	Re
	6001	USA	0.35-0.7	0.6	0.10	0.03	0.35-0.7	0.03	...	0.10	...	...	...	...	...	...	...	...	...	...	...	0.03	0.10	Re
	6004	USA	0.30-0.6	0.10-0.30	0.10	0.20-0.6	0.40-0.7	...	...	0.05	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Re
	6007	USA	0.9-1.4	0.7	0.20	0.05-0.25	0.6-0.9	0.05-0.25	...	0.25	0.15	...	...	...	...	...	...	...	...	0.05-0.20	...	0.05	0.15	Re
	6017	USA	0.55-0.7	0.15-0.30	0.05-0.20	0.10	0.45-0.6	0.10	...	0.05	0.05	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Re
	X6030	USA	0.40-0.8	0.7	0.15-0.40	0.15	0.8-1.2	0.04-0.35	...	0.25	0.15	...	...	...	...	...	...	0.05-0.50	...	...	0.05-0.50 In	0.05	0.15	Re
	6051	USA	0.6-1.2	1.0	0.15	0.20	0.45-0.8	...	...	0.25	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Re
	6062	USA	0.40-0.8	0.7	0.15-0.40	0.15	0.8-1.2	0.04-0.14	...	0.25	0.15	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Re
+	X6067	USA	0.9-1.8	0.7	0.9-2.0	0.40-1.2	0.7-1.5	0.20	...	0.25	0.20	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Re
+	6071	USA	1.1-1.9	0.50	0.15-0.40	0.40-1.0	0.8-1.4	0.10	...	0.25	0.15	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Re
+	6090	USA	0.40-0.8	0.7	0.30-0.9	0.15	0.8-1.2	0.15	...	0.25	0.15	...	...	...	...	...	...	...	...	...	0.05-0.7 O	0.05	0.15	Re
	7001	USA	0.35	0.40	1.6-2.6	0.20	2.6-3.4	0.18-0.35	...	6.8-8.0	0.20	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Re
+	7002	USA	0.20	0.40	0.50-1.0	0.05-0.30	2.0-3.0	0.10-0.30	...	3.0-4.0	0.15	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Re
+	X7006	USA	...	...	0.10	0.50	1.7-2.8	0.30	...	3.7-4.8	0.15	...	...	...	...	...	...	...	...	...	0.35 Si+Fe	0.05	0.15	Re
+	X7007	USA	...	...	0.25	0.40	1.4-2.2	0.05-0.25	...	6.0-7.0	0.01-0.06	...	...	...	...	...	...	...	...	0.05-0.25	0.40 Si+Fe	0.05	0.15	Re
	7008	USA	0.10	0.10	0.05	0.05	0.7-1.4	0.12-0.25	...	4.5-5.5	0.05	...	...	...	...	...	...	...	...	...	...	0.05	0.10	Re
	7011	USA	0.15	0.20	0.05	0.10-0.30	1.0-1.6	0.05-0.20	...	4.0-5.5	0.05	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Re
	7013	USA	0.6	0.7	0.10	1.0-1.5	...	...	...	1.5-2.0	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Re
+	7027	SWITZERLAND	0.25	0.40	0.10-0.30	0.10-0.40	0.7-1.1	...	...	3.5-4.5	0.10	...	...	...	...	...	...	...	...	0.05-0.30	...	0.05	0.15	Re
+	X7038	USA	0.20	0.35	0.10	0.10-0.35	3.0-4.0	0.05-0.25	...	4.0-5.0	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Re
+	7051	FRANCE	0.35	0.45	0.15	0.10-0.45	1.7-2.5	0.05-0.25	...	3.0-4.0	0.15	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Re
+	7070	USA	0.15	0.25	0.05	...	...	...	...	1.3-1.8	...	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Re
	7277	USA	0.50	0.7	0.8-1.7	...	1.7-2.3	0.18-0.35	...	3.7-4.3	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Re
+	7079	USA	030	0.40	0.40-0.8	0.10-0.30	2.9-3.7	0.10-0.25	...	3.8-4.8	0.10	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Re
+	X7080	USA	0.30	0.40	0.50-1.5	0.10-0.7	1.5-3.0	0.12	...	5.0-7.0	0.20	...	...	...	...	...	...	...	...	...	...	0.05	0.15	Re
	7091	USA	0.12	0.15	1.1-1.8	...	2.0-3.0	...	...	5.8-7.1	...	...	...	...	...	...	...	...	...	...	0.20-0.6 Co, 0.20-0.50 O	0.05	0.15	Re
	8001	USA	0.17	0.45-0.7	0.15	...	...	...	0.9-1.3	0.05	...	...	0.001	...	...	0.008	...	...	...	...	0.003 Cd, 0.001 Co	0.05	0.15	Re
+	X8002	USA	0.25	1.2-1.6	0.05	...	...	...	1.2-1.6	...	...	...	0.001	...	...	0.008	...	...	...	...	0.003 Cd, 0.001 Co	0.05	0.15	Re
+	X8003	USA	0.02	1.2-1.6	...	...	...	...	1.2-1.6	...	...	...	0.001	...	...	0.008	...	...	...	...	0.003 Cd, 0.001 Co	...	0.03	Re
+	8004	FRANCE	0.15	0.15	0.03	0.02	0.02	...	...	0.03	0.30-0.7	...	...	...	...	...	...	...	...	...	...	0.02	0.15	Re
	8009	USA	1.7-1.9	8.4-8.9	...	0.10	...	0.10	...	0.25	0.10	...	...	...	...	...	...	...	1.1-1.5	...	0.30 O	0.05	0.15	Re

