



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

The Aluminum Association

Incorporated

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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 24 through 26. Additions may be made in accordance with the rules outlined in the Declaration of Accord printed on page 27, and alloys will be deleted when no longer in commercial use (see table of inactive alloys).

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. The "X" is dropped when the alloy is no longer experimental.
3. 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.

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 27 of this publication.

<p>The Aluminum Association Inc. 900 19th Street, N.W. Washington, D.C. 20006 <u>USA</u> www.aluminum.org</p>	<p>USA</p>	<p>Assomet Associazione Nazionale Industrie Metalli Non Ferrosi Centro Direzionale Ambrosizno—Pal. A/1 Via Dei Missaglia, 97 20142 Milano <u>ITALY</u> www.assomet.it</p>	<p>ITALY</p>
<p>All-Russian Institute of Aviation Materials (VIAM) 17 Radio Ulitza 105005 Moscow <u>RUSSIA</u> www.viam.ru</p>	<p>RUSSIA</p>	<p>Austrian Non-Ferrous Metals Federation Wiedner Hauptstrasse 63 Postfach 338 A-1045 Wien IV <u>AUSTRIA</u></p>	<p>AUSTRIA</p>
<p>Aluminium Association of Canada 1010 Sherbrooke Street West, Suite 1600 Montreal, Quebec H3A2R7 <u>CANADA</u> www.aac.aluminium.qc.ca</p>	<p>CANADA</p>	<p>Australian Aluminium Council Limited Level 1, Dickson Square P. O. Box 63 Dickson, ACT 2602 <u>AUSTRALIA</u> www.aluminium.org.au</p>	<p>AUSTRALIA</p>
<p>Aluminium Federation Limited Broadway House, Calthorpe Road, Five Ways Birmingham B15 1TN <u>UNITED KINGDOM</u> www.alfed.org.uk</p>	<p>UK</p>	<p>Aluminium Center Belgium Z.I. Research Park 310 1731 Zellik <u>BELGIUM</u> www.aluminiumcenter.be</p>	<p>BELGIUM</p>
<p>Aluminium Federation of South Africa P. O. Box 423 Isando, 1600 <u>REPUBLIC OF SOUTH AFRICA</u> www.afsa.org.za</p>	<p>SOUTH AFRICA</p>	<p>Centro Nacional de Investigaciones Metalurgicas (CENIM) Avda. Gregorio del Amo, 8 Ciudad Universitaria 28040 Madrid <u>SPAIN</u> www.cenim.csic.es</p>	<p>SPAIN</p>
<p>Aluminium – Verband Schweiz Hallenstrasse 15 Postfach CH-8024 Zurich <u>SWITZERLAND</u> www.alu.ch</p>	<p>SWITZERLAND</p>	<p>China Nonferrous Metals Techno-Economic Research Institute No. 9 Xizhang Hutong, Xizhimennei Street Beijing, 100035 <u>PEOPLES REPUBLIC OF CHINA</u></p>	<p>CHINA</p>
<p>Gesamtverband Der Aluminium- industrie e.V. (GDA) Am Bonneshof 5 D-40474 Dusseldorf <u>GERMANY</u> www.aluinfo.de</p>	<p>GERMANY</p>	<p>European Aluminium Association Avenue de Broqueville, 12 B-1150 Brussels <u>BELGIUM</u> www.aluminium.org</p>	<p>EAA</p>
<p>Associacao Brasileira Do Aluminio—ABAL Rua Humberto 1, No. 220-4 Andar Vila Mariana 04018-030 Sao Paulo-SP <u>BRAZIL</u> www.abal.org.br</p>	<p>BRAZIL</p>	<p>FEDEM Federation Des Minerais, Mineraux Industriels Et Metaux Non Ferreux 17, rue Hamelin 75016 Paris <u>FRANCE</u> www.fedem.fr</p>	<p>FRANCE</p>
<p>The European Association of Aerospace Industries—Standardization Gulledelle 96 B-1200 Bruxelles <u>BELGIUM</u> www.aecma.org</p>	<p>A.E.C.M.A.</p>		

Signatories (Continued)

<p>IRAM—Instituto Argentino De Normalizacion Peru 556 C1068AAB Buenos Aires <u>ARGENTINA</u> www.iram.org.ar</p>	<p>ARGENTINA</p>	<p>S.C. Alprom S.A. 1 Milcov Street 23007 Slatina, Olt County <u>ROMANIA</u></p>	<p>ROMANIA</p>
<p>Instituto Mexicano del Alumino, A.C. Petarca 133-9 Piso Col. Polanco MEXICO, 11560, DF www.imedal.com.mx</p>	<p>MEXICO</p>	<p>Swedish Aluminium Association P.O. Box 22307 SE-104 22 Stockholm <u>SWEDEN</u> www.svensktaluminium.com</p>	<p>SWEDEN</p>
<p>Institute of Non-Ferrous Metals Light Metals Divison 32-050 Skawina Ul. Pi Lsudskiego 19 <u>POLAND</u> www.imn.gliwice.pl</p>	<p>POLAND</p>	<p>VNMI – Association for the Dutch Metallurgic Industry P.O. Box 190 2700 AD Zoetermeer <u>NETHERLANDS</u> www.vnmi.nl</p>	<p>NETHERLANDS</p>
<p>Japan Aluminium Association Tsukamoto-Sozan Building 2-15, Ginza 4-Chome Tokyo, Chuo-ku, 104-0061 <u>JAPAN</u> www.aluminum.or.jp</p>	<p>JAPAN</p>		

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 ³⁹		ALUMINUM
No. ⁷⁵	DATE	BY	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ga	V	Each	Total ³	Minimum	
1050	1954-07-01	USA	0.25	0.40	0.05	0.05	0.05	....	....	0.05	0.03	....	0.05	0.03	....	99.50 ^d
1050A	1972-09-22	EAA	0.25	0.40	0.05	0.05	0.05	....	....	0.07	0.05	....	....	0.03	....	99.50 ^d
1060	1954-07-01	USA	0.25	0.35	0.05	0.03	0.03	....	....	0.05	0.03	....	0.05	0.03	....	99.60 ^d
1065	1973-08-22	USA	0.25	0.30	0.05	0.03	0.03	....	....	0.05	0.03	....	0.05	0.03	....	99.65 ^d
1070	1954-07-01	USA	0.20	0.25	0.04	0.03	0.03	....	....	0.04	0.03	....	0.05	0.03	....	99.70 ^d
1070A	1972-09-22	EAA	0.20	0.25	0.03	0.03	0.03	....	....	0.07	0.03	....	....	0.03	....	99.70 ^d
1080	1954-07-01	USA	0.15	0.15	0.03	0.02	0.02	....	....	0.03	0.03	0.03	0.05	0.02	....	99.80 ^d
1080A	1972-09-22	EAA	0.15	0.15	0.03	0.02	0.02	....	....	0.06	0.02	0.03	....	0.02	....	99.80 ^d
1085	1954-07-01	USA	0.10	0.12	0.03	0.02	0.02	....	....	0.03	0.02	0.03	0.05	0.01	....	99.85 ^d
1090	1954-07-01	USA	0.07	0.07	0.02	0.01	0.01	....	....	0.03	0.01	0.03	0.05	0.01	....	99.90 ^d
1098	1972-02-15	GERMANY	0.010	0.006	0.003	....	....	....	....	0.015	0.003	....	....	0.003	....	99.98 ⁵

REGISTERED COMPOSITIONS

REGISTERED INTERNATIONAL DESIGNATION															OTHERS ³⁹		ALUMINUM
No. ⁷⁵	DATE	BY	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ga	V	Each	Total ³	Minimum	
1100	1954-07-01	USA	0.95 Si + Fe		0.05-0.20	0.05	....	....	....	0.10	....	....	....	0.05	0.15	99.00 ^d
1100A	2005-06-29	JAPAN	1.00 Si + Fe		0.05-0.20	0.05	0.10	....	....	0.10	0.10	....	....	0.05	0.15	99.00 ^d
1200	1966-09-23	USA	1.00 Si + Fe		0.05	0.05	....	....	....	0.10	0.05	....	....	0.05	0.15	99.00 ^d
1200A	1991-03-22	NORWAY	1.00 Si + Fe		0.10	0.30	0.30	0.10	....	0.10	....	....	....	0.05	0.15	99.00 ^d
1300 ⁶⁶	2000-12-13	FRANCE	0.20	0.30	0.05	0.03	0.03	....	....	0.20-0.50	0.03	....	....	0.05	0.15	99.00 ^d
1110	1987-06-15	FRANCE	0.30	0.8	0.04	0.01	0.25	0.01	....	....	....	....	0.02 B, 0.03 V+Ti	0.03	....	99.10 ^d
1120	1982-07-07	AUSTRALIA	0.10	0.40	0.05-0.35	0.01	0.20	0.01	....	0.05	....	0.03	0.05 B, 0.02 V+Ti	0.03	0.10	99.20 ^d
1230 ⁶⁶	1954-07-01	USA	0.70 Si + Fe		0.10	0.05	0.05	....	....	0.10	0.03	....	0.05	0.03	....	99.30 ^d
1230A	2005-06-29	JAPAN	0.70 Si + Fe		0.10	0.05	0.05	....	....	0.05	....	....	....	0.03	....	99.30 ^d
1235	1954-07-01	USA	0.65 Si + Fe		0.05	0.05	0.05	....	....	0.10	0.06	....	0.05	0.03	....	99.35 ^d
1435	1958-03-05	USA	0.15	0.30-0.50	0.02	0.05	0.05	....	....	0.10	0.03	....	0.05	0.03	....	99.35 ^d
1145	1954-07-01	USA	0.55 Si + Fe		0.05	0.05	0.05	....	....	0.05	0.03	....	0.05	0.03	....	99.45 ^d
1345	1956-10-08	USA	0.30	0.40	0.10	0.05	0.05	....	....	0.05	0.03	....	0.05	0.03	....	99.45 ^d
1445	1973-09-14	AUSTRALIA	0.50 Si + Fe ²⁰		0.04 ²⁰	....	....	....	....	....	....	....	....	....	0.05	99.45 ^d
1150	1973-08-02	AUSTRALIA	0.45 Si + Fe		0.05-0.20	0.05	0.05	....	....	0.05	0.03	....	....	0.03	....	99.50 ^d
1350 ⁷⁸	1975-01-24	USA	0.10	0.40	0.05	0.01	....	0.01	....	0.05	....	0.03	0.05 B, 0.02 V+Ti	0.03	0.10	99.50 ^d
1350A	1979-02-15	GERMANY	0.25	0.40	0.02	....	0.05	....	....	0.05	....	....	0.03 Cr+Mn+Ti+V	0.03	....	99.50 ^d
1450	1990-11-14	EAA	0.25	0.40	0.05	0.05	0.05	....	....	0.07	0.10-0.20	....	....	0.03	....	99.50 ^d

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 ³⁹		ALUMINUM
No. ⁷⁵	DATE	BY	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ga	V	Each	Total ³	Minimum	
1370	1976-04-20	FRANCE	0.10	0.25	0.02	0.01	0.02	0.01	....	0.04	....	0.03	....	0.02 B, 0.02 V+Ti	0.02	0.10	99.70 ⁴
1275	1986-03-24	SPAIN	0.08	0.12	0.05-0.10	0.02	0.02	....	....	0.03	0.02	0.03	0.03	....	0.01	....	99.75 ⁴
1185	1954-07-01	USA	0.15 Si + Fe	0.01	0.02	0.02	0.02	....	....	0.03	0.02	0.03	0.05	....	0.01	....	99.85 ⁴
1285	1954-07-01	USA	0.08 ⁷	0.08 ⁷	0.02	0.01	0.01	....	....	0.03	0.02	0.03	0.05	....	0.01	....	99.85 ⁴
1385	1987-06-15	FRANCE	0.05	0.12	0.02	0.01	0.02	0.01	....	0.03	....	0.03	....	0.03 V+Ti ⁴⁰	0.01	....	99.85 ⁴
1188	1954-07-01	USA	0.06	0.06	0.005	0.01	0.01	....	....	0.03	0.01	0.03	0.05	6	0.01	....	99.88 ⁴
1190	1987-06-15	FRANCE	0.05	0.07	0.01	0.01	0.01	0.01	....	0.02	....	0.02	....	0.01 V+Ti ⁴¹	0.01	....	99.90 ⁴
1290	2005-06-29	JAPAN	0.050	0.030	0.050	....	....	....	....	....	....	....	....	....	0.01	....	99.90 ⁵
1193	1964-09-29	USA	0.04	0.04	0.006	0.01	0.01	....	....	0.03	0.01	0.03	0.05	....	0.01	....	99.93 ⁴
1198	1990-10-04	FRANCE	0.010	0.006	0.006	0.006	....	....	....	0.010	0.006	0.006	....	....	0.003	....	99.98 ⁴
1199	1956-03-12	USA	0.006	0.006	0.006	0.002	0.006	....	....	0.006	0.002	0.005	0.005	....	0.002	....	99.99 ⁵
2001	1979-08-22	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	....	....	0.05 Zr ⁴²	0.05	0.15	Remainder
2002	1975-08-25	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	Remainder
2004	1980-08-07	UK	0.20	0.20	5.5-6.5	0.10	0.50	....	....	0.10	0.05	....	....	0.30-0.50 Zr	0.05	0.15	Remainder
2005	1983-01-10	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 Bi, 1.0-2.0 Pb	0.05	0.15	Remainder
2006	1983-01-10	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	Remainder
2007	1979-02-15	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	....	....	26	0.10	0.30	Remainder
2007A	2001-02-21	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	....	....	68	0.10	0.30	Remainder
2008	1987-07-01	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	Remainder
2009	1990-01-24	USA	0.25	0.05	3.2-4.4	....	1.0-1.6	....	....	0.10	....	....	....	44	0.05	0.15	Remainder
2010	1990-09-21	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	Remainder
2011	1954-07-01	USA	0.40	0.7	5.0-6.0	....	....	....	....	0.30	....	....	....	8	0.05	0.15	Remainder
2011A	1982-02-11	SWITZERLAND	0.40	0.50	4.5-6.0	....	....	....	....	0.30	....	....	....	8	0.05	0.15	Remainder
2111	1993-07-07	USA	0.40	0.7	5.0-6.0	....	....	....	....	0.30	....	....	....	64	0.05	0.15	Remainder
2111A	2001-02-21	ITALY	0.40	0.7	5.0-6.0	0.15	0.15	....	....	0.30	0.05	....	....	69	0.05	0.15	Remainder
2111B	2001-09-05	SWITZERLAND	0.30	0.50	4.6-6.0	0.05	0.05	....	....	....	....	....	....	70	0.05	0.15	Remainder
2012	1993-06-23	USA	0.40	0.7	4.0-5.5	....	....	....	....	0.30	....	....	....	63	0.05	0.15	Remainder
2013	2003-05-20	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	Remainder
2014	1954-07-01	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	....	....	9	0.05	0.15	Remainder
2014A	1976-08-30	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	Remainder
2214	1954-07-01	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	....	....	9	0.05	0.15	Remainder
2015	2003-06-24	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	....	....	71	0.05	0.15	Remainder
2016	2003-11-14	GERMANY	0.30-0.7	0.15	3.5-4.5	0.10-0.50	0.30-0.8	....	....	....	0.05-0.15	....	....	73	0.05	0.15	Remainder
2017	1954-07-01	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	....	....	9	0.05	0.15	Remainder
2017A	1972-09-22	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	Remainder
2117	1954-07-01	USA	0.8	0.7	2.2-3.0	0.20	0.20-0.50	0.10	....	0.25	....	....	....	....	0.05	0.15	Remainder
2018	1954-07-01	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	Remainder
2218	1954-07-01	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	Remainder
2618	1954-07-01	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	Remainder
2618A	1972-09-22	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	Remainder

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 ³⁹		ALUMINUM
No. ⁷⁵	DATE	BY	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ga	V			Each	Total ³	Minimum
2219 ⁷⁰	1954-08-13	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 Zr		0.05	0.15	Remainder
2319	1958-06-05	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 Zr ⁶		0.05	0.15	Remainder
2419	1972-10-12	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 Zr		0.05	0.15	Remainder
2519	1985-02-07	USA	0.25 ²⁸	0.30 ²⁸	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 Zr		0.05	0.15	Remainder
2021	1981-05-28	UK	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 Zr ²⁹		0.05	0.15	Remainder
+ 2022	2004-08-17	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	Remainder
+ 2023	2004-08-17	FRANCE	0.10	0.15	3.6-4.5	0.30	1.0-1.6	0.10	....	....	0.05	....	....	0.05-0.15 Zr ⁵⁸		0.05	0.15	Remainder
2024	1954-07-01	USA	0.50	0.50	3.8-4.9	0.30-0.9	1.2-1.8	0.10	....	0.25	0.15	....	....	9		0.05	0.15	Remainder
2024A	1996-02-14	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	Remainder
2124	1970-10-02	USA	0.20	0.30	3.8-4.9	0.30-0.9	1.2-1.8	0.10	....	0.25	0.15	....	....	9		0.05	0.15	Remainder
2224	1978-05-04	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	Remainder
2224A	1997-10-10	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	Remainder
2324	1978-05-04	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	Remainder
2424	1994-01-28	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	Remainder
2524	1995-11-20	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	Remainder
2025	1954-07-01	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	Remainder
2026	1999-05-24	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 Zr		0.05	0.15	Remainder
2027	2001-12-19	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 Zr		0.05	0.15	Remainder
+ 2028	2005-07-08	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	....	....	76		0.10	0.30	Remainder
2030	1972-09-22	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 Bi, 0.8-1.5 Pb		0.10	0.30	Remainder
2031	1974-02-05	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	Remainder
+ 2032	2005-06-29	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	Remainder
2034	1983-01-18	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 Zr		0.05	0.15	Remainder
2036	1970-08-13	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	Remainder
2037	1977-06-01	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	Remainder
2038	1980-09-23	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	Remainder
2039	1999-03-17	SWITZERLAND	0.20	0.30	4.5-5.5	0.20-0.50	0.40-0.8	....	....	....	0.15	....	....	0.10-0.25 Zr ²¹		0.05	0.15	Remainder
+ 2139	2004-10-07	FRANCE	0.10	0.15	4.5-5.5	0.20-0.6	0.20-0.8	0.05	....	0.25	0.15	....	0.05	77		0.05	0.15	Remainder
2040	2003-10-30	USA	0.08	0.10	4.8-5.4	0.45-0.8	0.7-1.1	....	....	0.25	0.06	....	....	74		0.05	0.15	Remainder
+ 2050	2004-06-02	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	0.05	0.05	0.06-0.14 Zr ⁷⁸		0.05	0.15	Remainder
2056	2003-02-18	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	Remainder
2090	1984-08-06	USA	0.10	0.12	2.4-3.0	0.05	0.25	0.05	....	0.10	0.15	....	....	0.08-0.15 Zr ³⁰		0.05	0.15	Remainder
2091	1985-08-03	FRANCE	0.20	0.30	1.8-2.5	0.10	1.1-1.9	0.10	....	0.25	0.10	....	....	0.04-0.16 Zr ³⁵		0.05	0.15	Remainder
2094	1990-06-04	USA	0.12	0.15	4.4-5.2	0.25	0.25-0.8	....	....	0.25	0.10	....	....	0.04-0.18 Zr ⁴⁶		0.05	0.15	Remainder
2095	1990-06-04	USA	0.12	0.15	3.9-4.6	0.25	0.25-0.8	....	....	0.25	0.10	....	....	0.04-0.18 Zr ⁴⁷		0.05	0.15	Remainder
2195	1992-11-20	USA	0.12	0.15	3.7-4.3	0.25	0.25-0.8	....	....	0.25	0.10	....	....	0.08-0.16 Zr ⁵⁹		0.05	0.15	Remainder
2196	2000-12-08	USA	0.12	0.15	2.5-3.3	0.35	0.25-0.8	....	....	0.35	0.10	....	....	0.04-0.18 Zr ²⁷		0.05	0.15	Remainder
2097	1993-06-30	USA	0.12	0.15	2.5-3.1	0.10-0.6	0.35	....	....	0.35	0.15	....	....	0.08-0.16 Zr ⁶¹		0.05	0.15	Remainder
2197	1993-09-21	USA	0.10	0.10	2.5-3.1	0.10-0.50	0.25	....	....	0.05	0.12	....	....	0.08-0.15 Zr ⁶²		0.05	0.15	Remainder
2297	1997-08-18	USA	0.10	0.10	2.5-3.1	0.10-0.50	0.25	....	....	0.05	0.12	....	....	0.08-0.15 Zr ⁶⁵		0.05	0.15	Remainder
2397	2002-04-03	USA	0.10	0.10	2.5-3.1	0.10-0.50	0.25	....	....	0.05-0.15	0.12	....	....	0.08-0.15 Zr ⁶⁵		0.05	0.15	Remainder
2098	2000-06-22	USA	0.12	0.15	3.2-3.8	0.35	0.25-0.8	....	....	0.35	0.10	....	....	0.04-0.18 Zr ³⁸		0.05	0.15	Remainder
+ 2198	2005-10-06	USA	0.08	0.10	2.9-3.5	0.50	0.25-0.8	0.05	....	0.35	0.10	....	....	0.04-0.18 Zr ⁸⁴		0.05	0.15	Remainder
2099	2003-08-22	USA	0.05	0.07	2.4-3.0	0.10-0.50	0.10-0.50	....	....	0.40-1.0	0.10	....	....	48		0.05	0.15	Remainder
+ 2199	2005-06-01	USA	0.05	0.07	2.3-2.9	0.10-0.50	0.05-0.40	....	....	0.20-0.9	0.10	....	....	0.05-0.12 Zr ⁷⁹		0.05	0.12	Remainder