See footnotes on page 15.

REGISTERED CHEMICAL COMPOSITION LIMITS OF INACTIVE ORIGINAL ALLOYS[1,2]

	Registered International Designation																				OTHERS[13]		
	No.[17]	By	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ag	B	Bi	Ga	Li	Pb	Sn	V	Zr		Each	Total[3]	Min
+	8013	USA	...	...	...	...	...	0.20-0.50	...	...	0.10	...	...	...	...	...	...	...	...	...	0.25 Si+Fe	0.03	0.10	Re
	8020	USA	0.10	0.10	0.005	0.005	...	...	...	0.005	...	...	...	0.10-0.50	...	...	...	0.10-0.25	0.05	...	...	0.03	0.10	Re
	8280	USA	1.0-2.0	0.7	0.7-1.3	0.10	...	...	0.20-0.7	0.05	0.10	...	...	...	...	...	...	5.5-7.0	...	...	...	0.05	0.15	Re
	8081	USA	0.7	0.7	0.7-1.3	0.10	...	...	...	0.05	0.10	...	...	...	...	...	...	18.0-22.0	...	...	...	0.05	0.15	Re
+	X8092	USA	0.10	0.15	0.50-0.8	0.05	0.9-1.4	0.05	...	0.10	0.15	...	...	...	...	2.1-2.7	...	...	...	0.08-0.15	...	0.05	0.15	Re

See footnotes on page 15.

CROSS REFERENCE OF INTERNATIONAL DESIGNATIONS

DECLARATION OF ACCORD (DOA) TO ISO*

DOA DESIGNATION	FORMER ISO DESIGNATION	DOA DESIGNATION	FORMER ISO DESIGNATION	DOA DESIGNATION	FORMER ISO DESIGNATION
1050A	Al99.5	3105	AlMn0.5Mg0.5	6101	E-AlMgSi
1350	E-Al99.5	4043	AlSi5	6101A	E-AlMgSi(A)
1060	Al99.6	4043A	AlSi5(A)	6005	AlSiMg
1070A	Al99.7	4047	AlSi12	6005A	AlSiMg(A)
1370	E-Al99.7	4047A	AlSi12(A)	6351	AlSi1Mg0.5Mn
1080A	Al99.8(A)	5005	AlMg1(B)	6060	AlMgSi
1100	Al99.0Cu	5019	AlMg5	6061	AlMg1SiCu
1200	Al99.0	5050	AlMg1.5(C)	6262	AlMg1SiPb
2011	AlCu6BiPb	5251	AlMg2	6063	AlMg0.7Si
2014	AlCu4SiMg	5052	AlMg2.5	6063A	AlMg0.7Si(A)
2014A	AlCu4SiMg(A)	5154	AlMg3.5	6181	AlSi1Mg0.8
2017	AlCu4MgSi	5154A	AlMg3.5(A)	6082	AlSi1MgMn
2017A	AlCu4MgSi(A)	5454	AlMg3Mn	7005	AlZn4.5Mg1.5Mn
2117	AlCu2.5Mg	5554	AlMg3Mn(A)	7010	AlZn6MgCu
2219	AlCu6Mn	5754	AlMg3	7020	AlZn4.5Mg1
2024	AlCu4Mg1	5056	AlMg5Cr	7049A	AlZn8MgCu
2030	AlCu4PbMg	5356	AlMg5Cr(A)	7050	AlZn6CuMgZr
3003	AlMn1Cu	5456	AlMg5Mn1	7075	AlZn5.5MgCu
3103	AlMn1	5083	AlMg4.5Mn0.7	7475	AlZn5.5MgCu(A)
3004	AlMn1Mg1	5183	AlMg4.5Mn0.7(A)	7178	AlZn7MgCu
3005	AlMn1Mg0.5	5086	AlMg4		

*Source: ISO 209-1.