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 ³⁹		ALUMINUM
No. ⁷⁵	DATE	BY	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ga	V	Each	Total ³	Minimum	
3002	1961-07-03	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	Remainder
3102	1972-03-01	USA	0.40	0.7	0.10	0.05-0.40	....	....	....	0.30	0.10	....	....	....	0.05	0.15	Remainder
3003	1954-07-01	USA	0.6	0.7	0.05-0.20	1.0-1.5	....	....	....	0.10	....	....	....	....	0.05	0.15	Remainder
++ 3103	1972-09-22	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	Remainder
3103A	1991-03-22	NORWAY	0.50	0.7	0.10	0.7-1.4	0.30	0.10	....	0.20	0.10	....	....	0.10 Zr+Ti	0.05	0.15	Remainder
3103B	2002-04-05	USA	0.50-1.3	0.8	0.50	0.7-1.3	0.50	....	....	0.50	0.20	....	....	....	0.05	0.15	Remainder
3203	1973-08-22	AUSTRALIA	0.6	0.7	0.05	1.0-1.5	....	....	....	0.10	....	....	....	δ	0.05	0.15	Remainder
3403	2001-05-14	USA	1.3	0.8	0.50	0.8-1.5	0.6	0.10	....	0.40	0.10	....	....	....	0.05	0.15	Remainder
3004	1954-07-01	USA	0.30	0.7	0.25	1.0-1.5	0.8-1.3	....	....	0.25	....	....	....	....	0.05	0.15	Remainder
3004A	1985-07-09	AUSTRALIA	0.40	0.7	0.25	0.8-1.5	0.8-1.5	0.10	....	0.25	0.05	....	....	0.03 Pb	0.05	0.15	Remainder
3104	1978-08-30	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	Remainder
3204	1991-07-11	USA	0.30	0.7	0.10-0.25	0.8-1.5	0.8-1.5	....	....	0.25	....	....	....	....	0.05	0.15	Remainder
3304	2001-05-14	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	Remainder
3005	1954-07-01	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	Remainder
3005A	1997-06-12	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	Remainder
3105	1960-05-27	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	Remainder
3105A	1990-10-04	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	Remainder
3105B	1997-06-12	NORWAY	0.7	0.9	0.30	0.30-0.9	0.20-0.8	0.20	....	0.50	0.10	....	....	0.10 Pb	0.05	0.15	Remainder
3007	1976-03-17	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	Remainder
3107	1977-11-11	SPAIN	0.6	0.7	0.05-0.15	0.40-0.9	....	....	....	0.20	0.10	....	....	....	0.05	0.15	Remainder
3207	1979-02-15	GERMANY	0.30	0.45	0.10	0.40-0.8	0.10	....	....	0.10	....	....	....	....	0.05	0.10	Remainder
3207A	1990-11-28	NORWAY	0.35	0.6	0.25	0.30-0.8	0.40	0.20	....	0.25	....	....	....	....	0.05	0.15	Remainder
3307	1986-08-20	USA	0.6	0.8	0.30	0.50-0.9	0.30	0.20	....	0.40	0.10	....	....	....	0.05	0.15	Remainder
3009	1978-03-03	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 Zr	0.05	0.15	Remainder
3010	1978-08-25	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	Remainder
3011	1978-08-25	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 Zr	0.05	0.15	Remainder
+ 3110	2004-06-10	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	Remainder
3012	1983-01-10	ARGENTINA	0.6	0.7	0.10	0.50-1.1	0.10	0.20	....	0.10	0.10	....	....	....	0.05	0.15	Remainder
3013	1983-01-10	ARGENTINA	0.6	1.0	0.50	0.9-1.4	0.20-0.6	....	....	0.50-1.0	....	....	....	....	0.05	0.15	Remainder
3014	1993-01-10	ARGENTINA	0.6	1.0	0.50	1.0-1.5	0.10	....	....	0.50-1.0	0.10	....	....	....	0.05	0.15	Remainder
3015	1986-08-20	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	Remainder
3016	1986-08-20	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	Remainder
3017	1989-08-03	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	Remainder
3019	2000-01-11	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	Remainder
3020	1998-04-17	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	Remainder
3025	1997-04-03	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	Remainder
3026	2003-04-09	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	Remainder
3030	1996-09-09	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	Remainder
3130	2002-07-09	USA	0.15	0.20	0.05	0.10-0.40	0.05	....	....	0.05-0.30	0.05	....	....	....	0.05	0.15	Remainder

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 ³⁹		ALUMINUM
No. ⁷⁵	DATE	BY	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ga	V	Each	Total ³	Minimum
4004 ⁶⁶	1971-10-05	USA	9.0-10.5	0.8	0.25	0.10	1.0-2.0	....	....	0.20	....	....	....	0.05	0.15	Remainder
4104	1974-02-26	USA	9.0-10.5	0.8	0.25	0.10	1.0-2.0	....	....	0.20	....	....	....	0.05	0.15	Remainder
4006	1977-04-06	FRANCE	0.8-1.2	0.50-0.8	0.10	0.05	0.01	0.20	....	0.05	....	....	....	0.05	0.15	Remainder
4007	1978-12-12	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	0.15	Remainder
4008	1985-05-15	USA	6.5-7.5	0.09	0.05	0.05	0.30-0.45	....	....	0.05	0.04-0.15	....	....	0.05	0.15	Remainder
4009	1987-05-26	USA	4.5-5.5	0.20	1.0-1.5	0.10	0.45-0.6	....	....	0.10	0.20	....	....	0.05	0.15	Remainder
4010	1988-07-11	USA	6.5-7.5	0.20	0.20	0.10	0.30-0.45	....	....	0.10	0.20	....	....	0.05	0.15	Remainder
4013	1988-07-26	USA	3.5-4.5	0.35	0.05-0.20	0.03	0.05-0.20	....	....	0.05	0.02	....	....	0.05	0.15	Remainder
4014	1989-07-04	NORWAY	1.4-2.2	0.7	0.20	0.35	0.30-0.8	....	....	0.20	....	....	....	0.05	0.15	Remainder
4015	1989-07-04	NORWAY	1.4-2.2	0.7	0.20	0.6-1.2	0.10-0.50	....	....	0.20	....	....	....	0.05	0.15	Remainder
4016	1993-02-23	NORWAY	1.4-2.2	0.7	0.20	0.6-1.2	0.10	....	....	0.50-1.3	....	....	....	0.05	0.15	Remainder
4017	1995-06-25	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	Remainder
++ 4018	1995-12-15	GERMANY	6.5-7.5	0.20	0.05	0.10	0.50-0.8	....	....	0.10	0.20	....	....	0.05	0.15	Remainder
4019	1999-04-09	UK	18.5-21.5	4.6-5.4	....	....	....	....	1.8-2.2	....	....	....	....	0.05	0.15	Remainder
+ 4020	2005-03-31	AUSTRIA	2.5-3.5	0.20	0.03	0.8-1.2	0.01	0.01	....	....	0.005	....	....	0.02	0.10	Remainder
4026	2001-04-02	USA	9.0-11.5	0.50	2.5-3.5	....	0.7-1.4	....	....	0.10	0.05	....	....	0.05	0.15	Remainder
5 4032	1954-07-01	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	Remainder
4043	1954-07-01	USA	4.5-6.0	0.8	0.30	0.05	0.05	....	....	0.10	0.20	....	....	0.05	0.15	Remainder
4043A	1976-02-03	EAA	4.5-6.0	0.6	0.30	0.15	0.20	....	....	0.10	0.15	....	....	0.05	0.15	Remainder
4343	1954-07-01	USA	6.8-8.2	0.8	0.25	0.10	....	....	....	0.20	....	....	....	0.05	0.15	Remainder
4643	1963-08-14	USA	3.6-4.6	0.8	0.10	0.05	0.10-0.30	....	....	0.10	0.15	....	....	0.05	0.15	Remainder
4044 ⁶⁶	1969-07-15	USA	7.8-9.2	0.8	0.25	0.10	....	....	....	0.20	....	....	....	0.05	0.15	Remainder
4045	1964-07-01	USA	9.0-11.0	0.8	0.30	0.05	0.05	....	....	0.10	0.20	....	....	0.05	0.15	Remainder
4145	1957-04-30	USA	9.3-10.7	0.8	3.3-4.7	0.15	0.15	0.15	....	0.20	....	....	....	0.05	0.15	Remainder
4145A	1976-05-28	UK	9.0-11.0	0.6	3.0-5.0	0.15	0.10	....	....	0.20	0.15	....	....	0.05	0.15	Remainder
++ 4046	1990-11-14	EAA	9.0-11.0	0.50	0.03	0.40	0.20-0.50	....	....	0.10	0.15	....	....	0.05	0.15	Remainder
4047	1964-07-01	USA	11.0-13.0	0.8	0.30	0.15	0.10	....	....	0.20	....	....	....	0.05	0.15	Remainder
4047A	1976-02-03	EAA	11.0-13.0	0.6	0.30	0.15	0.10	....	....	0.20	0.15	....	....	0.05	0.15	Remainder
4147	1989-04-24	USA	11.0-13.0	0.8	0.25	0.10	0.10-0.50	....	....	0.20	....	....	....	0.05	0.15	Remainder
5005	1954-07-01	USA	0.30	0.7	0.20	0.20	0.50-1.1	0.10	....	0.25	....	....	....	0.05	0.15	Remainder
5005A	1979-02-15	GERMANY	0.30	0.45	0.05	0.15	0.7-1.1	0.10	....	0.20	....	....	....	0.05	0.15	Remainder
5205	1967-05-29	USA	0.15	0.7	0.03-0.10	0.10	0.6-1.0	0.10	....	0.05	....	....	....	0.05	0.15	Remainder
5305	1990-11-14	EAA	0.08	0.08	....	0.03	0.7-1.1	....	....	0.05	0.02	....	....	0.02	....	Remainder
5505	1990-11-14	EAA	0.06	0.04	....	0.03	0.8-1.1	....	....	0.04	0.01	....	....	0.01	....	Remainder
5605	1990-11-14	EAA	0.01	0.008	0.8-1.1	0.01	0.008	0.003	Remainder

CHEMICAL COMPOSITION LIMITS^{1,2}
REGISTERED COMPOSITION--Continued

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REGISTERED INTERNATIONAL DESIGNATION															OTHERS ³⁹		ALUMINUM
No. ⁷⁵	DATE	BY	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ga	V	Each	Total ³	Minimum	
5006	1977-06-08	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	Remainder
5106	2001-06-11	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	Remainder
5010	1961-10-03	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	Remainder
5110	1990-11-14	EAA	0.08	0.08	....	0.03	0.30-0.6	....	....	0.05	0.02	....	....	....	0.02	....	Remainder
5110A	2005-06-29	JAPAN	0.15	0.25	0.20	0.20	0.20-0.6	....	....	0.03	....	....	....	....	0.05	0.10	Remainder
5210	1990-11-14	EAA	0.06	0.04	....	0.03	0.35-0.6	....	....	0.04	0.01	....	....	....	0.01	....	Remainder
5310	1990-11-14	EAA	0.01	0.008	....	....	0.35-0.6	....	....	0.01	0.008	....	....	0.008 Fe+Ti	0.003	....	Remainder
5016	1982-09-17	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	Remainder
5017	1986-08-18	USA	0.40	0.7	0.18-0.28	0.6-0.8	1.9-2.2	....	....	....	0.09	....	....	....	0.05	0.15	Remainder
5018	1992-02-21	GERMANY	0.25	0.40	0.05	0.20-0.6	2.6-3.6	0.30	....	0.20	0.15	....	....	0.20-0.6 Mn+Cr ⁶	0.05	0.15	Remainder
5018A	1999-04-19	ROMANIA	0.40	0.40	0.10	0.35-0.50	3.0-3.6	0.30	....	0.20	0.15	....	....	0.35-0.7 Mn+Cr	0.05	0.15	Remainder
5019 ⁵²	1972-09-22	EAA	0.40	0.50	0.10	0.10-0.6	4.5-5.6	0.20	....	0.20	0.20	....	....	0.10-0.6 Mn+Cr	0.05	0.15	Remainder
5019A	1998-11-25	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	Remainder
5119	1992-02-21	GERMANY	0.25	0.40	0.05	0.20-0.6	4.5-5.6	0.30	....	0.20	0.15	....	....	0.20-0.6 Mn+Cr ⁶	0.05	0.15	Remainder
5119A	2001-08-05	EAA	0.25	0.40	0.05	0.20-0.6	4.5-5.6	0.30	....	0.20	0.15	....	....	0.20-0.6 Mn+Cr ⁶⁷	0.05	0.15	Remainder
5021	1993-06-25	NORWAY	0.40	0.50	0.15	0.10-0.50	2.2-2.8	0.15	....	0.15	....	....	....	....	0.05	0.15	Remainder
5022	1995-09-08	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	Remainder
5023	1995-09-08	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	Remainder
5026	2001-02-19	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 Zr	0.05	0.15	Remainder
5027	2002-01-28	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	Remainder
5040	1961-02-24	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	Remainder
5041	2005-06-29	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	Remainder
5140	2001-05-14	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	Remainder
5042	1980-05-29	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	Remainder
5043	1982-01-11	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	Remainder
5049	1979-02-15	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	Remainder
5149	1990-11-14	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	Remainder
5249	1990-11-14	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 Zr ⁶	0.05	0.15	Remainder
5349	1992-05-01	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	Remainder
5449	1994-03-21	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	Remainder
5050	1954-07-01	USA	0.40	0.7	0.20	0.10	1.1-1.8	0.10	....	0.25	....	....	....	....	0.05	0.15	Remainder
5050A	1973-04-27	AUSTRALIA	0.40	0.7	0.20	0.30	1.1-1.8	0.10	....	0.25	....	....	....	....	0.05	0.15	Remainder
5150	1972-04-01	FRANCE	0.08	0.10	0.10	0.03	1.3-1.7	....	....	0.10	0.06	....	....	....	0.03	0.10	Remainder
5051	1967-03-01	USA	0.40	0.7	0.25	0.20	1.7-2.2	0.10	....	0.25	0.10	....	....	....	0.05	0.15	Remainder
5051A	1983-02-15	GERMANY	0.30	0.45	0.05	0.25	1.4-2.1	0.30	....	0.20	0.10	....	....	....	0.05	0.15	Remainder
5151	1970-09-25	USA	0.20	0.35	0.15	0.10	1.5-2.1	0.10	....	0.15	0.10	....	....	....	0.05	0.15	Remainder
5251	1972-09-22	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	Remainder
5251A	1990-10-04	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	Remainder
5351	1978-08-25	USA	0.08	0.10	0.10	0.10	1.6-2.2	....	....	0.05	....	....	0.05	....	0.03	0.10	Remainder
5451	1981-07-22	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	Remainder

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 ³⁹		ALUMINUM	
No. ⁷⁵	DATE	BY	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ga	V	Each	Total ³	Minimum	
5052	1954-07-01	USA	0.25	0.40	0.10	0.10	2.2-2.8	0.15-0.35	....	0.10	....	....	....	0.05	0.15	Remainder	
5252	1961-02-24	USA	0.08	0.10	0.10	0.10	2.2-2.8	....	....	0.05	....	....	0.05	0.03	0.10	Remainder	
5352	1971-09-23	USA	0.45 Si + Fe		0.10	0.10	2.2-2.8	0.10	....	0.10	0.10	....	....	0.05	0.15	Remainder	
5154 ⁷⁰	1954-07-01	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	Remainder
5154A	1972-06-23	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	Remainder
5154B	1978-11-15	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	Remainder
5254	1954-07-01	USA	0.45 Si + Fe		0.05	0.01	3.1-3.9	0.15-0.35	....	0.20	0.05	....	....	....	0.05	0.15	Remainder
5354	1990-11-14	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 Zr	0.05	0.15	Remainder
5454	1957-07-08	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	Remainder
5554	1958-03-05	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	Remainder
5654	1968-05-29	USA	0.45 Si + Fe		0.05	0.01	3.1-3.9	0.15-0.35	....	0.20	0.05-0.15	....	....	6	0.05	0.15	Remainder
5654A	2001-08-05	EAA	0.45 Si + Fe		0.05	0.01	3.1-3.9	0.15-0.35	....	0.20	0.05-0.15	....	....	6 ⁷	0.05	0.15	Remainder
5754	1970-06-30	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	0.05	0.15	Remainder
5954	1988-11-29	USA	0.25	0.40	0.10	0.10	3.3-4.1	0.10	....	0.20	0.20	....	....	....	0.05	0.15	Remainder
5056	1954-07-01	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	Remainder	
5356	1954-07-01	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	Remainder
5356A	2001-08-05	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	....	....	6 ⁷	0.05	0.15	Remainder
5456	1956-10-04	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	Remainder
5456A	1992-02-21	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	Remainder
5456B	2001-08-05	EAA	0.25	0.40	0.05	0.7-1.1	4.5-5.2	0.05-0.25	....	0.25	0.15	....	....	6 ⁷	0.05	0.15	Remainder
5556	1956-10-09	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	Remainder
5556A	1972-06-23	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	Remainder
5556B	2001-08-05	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	....	....	6 ⁷	0.05	0.15	Remainder
5556C	2001-11-15	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	....	....	6 ⁷	0.05	0.15	Remainder
5257 ⁷⁰	1961-03-27	USA	0.08	0.10	0.10	0.03	0.20-0.6	....	....	0.03	....	....	....	0.02	0.05	Remainder	
5457	1957-12-24	USA	0.08	0.10	0.20	0.15-0.45	0.8-1.2	....	....	0.05	....	....	0.05	0.03	0.10	Remainder	
5557	1977-07-21	USA	0.10	0.12	0.15	0.10-0.40	0.40-0.8	....	....	....	....	....	0.05	0.03	0.10	Remainder	
5657	1960-02-26	USA	0.08	0.10	0.10	0.03	0.6-1.0	....	....	0.05	....	0.03	0.05	0.02	0.05	Remainder	
5058	1991-07-15	GERMANY	0.40	0.50	0.10	0.20	4.5-5.6	0.10	....	0.20	0.20	....	....	5 ⁷	0.05	0.15	Remainder
5059	1999-06-25	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 Zr	0.05	0.15	Remainder
5070	2003-01-31	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	Remainder	
5180	1963-10-22	USA	0.35 Si + Fe		0.10	0.20-0.7	3.5-4.5	0.10	....	1.7-2.8	0.06-0.20	....	....	0.08-0.25 Zr ⁶	0.05	0.15	Remainder
5180A	2001-11-15	FRANCE	0.35 Si + Fe		0.10	0.20-0.7	3.5-4.5	0.10	....	1.7-2.8	0.06-0.20	....	....	0.08-0.25 Zr ^{6,7}	0.05	0.15	Remainder
5082	1963-08-14	USA	0.20	0.35	0.15	0.15	4.0-5.0	0.15	....	0.25	0.10	....	....	0.05	0.15	Remainder	
5182	1967-11-10	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	Remainder	