NOTE: This table is included for informational purposes only. ISO 209-1 has been withdrawn and replaced by ISO 209 which references the Teal Sheets as the normative reference and the source for international alloy designations.

The Aluminum Association
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Arlington, VA 22209
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RECOMMENDATION

INTERNATIONAL DESIGNATION SYSTEM
FOR WROUGHT ALUMINUM AND WROUGHT ALUMINUM ALLOYS

15 December 1970
Revised June 2014

This Recommendation is based on the numerical designation system for wrought aluminum and wrought aluminum alloys which was adopted in the U.S.A. in 1954, and became its national standard in 1957. This Recommendation was officially adopted by the International Signatories of the Declaration of Accord on December 15, 1970.

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

A numerical 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 Signatories to the Declaration of Accord on an International Alloy Designation System for Wrought Aluminum and Wrought Aluminum Alloys.

1. Scope

This recommendation describes a four-digit numerical system for designating wrought aluminum and wrought aluminum alloys.

2. Alloy Groups [1, 2, 3, 6]

The first of the four digits in the designation indicates the alloy group as follows:

Aluminum, 99.00 percent and greater	1xxx
Aluminum alloys grouped by major alloying elements	
Copper	2xxx
Manganese.	3xxx
Silicon	4xxx
Magnesium	5xxx
Magnesium and Silicon	6xxx
Zinc	7xxx
Other elements	8xxx
Unused series	9xxx

3. 1xxx Group

The designation assigned shall be in the 1xxx group whenever the minimum aluminum content is specified as 99.00 percent and greater. In the 1xxx group, the last two of the four digits in the designation indicate the minimum aluminum percentage[4]. These digits are the same as the two digits to the right of the decimal point in minimum aluminum percentage when it is expressed to the nearest 0.01 percent. The second digit in the alloy designation indicates alloy modifications in impurity limits or alloying elements. If the second digit in the designation is zero, it indicates unalloyed aluminum having natural impurity limits; integers 1 through 9, which are assigned consecutively as needed, indicate special control of one or more individual impurities or alloying elements.

4. 2xxx-8xxx Groups

The alloy designation in the 2xxx through 8xxx groups is determined by the alloying element (Mg_2Si for 6xxx alloys) present in the greatest mean percentage. If the greatest mean percentage is common to more than one alloying element, choice of group shall be in order of group sequence Cu, Mn, Si, Mg, Mg_2Si, Zn or Others. In the 2xxx through 8xxx alloy groups the last 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 second digit in the alloy designation indicates the original alloy[5] and alloy modifications; integers 1 through 9, which are assigned consecutively, indicate alloy modifications.

5. Modifications

A modification of the original alloy [5] 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:

Arithmetic Mean of Limits for Alloying Elements in Original Alloy	Maximum Change
Up through 1.0 percent	0.15
Over 1.0 through 2.0 percent	0.20
Over 2.0 through 3.0 percent	0.25
Over 3.0 through 4.0 percent	0.30
Over 4.0 through 5.0 percent	0.35
Over 5.0 through 6.0 percent	0.40
Over 6.0 percent	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 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 percent, 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 percent.

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

(d) Change in limits for impurities expressed singly or as a combination.

(e) Change in limits for grain refining elements.

(f) Maximum iron or silicon limits of 0.12 percent and 0.10 percent, or less, respectively, reflecting high purity base metal.

An alloy shall not be registered as a modification if it meets the requirements for a variation.

6. Variations

Variations of wrought aluminum and wrought aluminum alloys registered in accordance with this Recommendation are identified by a serial letter after the numerical designation. The serial letters are assigned in alphabetical sequence starting with A for the first variation registered, but omitting I, O, and Q.

A variation has composition limits which are similar but not identical to a modification or an original alloy, with differences such as:

(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:

Arithmetic Mean of Limits for Alloying Elements in Original Alloy or Modification	Maximum Change
Up through 1.0 percent	0.15
Over 1.0 through 2.0 percent	0.20
Over 2.0 through 3.0 percent	0.25
Over 3.0 through 4.0 percent	0.30
Over 4.0 through 5.0 percent	0.35
Over 5.0 through 6.0 percent	0.40
Over 6.0 percent	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 combination is compared to the sum of the mean values of the same individual elements, or any combination thereof, in another alloy composition.

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

(c) Change in limits of impurities expressed singly or as a combination except for low iron. Iron maximum of 0.12 percent or less, reflecting high purity base metal, should be considered an alloy modification. See 5(f).

(d) Change in limits on grain refining elements.

(e) Inclusion of a minimum limit for iron or silicon or both, without a change in the maximum limit.

An alloy shall not be registered as a new alloy or alloy modification if it meets the requirements for a variation.

See footnotes on page 29