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 ³⁹		ALUMINUM
No. ⁷⁵	DATE	BY	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ga	V	Each	Total ³	Minimum	
5083	1954-07-01	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	Remainder
5183	1957-06-07	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	Remainder
5183A	2001-08-05	EAA	0.40	0.40	0.10	0.50-1.0	4.3-5.2	0.05-0.25	....	0.25	0.15	....	....	67	0.05	0.15	Remainder
5283	1976-06-21	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 Zr	0.05	0.15	Remainder
5283A	1987-09-30	EAA	0.30	0.30	0.03	0.50-1.0	4.5-5.1	0.05	0.03	0.10	0.03	....	....	0.05 Zr ⁴²	0.05	0.15	Remainder
5283B	1999-05-04	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	Remainder
5383	1995-06-26	FRANCE	0.25	0.25	0.20	0.7-1.0	4.0-5.2	0.25	....	0.40	0.15	....	....	0.20 Zr	0.05	0.15	Remainder
5483	2001-12-07	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 Zr	0.05	0.15	Remainder
5086	1954-07-01	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	Remainder
5186	1996-02-14	FRANCE	0.40	0.45	0.25	0.20-0.50	3.8-4.8	0.15	....	0.40	0.15	....	....	0.05 Zr	0.05	0.15	Remainder
5087	1990-11-14	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 Zr ⁶	0.05	0.15	Remainder
5187	2001-08-05	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 Zr ⁶⁷	0.05	0.15	Remainder
5088	2002-07-15	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 Zr	0.05	0.15	Remainder
6101	1955-07-08	USA	0.30-0.7	0.50	0.10	0.03	0.35-0.8	0.03	....	0.10	....	....	....	0.06 B	0.03	0.10	Remainder
6101A	1974-02-05	UK	0.30-0.7	0.40	0.05	....	0.40-0.9	....	....	....	....	....	....	....	0.03	0.10	Remainder
6101B	1979-02-15	GERMANY	0.30-0.6	0.10-0.30	0.05	0.05	0.35-0.6	....	....	0.10	....	....	....	....	0.03	0.10	Remainder
6201	1960-09-07	USA	0.50-0.9	0.50	0.10	0.03	0.6-0.9	0.03	....	0.10	....	....	....	0.06 B	0.03	0.10	Remainder
6201A	1973-08-02	AUSTRALIA	0.50-0.7	0.50	0.04	....	0.6-0.9	....	....	....	....	....	....	0.06 B	0.03	0.10	Remainder
6401	1990-11-14	EAA	0.35-0.7	0.04	0.05-0.20	0.03	0.35-0.7	....	....	0.04	0.01	....	....	....	0.01	....	Remainder
6501	2005-09-20	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	Remainder
6002	1983-03-17	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 Zr	0.05	0.15	Remainder
6003 ⁶⁶	1954-07-01	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	Remainder
6103	1984-12-20	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	Remainder
6005	1962-12-20	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	Remainder
6005A	1972-04-01	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	Remainder
6005B	1989-08-03	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	Remainder
6005C	2005-06-29	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	Remainder
6105	1965-11-23	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	Remainder
6205	1970-03-19	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 Zr	0.05	0.15	Remainder
6006	1971-10-20	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	Remainder
6106	1979-04-23	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	Remainder
6206	1984-03-08	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	Remainder
6306	1991-11-19	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	Remainder
6008	1983-10-20	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	Remainder
6009	1976-09-17	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	Remainder
6010	1976-09-17	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	Remainder
6110	1979-01-29	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	Remainder
6110A	1996-07-28	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 Ti+Zr	0.05	0.15	Remainder

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 ³⁹		ALUMINUM
No. ⁷⁵	DATE	BY	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ga	V	Each	Total ³	Minimum	
6011	1954-07-01	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	Remainder
6111	1982-10-07	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	Remainder
6012	1979-02-15	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 Bi, 0.40-2.0 Pb	0.05	0.15	Remainder
6012A	1999-12-16	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 Bi, 0.40-2.0 Sn	0.05	0.15	Remainder
6013	1983-03-15	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	Remainder
6113	1991-09-13	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	....	....	55	0.05	0.15	Remainder
6014	1983-01-20	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	Remainder
6015	1984-09-01	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	Remainder
6016	1984-09-17	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	Remainder
6016A	1995-01-16	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	Remainder
6116	1996-06-26	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	Remainder
6018	1991-06-17	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	....	....	53	0.05	0.15	Remainder
6019	1996-10-17	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	Remainder
6020	1995-08-25	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 Pb, 0.9-1.5 Sn	0.05	0.15	Remainder
6021	2000-11-21	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 Sn	0.05	0.15	Remainder
6022	1995-08-23	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	Remainder
6023	2001-09-05	SWITZERLAND	0.6-1.4	0.50	0.20-0.50	0.20-0.6	0.40-0.9	....	....	....	....	....	....	0.30-0.8 Bi, 0.6-1.2 Sn	0.05	0.15	Remainder
6024	2001-11-20	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	Remainder
6025	2002-06-25	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	Remainder
6026	2004-06-25	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	....	....	81	0.05	0.15	Remainder
6033	2002-08-26	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 Bi, 0.05 Pb	0.05	0.15	Remainder
6040	2002-07-05	USA	0.40-0.8	0.7	0.20-0.8	0.15	0.8-1.2	0.15	....	0.25	0.15	....	....	72	0.05	0.15	Remainder
6151	1954-07-01	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	Remainder
6351	1958-12-16	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	Remainder
6351A	1988-12-22	FRANCE	0.7-1.3	0.50	0.10	0.40-0.8	0.40-0.8	....	....	0.20	0.20	....	....	42	0.05	0.15	Remainder
6451	2005-02-14	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	Remainder
6951	1954-07-01	USA	0.20-0.50	0.8	0.15-0.40	0.10	0.40-0.8	....	....	0.20	....	....	....	....	0.05	0.15	Remainder
6053	1954-07-01	USA	11	0.35	0.10	....	1.1-1.4	0.15-0.35	....	0.10	....	....	....	....	0.05	0.15	Remainder
6056	1988-10-25	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	49	....	....	49	0.05	0.15	Remainder
6156	2003-02-19	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	Remainder
6060	1972-09-22	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	Remainder
6160	1993-07-30	USA	0.30-0.6	0.15	0.20	0.05	0.35-0.6	0.05	....	0.05	....	....	....	....	0.05	0.15	Remainder
6260	1996-11-05	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 Zr	0.05	0.15	Remainder
6360	2001-11-08	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	Remainder
6460	2001-10-29	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	Remainder
6560	2001-10-29	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	Remainder
6061	1954-07-01	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	Remainder
6061A	1991-05-13	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	....	....	42	0.05	0.15	Remainder
6261	1968-04-23	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	Remainder
6162	1959-03-26	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	Remainder
6262	1960-01-14	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	....	....	72	0.05	0.15	Remainder
6262A	2005-02-17	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	....	....	82	0.05	0.15	Remainder

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 ³⁹		ALUMINUM
No. ⁷⁵	DATE	BY	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ga	V	Each	Total ³	Minimum	
6063	1954-07-01	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	Remainder
6063A	1979-02-28	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	Remainder
6463	1957-04-15	USA	0.20-0.6	0.15	0.20	0.05	0.45-0.9	....	....	0.05	....	....	....	....	0.05	0.15	Remainder
6463A	1973-08-02	AUSTRALIA	0.20-0.6	0.15	0.25	0.05	0.30-0.9	....	....	0.05	....	....	....	....	0.05	0.15	Remainder
6763	1972-12-04	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	Remainder
6963	1994-08-23	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	Remainder
+ 6065	2005-02-17	BELGIUM	0.40-0.8	0.7	0.15-0.40	0.15	0.8-1.2	0.15	....	0.25	0.10	....	....	0.15 Zr ⁸³	0.05	0.15	Remainder
6066	1954-07-01	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	Remainder
6069	1994-05-16	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	Remainder
6070	1962-01-18	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	Remainder
6081	1972-04-01	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	Remainder
6181	1972-09-22	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	Remainder
6181A	1997-07-31	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	Remainder
6082	1972-09-22	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	Remainder
+ 6182	2005-02-17	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 Zr,	0.05	0.15	Remainder
6082A	1987-09-30	FRANCE	0.7-1.3	0.50	0.10	0.40-1.0	0.6-1.2	0.25	....	0.20	0.10	....	....	42	0.05	0.15	Remainder
6091	1992-02-21	USA	0.40-0.8	0.7	0.15-0.40	0.15	0.8-1.2	0.15	....	0.25	0.15	....	....	55	0.05	0.15	Remainder
6092	1992-02-21	USA	0.40-0.8	0.30	0.7-1.0	0.15	0.8-1.2	0.15	....	0.25	0.15	....	....	55	0.05	0.15	Remainder
10 7003	1975-07-04	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 Zr	0.05	0.15	Remainder
+ 7004	1964-03-19	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 Zr	0.05	0.15	Remainder
7204	2005-06-29	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 Zr	0.05	0.15	Remainder
7005	1962-08-13	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 Zr	0.05	0.15	Remainder
7108 ⁶⁶	1983-09-22	USA	0.10	0.10	0.05	0.05	0.7-1.4	....	....	4.5-5.5	0.05	....	....	0.12-0.25 Zr	0.05	0.15	Remainder
7108A	1987-12-10	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 Zr	0.05	0.15	Remainder
7009	1974-02-12	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	....	....	23	0.05	0.15	Remainder
7010	1975-09-10	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 Zr	0.05	0.15	Remainder
7012	1975-01-12	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 Zr	0.05	0.15	Remainder
7014	1977-06-30	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 Ti+Zr	0.05	0.15	Remainder
7015	1977-09-16	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 Zr	0.05	0.15	Remainder
7016	1972-06-29	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	Remainder
7116	1975-06-12	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	Remainder
7017	1978-03-23	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 Zr ²⁴	0.05	0.15	Remainder
7018	1978-03-23	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 Zr	0.05	0.15	Remainder
7019	1978-03-23	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 Zr	0.05	0.15	Remainder
7019A	1983-01-10	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	Remainder
7020	1972-09-22	EAA	0.35	0.40	0.20	0.05-0.50	1.0-1.4	0.10-0.35	....	4.0-5.0	....	....	....	22	0.05	0.15	Remainder
7021	1976-11-10	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 Zr	0.05	0.15	Remainder
7022	1979-02-15	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 Ti+Zr	0.05	0.15	Remainder
7122	2000-02-24	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 Zr	0.05	0.15	Remainder
7023	1983-01-10	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	Remainder
7024	1983-01-10	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	Remainder
7025	1983-01-10	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	Remainder

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 ³⁹		ALUMINUM	
No. ⁷⁵	DATE	BY	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ga	V	Each	Total ³	Minimum	
7026	1983-03-17	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 Zr	0.03	0.10	Remainder
7028	1987-05-11	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	Remainder
7029	1975-12-08	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	Remainder
7129	1977-01-06	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	Remainder
7229	1988-02-25	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	Remainder
7030	1987-12-10	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 Zr	0.05	0.15	Remainder
7031	1988-11-14	USA	0.30	0.8-1.4	0.10	0.10-0.40	0.10	....	....	0.8-1.8	....	....	....	....	0.05	0.15	Remainder
7032	1995-11-20	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 Bi, 0.01 Pb	0.05	0.15	Remainder
7033	1996-08-29	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 Zr	0.05	0.15	Remainder
7034	1999-04-09	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 Zr	0.05	0.15	Remainder
7035	2003-04-28	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 Zr	0.05	0.15	Remainder
+ 7036	2004-04-20	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 Zr	0.05	0.15	Remainder
+ 7136	2004-09-08	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 Zr	0.05	0.15	Remainder
7039	1962-07-16	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	Remainder
7040	1996-02-14	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 Zr	0.05	0.15	Remainder
+ 7140	2005-04-07	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	Remainder
7046	1973-05-16	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 Zr	0.05	0.15	Remainder
7046A	1999-02-24	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 Zr	0.05	0.15	Remainder
11 7049	1968-05-10	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	Remainder
7049A	1972-04-01	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	Remainder
7149	1975-10-28	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	Remainder
7249	1992-12-11	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	Remainder
7349	1994-01-04	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 Ti+Zr	0.05	0.15	Remainder
7449	1994-01-04	FRANCE	0.12	0.15	1.4-2.1	0.20	1.8-2.7	....	....	7.5-8.7	....	....	....	0.25 Ti+Zr	0.05	0.15	Remainder
7050	1971-02-01	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 Zr	0.05	0.15	Remainder
7050A	1996-02-14	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 Zr	0.05	0.15	Remainder
7150	1978-05-04	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 Zr	0.05	0.15	Remainder
7250	2001-01-24	USA	0.08	0.10	2.0-2.4	0.10	1.9-2.3	0.04	....	5.7-6.5	0.06	....	....	0.08-0.13 Zr	0.05	0.15	Remainder
7055	1991-02-13	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 Zr	0.05	0.15	Remainder
+ 7056	2004-08-17	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 Zr	0.05	0.15	Remainder
7060	1986-12-23	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 Pb, 0.05 Zr	0.05	0.15	Remainder
7064	1985-01-09	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 Zr ³⁴	0.05	0.15	Remainder
7068	1996-10-30	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 Zr	0.05	0.15	Remainder
7168	2002-05-16	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 Zr	0.05	0.15	Remainder
7072 ⁶⁶	1954-07-01	USA	0.7 Si + Fe	....	0.10	0.10	0.10	....	....	0.8-1.3	....	....	....	....	0.05	0.15	Remainder
7075	1954-07-01	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	....	....	¹⁶	0.05	0.15	Remainder
7175	1957-11-08	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	Remainder
7475	1969-09-15	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	Remainder
7076	1954-07-01	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	Remainder
7178 ⁷⁰	1954-07-01	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	Remainder
7278	1981-05-26	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	Remainder
7278A	1991-06-17	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 Zr	0.05	0.15	Remainder

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 ³⁹		ALUMINUM	
No. ⁷⁵	DATE	BY	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ga	V	Each	Total ³	Minimum	
+ 7081	2005-05-17	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 Zr	0.05	0.15	Remainder
7085	2002-02-15	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 Zr	0.05	0.15	Remainder
7090	1980-07-29	USA	0.12	0.15	0.6-1.3	....	2.0-3.0	....	....	7.3-8.7	....	....	....	1.0-1.9 Co ³⁷	0.05	0.15	Remainder
7093	1990-04-11	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 Zr ⁵⁵	0.05	0.15	Remainder
+ 7095	2005-08-16	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 Zr	0.05	0.15	Remainder
8005	1976-12-01	ITALY	0.20-0.50	0.40-0.8	0.05	....	0.05	....	....	0.05	....	....	....	....	0.05	0.15	Remainder
8006	1978-06-16	USA	0.40	1.2-2.0	0.30	0.30-1.0	0.10	....	....	0.10	....	....	....	....	0.05	0.15	Remainder
8007	1978-06-16	USA	0.40	1.2-2.0	0.10	0.30-1.0	0.10	....	....	0.8-1.8	....	....	....	....	0.05	0.15	Remainder
8008	1979-03-08	SPAIN	0.6	0.9-1.6	0.20	0.50-1.0	....	....	....	0.10	0.10	....	....	....	0.05	0.15	Remainder
8010	1988-06-17	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	Remainder
8011 ⁷⁰	1970-06-30	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	Remainder
8011A	1979-02-15	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	Remainder
8111	1979-11-14	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	Remainder
8211	1990-03-13	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	Remainder
8112 ⁷⁰	1954-07-01	USA	1.0	1.0	0.40	0.6	0.7	0.20	....	1.0	0.20	....	....	....	0.05	0.15	Remainder
8014	1983-10-13	USA	0.30	1.2-1.6	0.20	0.20-0.6	0.10	....	....	0.10	0.10	....	....	....	0.05	0.15	Remainder
8015	1988-11-14	USA	0.30	0.8-1.4	0.10	0.10-0.40	0.10	....	....	0.10	....	....	....	....	0.05	0.15	Remainder
8016	1989-03-30	NORWAY	0.20	0.7-1.1	0.10	0.10-0.30	0.10	....	....	0.10	....	....	....	....	0.05	0.15	Remainder
8017	1983-10-04	USA	0.10	0.55-0.8	0.10-0.20	....	0.01-0.05	....	....	0.05	....	....	....	0.04 B, 0.003 Li	0.03	0.10	Remainder
8018	1989-06-21	UK	0.50-0.9	0.6-1.0	0.30-0.6	0.30	....	....	....	....	0.006-0.06	....	....	....	0.05	0.15	Remainder
8019	1990-04-11	USA	0.20	7.3-9.3	....	0.05	....	....	....	0.05	0.05	....	....	⁵¹	0.05	0.15	Remainder
8021	1992-01-24	JAPAN	0.15	1.2-1.7	0.05	....	....	....	....	....	....	....	....	....	0.05	0.15	Remainder
8021A	1992-05-18	UK	0.20	1.2-1.7	0.05	0.03	0.02	....	....	0.05	0.05	....	....	....	0.02	0.15	Remainder
8021B	1996-08-09	EAA	0.40	1.1-1.7	0.05	0.03	0.01	0.03	....	0.05	0.05	....	....	....	0.03	0.10	Remainder
8022	1991-08-28	USA	1.2-1.4	6.2-6.8	....	0.10	....	0.10	....	0.25	0.10	....	0.40-0.8	⁵⁴	0.05	0.15	Remainder
8023	1997-04-16	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 B	0.05	0.15	Remainder
8024	1999-04-09	UK	0.10	0.12	....	....	....	....	....	....	....	....	....	3.4-4.2 Li, 0.08-0.25 Zr	0.05	0.15	Remainder
8025	2000-09-15	SKANALUMINIUM	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 Zr	0.05	0.15	Remainder
8030	1975-09-29	USA	0.10	0.30-0.8	0.15-0.30	....	0.05	....	....	0.05	....	....	....	0.001-0.04 B	0.03	0.10	Remainder
8130	1976-03-13	USA	0.15 ⁷⁵	0.40-1.0 ⁷⁵	0.05-0.15	....	....	....	....	0.10	....	....	....	....	0.03	0.10	Remainder
8040	1962-11-15	USA	1.0 Si + Fe	....	0.20	0.05	....	....	....	0.20	....	....	....	0.10-0.30 Zr	0.05	0.15	Remainder
8050	1988-11-11	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	Remainder
8150	1998-04-09	AUSTRALIA	0.30	0.9-1.3	....	0.20-0.7	....	....	....	....	0.05	....	....	....	0.05	0.15	Remainder
+ 8076A	2005-07-05	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	Remainder
8176	1976-01-21	USA	0.03-0.15	0.40-1.0	....	....	....	....	....	0.10	....	0.03	....	....	0.05	0.15	Remainder
8077	1975-05-20	USA	0.10	0.10-0.40	0.05	....	0.10-0.30	....	....	0.05	....	....	....	0.05 B ⁷⁷	0.03	0.10	Remainder
8079	1969-10-09	USA	0.05-0.30	0.7-1.3	0.05	....	....	....	....	0.10	....	....	....	....	0.05	0.15	Remainder
8090	1984-07-16	EAA	0.20	0.30	1.0-1.6	0.10	0.6-1.3	0.10	....	0.25	0.10	....	....	0.04-0.16 Zr ³³	0.05	0.15	Remainder
8091	1985-03-29	UK	0.30	0.50	1.6-2.2	0.10	0.50-1.2	0.10	....	0.25	0.10	....	....	0.08-0.16 Zr ³⁶	0.05	0.15	Remainder
8093	1990-02-01	FRANCE	0.10	0.10	1.0-1.6	0.10	0.9-1.6	0.10	....	0.25	0.10	....	....	0.04-0.14 Zr ³⁰	0.05	0.15	Remainder

FOOTNOTES

7. 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	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 normally is made 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 figures used in expressing the specified limit, in accordance with the following:

When the figure next beyond the last figure or place to be retained is less than 5, the figure in the last place retained should be kept unchanged.

When the figure next beyond the last figure or place to be retained is greater than 5, the figure in the last place retained should be increased by 1.

When the figure next beyond the last figure or place to be retained is 5 and

 - (1) there are no figures or only zeros beyond this 5, if the figure in the last place to be retained is odd, it should be increased by 1; if even, it should be kept unchanged;
 - (2) if the 5 next beyond the figure in the last place to be retained is followed by any figures other than zero, the figure in the last place retained should be increased by 1, whether odd or even.
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 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 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. When an element's 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. 0.14 max Si + Fe.
8. 0.20-0.6 Bi, 0.20-0.6 Pb.
9. 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.
10. This designation is considered the sole original alloy for this alloy family.
11. 45-65% of Mg.
12. 0.40-0.7 Bi, 0.40-0.7 Pb.

13. 0.001 max B, 0.003 max Cd, 0.001 max Co, 0.008 max Li.
14. 0.10-0.50 Bi, 0.10-0.25 Sn.
15. 1.0 max Si + Fe.
16. 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.
17. 0.02-0.08 Zr.
18. Formerly designated EC.
19. Inactive alloys can be reactivated with their original designation and original chemical composition limits. When possible, the original chemical composition limits shall be restored. An inactive experimental alloy can only be reactivated if the "X" is dropped. Inactive designations may be eligible for reassignment for registration of new compositions only if:
 - (a) All available designations in this alloy family have been exhausted.
 - (b) Ten (10) years have passed from the date of deactivation.
 - (c) The alloy is not an "original" alloy. (Note: An inactive "original" alloy may be eligible for registration of new compositions with different limits if it has neither active nor inactive modification nor national variations assigned.)
20. 0.50 max Si + Fe + Cu.
21. 0.05-0.50 Ag.
22. 0.08-0.20 Zr, 0.08-0.25 Zr + Ti.
23. 0.25-0.40 Ag.
24. 0.15 min Mn + Cr.
25. 0.05-0.20 Cd.
26. 0.20 max Bi, 0.8-1.5 Pb, 0.20 max Sn.
27. 0.25-0.6 Ag, 1.4-2.1 Li.
28. 0.40 max Si + Fe.
29. 0.05-0.20 Cd, 0.03-0.08 Sn.
30. 1.9-2.6 Li.
31. 0.20-0.50 Oxygen.
32. 0.0008 max Be, 0.05-0.55 Sc
33. 2.2-2.7 Li.
34. 0.10-0.40 Co, 0.05-0.30 Oxygen.
35. 1.7-2.3 Li.
36. 2.4-2.8 Li.
37. 0.05-0.50 In, 0.05-0.50 Sn
38. 0.25-0.6 Ag, 0.8-1.3 Li.
39. "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.
40. 0.02 max B.
41. 0.01 max B.
42. 0.003 max Pb.
43. 0.6-1.5 Bi, 0.05 max Cd.

FOOTNOTES – Continued

44. 0.6 max Oxygen.
45. 0.005 max Be, 0.05-0.50 Oxygen.
46. 0.25-0.6 Ag, 0.7-1.4 Li.
47. 0.25-0.6 Ag, 0.7-1.5 Li.
48. 1.6-2.0 Li, 0.05-0.12 Zr, 0.0001 Be
49. 0.20 max Zr + Ti.
50. 0.30 max Oxygen.
51. 3.5-4.5 Ce, 0.05-0.50 Oxygen.
52. Alloy 5056A redesignated 5019.
53. 0.40-0.7 Bi, 0.40-1.2 Pb.
54. 0.05-0.20 Oxygen.
55. 0.05-0.50 Oxygen.
56. 1.0-1.3 Carbon, 1.2-1.4 Li, 0.20-0.7 Oxygen.
57. 1.2-1.8 Pb.
58. 0.01-0.06 Sc
59. 0.25-0.6 Ag, 0.8-1.2 Li.
60. 0.25-0.6 Ag, 1.3-1.9 Li.
61. 1.2-1.8 Li.
62. 1.3-1.7 Li.
63. 0.20-0.7 Bi, 0.20-0.6 Sn.
64. 0.20-0.8 Bi, 0.10-0.50 Sn.
65. 1.1-1.7 Li.
66. Cladding is a main use.
67. 0.0005 max Be for welding electrode, welding rod and filler wire.
68. 0.20 max Bi, 0.05 max Pb, 0.8-1.5 Sn.
69. 0.20-0.6 Bi, 0.05 max Pb, 0.20-0.6 Sn.
70. 0.30-0.6 Bi, 0.30-0.7 Sn.
71. 0.40 Bi, 0.20 Pb, 0.7-1.5 Sn.
72. 0.15-0.7 Bi, 0.30-1.2 Sn.
73. 0.10-0.25 Zr, 0.30-0.7 Ag.
74. 0.40-0.7 Ag, 0.08-0.15 Zr, 0.0001 Be
75. 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.
76. 0.10-1.0 Bi, 1.0 Pb, 0.10-1.0 Sn
77. 0.15-0.6 Ag
78. 0.20-0.7 Ag, 0.7-1.3 Li
79. 0.0001 Be, 1.4-1.8 Li
80. 0.005 B, 0.005 Na, 0.005 P
81. 0.50-1.5 Bi, 0.40 Pb, 0.05 Sn
82. 0.40-0.9 Bi, 0.40-1.0 Sn
83. 0.50-1.5 Bi, 0.05 Pb
84. 0.10-0.50 Ag, 0.8-1.1 Li
- + 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 is determined by computation rather than by a weighing 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. 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/in³) to the nearest multiple of 0.0005 and in the metric system [(kg/m³) x 10³] 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/in³) to the nearest multiple of 0.001 and in the metric system [(kg/m³) x 10³] to the nearest multiple of 0.01.

The US customary (lbs/in³) unit values are derived from metric values and subsequently rounded and are not to be back-converted to metric values.

Designation	Density		Designation	Density	
	lbs/in. ³	(kg/m ³) x 10 ³		lbs/in. ³	(kg/m ³) x 10 ³
1050	0.0975	2.705	1190	0.0975	2.700
1050A	0.0975	2.705	+ 1290	0.0975	2.700
1060	0.0975	2.705	1193	0.0975	2.700
1065	0.0975	2.700	1198	0.0975	2.700
1070	0.0975	2.700	1199	0.0975	2.700
1070A	0.0975	2.700	2001	0.102	2.82
1080	0.0975	2.700	2002	0.099	2.73
1080A	0.0975	2.700	2004	0.102	2.82
1085	0.0975	2.700	2005	0.102	2.83
1090	0.0975	2.700	2006	0.099	2.74
1098	0.0975	2.700	2007	0.102	2.82
1100	0.098	2.71	2007A	0.102	2.81
+ 1100A	0.098	2.71	2008	0.098	2.72
1200	0.098	2.70	2009	0.099	2.75
1200A	0.098	2.71	2010	0.098	2.72
1300	0.098	2.71	2011	0.102	2.83
1110	0.098	2.70	2011A	0.102	2.82
1120	0.098	2.71	2111	0.102	2.83
1230	0.098	2.70	2111A	0.102	2.83
+ 1230A	0.098	2.70	2111B	0.102	2.83
1235	0.0975	2.705	2012	0.102	2.82
1435	0.0980	2.710	2013	0.099	2.73
1145	0.0975	2.700	2014	0.101	2.80
1345	0.0975	2.705	2014A	0.101	2.80
1445	0.0975	2.700	2214	0.101	2.80
1150	0.0975	2.705	2015	0.102	2.83
1350	0.0975	2.705	2016	0.101	2.79
1350A	0.0975	2.700	2017	0.101	2.79
1450	0.0975	2.705	2017A	0.101	2.79
1370	0.0975	2.700	2117	0.099	2.75
1275	0.0975	2.705	2018	0.102	2.82
1185	0.0975	2.700	2218	0.101	2.81
1285	0.0975	2.700	2618	0.100	2.76
1385	0.0975	2.700	2618A	0.100	2.77
1188	0.0975	2.700	2219	0.103	2.84

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

Designation	Density		Designation	Density	
	lbs/in. ³	(kg/m ³) x 10 ³		lbs/in. ³	(kg/m ³) x 10 ³
2319	0.103	2.84	3204	0.098	2.71
2419	0.102	2.84	3304	0.098	2.72
2519	0.102	2.82	3005	0.098	2.73
2021	0.103	2.84	3005A	0.099	2.73
+ 2022	0.101	2.80	3105	0.098	2.72
+ 2023	0.100	2.77	3105A	0.098	2.71
2024	0.100	2.78	3105B	0.098	2.72
2024A	0.100	2.77	3007	0.098	2.72
2124	0.100	2.78	3107	0.098	2.72
2224	0.100	2.77	3207	0.098	2.71
2224A	0.100	2.78	3207A	0.098	2.72
2324	0.100	2.77	3307	0.098	2.72
2424	0.100	2.77	3009	0.099	2.73
2524	0.100	2.78	3010	0.098	2.72
2025	0.101	2.81	+ 3110	0.098	2.72
2026	0.100	2.77	3011	0.099	2.73
2027	0.101	2.79	3012	0.098	2.72
+ 2028	0.102	2.83	3013	0.099	2.74
2030	0.102	2.81	3014	0.099	2.75
2031	0.100	2.77	3015	0.098	2.72
+ 2032	0.100	2.76	3016	0.098	2.72
2034	0.101	2.79	3017	0.099	2.73
2036	0.100	2.75	3019	0.099	2.73
2037	0.099	2.74	3020	0.099	2.73
2038	0.099	2.73	3025	0.098	2.72
2039	0.101	2.81	3026	0.098	2.72
+ 2139	0.102	2.81	3030	0.098	2.72
2040	0.102	2.81	3130	0.098	2.71
+ 2050	0.098	2.70	4004	0.096	2.65
2056	0.100	2.78	4104	0.096	2.65
2090	0.093	2.59	4006	0.098	2.71
2091	0.093	2.58	4007	0.099	2.74
2094	0.098	2.72	4008	0.096	2.67
2095	0.098	2.70	4009	0.097	2.70
2195	0.098	2.71	4010	0.096	2.67
2196	0.095	2.63	4013	0.098	2.71
2097	0.096	2.65	4014	0.097	2.70
2197	0.095	2.64	4015	0.098	2.71
2297	0.096	2.65	4016	0.099	2.73
2397	0.096	2.65	4017	0.098	2.72
2098	0.097	2.70	4018	0.096	2.67
2099	0.095	2.63	4019	0.099	2.74
+ 2198	0.097	2.69	+ 4020	0.098	2.71
+ 2199	0.095	2.64	4026	0.099	2.73
3002	0.098	2.70	4032	0.097	2.68
3102	0.098	2.71	4043	0.097	2.69
3003	0.099	2.73	4043A	0.097	2.69
3103	0.099	2.73	4343	0.097	2.68
3103A	0.098	2.72	4643	0.097	2.69
3103B	0.098	2.73	4044	0.097	2.67
3203	0.098	2.73	4045	0.096	2.67
3403	0.099	2.73	4145	0.099	2.74
3004	0.098	2.72	4145A	0.099	2.74
3004A	0.098	2.71	4046	0.096	2.66
3104	0.098	2.72	4047	0.096	2.66

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

Designation	Density		Designation	Density	
	lbs/in. ³	(kg/m ³) x 10 ³		lbs/in. ³	(kg/m ³) x 10 ³
4047A	0.096	2.66	5354	0.097	2.69
4147	0.096	2.66	5454	0.097	2.69
5005	0.098	2.70	5554	0.097	2.69
5005A	0.097	2.69	5654	0.096	2.66
5205	0.097	2.70	5654A	0.096	2.66
5305	0.097	2.69	5754	0.097	2.67
5505	0.097	2.69	5954	0.096	2.66
5605	0.097	2.69	5056	0.095	2.64
5006	0.098	2.71	5356	0.096	2.64
5106	0.098	2.71	5356A	0.096	2.64
5010	0.098	2.71	5456	0.096	2.66
5110	0.097	2.69	5456A	0.096	2.66
+ 5110A	0.098	2.70	5456B	0.096	2.66
5210	0.097	2.69	5556	0.096	2.66
5310	0.097	2.69	5556A	0.096	2.65
5016	0.097	2.70	5556B	0.096	2.65
5017	0.097	2.69	5556C	0.096	2.66
5018	0.096	2.67	5257	0.097	2.70
5018A	0.097	2.67	5457	0.097	2.69
5019	0.096	2.65	5557	0.097	2.70
5019A	0.096	2.65	5657	0.097	2.69
5119	0.096	2.65	5058	0.097	2.67
5119A	0.096	2.65	5059	0.096	2.66
5021	0.097	2.68	5070	0.097	2.68
5022	0.096	2.66	5180	0.097	2.70
5023	0.095	2.64	5180A	0.097	2.70
5026	0.097	2.69	5082	0.096	2.65
5027	0.096	2.65	5182	0.096	2.65
5040	0.098	2.72	5083	0.096	2.66
5140	0.098	2.71	5183	0.096	2.66
+ 5041	0.097	2.67	5183A	0.096	2.66
5042	0.096	2.67	5283	0.096	2.65
5043	0.098	2.72	5283A	0.096	2.65
5049	0.097	2.70	5283B	0.096	2.66
5149	0.097	2.69	5383	0.096	2.66
5249	0.097	2.70	5483	0.096	2.66
5349	0.097	2.70	5086	0.096	2.66
5449	0.097	2.70	5186	0.096	2.66
5050	0.097	2.69	5087	0.096	2.66
5050A	0.097	2.69	5187	0.096	2.66
5150	0.097	2.68	5088	0.096	2.65
5051	0.097	2.69	6101	0.097	2.70
5051A	0.097	2.69	6101A	0.097	2.69
5151	0.097	2.68	6101B	0.097	2.70
5251	0.097	2.69	6201	0.097	2.69
5251A	0.097	2.69	6201A	0.097	2.69
5351	0.097	2.68	6401	0.097	2.69
5451	0.097	2.68	+ 6501	0.098	2.70
5052	0.097	2.68	6002	0.097	2.70
5252	0.096	2.67	6003	0.097	2.70
5352	0.097	2.67	6103	0.098	2.70
5154	0.096	2.66	6005	0.097	2.70
5154A	0.096	2.67	6005A	0.098	2.70
5154B	0.096	2.67	6005B	0.097	2.70
5254	0.096	2.66	+ 6005C	0.098	2.70

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

Designation	Density		Designation	Density	
	lbs/in. ³	(kg/m ³) x 10 ³		lbs/in. ³	(kg/m ³) x 10 ³
6105	0.097	2.70	6463	0.097	2.69
6205	0.098	2.71	6463A	0.097	2.69
6006	0.098	2.70	6763	0.097	2.69
6106	0.098	2.70	6963	0.097	2.70
6206	0.098	2.71	+ 6065	0.098	2.72
6306	0.097	2.70	6066	0.098	2.72
6008	0.098	2.70	6069	0.098	2.70
6009	0.098	2.71	6070	0.098	2.71
6010	0.098	2.71	6081	0.097	2.70
6110	0.098	2.71	6181	0.097	2.69
6110A	0.098	2.71	6181A	0.098	2.70
6011	0.099	2.73	6082	0.098	2.70
6111	0.098	2.71	6082A	0.098	2.70
6012	0.099	2.74	+ 6182	0.098	2.71
6012A	0.099	2.74	6091	0.097	2.70
6013	0.098	2.71	6092	0.098	2.70
6113	0.098	2.71	7003	0.101	2.80
6014	0.098	2.70	7004	0.100	2.77
6015	0.097	2.69	+ 7204	0.100	2.78
6016	0.098	2.70	7005	0.100	2.77
6016A	0.098	2.70	7108	0.100	2.78
6116	0.097	2.70	7108A	0.101	2.78
6018	0.099	2.74	7009	0.101	2.80
6019	0.098	2.71	7010	0.102	2.82
6020	0.099	2.73	7012	0.101	2.81
6021	0.098	2.72	7014	0.101	2.79
6022	0.097	2.69	7015	0.100	2.77
6023	0.099	2.73	7016	0.100	2.78
6024	0.098	2.72	7116	0.101	2.78
6025	0.097	2.70	7017	0.100	2.76
+ 6026	0.099	2.74	7018	0.101	2.79
6033	0.099	2.73	7019	0.100	2.76
6040	0.099	2.73	7019A	0.100	2.75
6151	0.098	2.71	7020	0.100	2.78
6351	0.098	2.71	7021	0.101	2.78
6351A	0.098	2.71	7022	0.100	2.77
+ 6451	0.098	2.70	7122	0.100	2.76
6951	0.098	2.70	7023	0.100	2.78
6053	0.097	2.69	7024	0.100	2.77
6056	0.098	2.72	7025	0.100	2.77
6156	0.098	2.72	7026	0.100	2.78
6060	0.097	2.70	7028	0.100	2.77
6160	0.097	2.70	7029	0.100	2.77
6260	0.098	2.70	7129	0.100	2.78
6360	0.098	2.70	7229	0.100	2.77
6460	0.097	2.70	7030	0.101	2.79
6560	0.098	2.70	7031	0.099	2.74
6061	0.098	2.70	7032	0.102	2.82
6061A	0.098	2.70	7033	0.101	2.79
6261	0.098	2.70	7034	0.105	2.90
6162	0.097	2.70	7035	0.099	2.75
6262	0.098	2.72	+ 7036	0.104	2.88
+ 6262A	0.098	2.72	+ 7136	0.104	2.88
6063	0.097	2.70	7039	0.099	2.74
6063A	0.097	2.70	7040	0.102	2.82

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

Designation	Density		Designation	Density	
	lbs/in. ³	(kg/m ³) x 10 ³		lbs/in. ³	(kg/m ³) x 10 ³
+ 7140	0.102	2.83	8008	0.099	2.74
7046	0.102	2.82	8010	0.098	2.72
7046A	0.102	2.81	8011	0.098	2.71
7049	0.103	2.84	8011A	0.098	2.71
7049A	0.103	2.84	8111	0.098	2.71
7149	0.103	2.84	8211	0.098	2.72
7249	0.103	2.84	8112	0.098	2.72
7349	0.103	2.85	8014	0.099	2.73
7449	0.103	2.85	8015	0.098	2.72
7050	0.102	2.83	8016	0.098	2.72
7050A	0.102	2.82	8017	0.098	2.71
7150	0.102	2.83	8018	0.098	2.72
7250	0.102	2.82	8019	0.106	2.92
7055	0.103	2.86	8021	0.098	2.73
+ 7056	0.104	2.87	8021A	0.098	2.72
7060	0.103	2.85	8021B	0.098	2.72
7064	0.103	2.85	8022	0.102	2.83
7068	0.103	2.85	8023	0.099	2.74
7168	0.103	2.86	8024	0.088	2.43
7072	0.098	2.72	8025	0.098	2.71
7075	0.101	2.81	8030	0.098	2.71
7175	0.101	2.80	8130	0.098	2.71
7475	0.101	2.81	8040	0.098	2.71
7076	0.102	2.84	8050	0.099	2.73
7178	0.102	2.83	8150	0.098	2.73
7278	0.102	2.83	+ 8076A	0.098	2.71
7278A	0.102	2.82	8176	0.098	2.71
+ 7081	0.102	2.83	8077	0.098	2.70
7085	0.103	2.85	8079	0.098	2.72
7090	0.103	2.85	8090	0.092	2.54
7093	0.103	2.86	8091	0.092	2.54
+ 7095	0.104	2.89	8093	0.092	2.55
8005	0.098	2.71			
8006	0.099	2.74			
8007	0.100	2.76			

PREVIOUSLY ASSIGNED BUT PRESENTLY INACTIVE ALLOY DESIGNATIONS¹⁹

<u>DESIGNATION</u>	<u>DATE RECLASSIFIED</u>	<u>DESIGNATION</u>	<u>DATE RECLASSIFIED</u>
1030 ¹⁰	1988-05-23	4245	1968-08-19
+ 1035 ¹⁰	2005-04-13		(Redesignated 4048)
+ 1040 ¹⁰	2005-04-13	+ 4048 ¹⁰	2005-04-13
+ 1045 ¹⁰	2005-04-13	X5002	1963-06-03
1130	1966-09-09	5004	1967-04-26
1330	1964-12-18	5105	1960-04-28
1135	1997-02-03		
1335	1966-09-09	5405	1966-07-12
1245	1966-09-09	5007	1968-05-13
1250	1988-05-23	5008	1968-05-13
1055	1988-05-23	5009	1968-05-13
1160	1958-04-22	5011	1967-04-26
	(Superseded by 1060)	X5012	1970-06-30
+ 1260	2005-04-13	5013	1996-10-02
1360	1965-12-09	5014 ¹⁰	1997-11-28
1165	1966-07-12	X5015	1968-08-19
1170	1997-02-03	X5020	1977-08-04
1270	1966-07-12	X5220	1962-01-11
1075 ¹⁰	1988-05-23	+ 5025 ¹⁰	2005-06-02
1175	1997-02-03	5034	1973-08-09
1180	1997-02-03	5039	1975-11-24
1187	1958-09-10	+ 5250	2005-04-13
	(Superseded by 1188)	5050B	1996-03-15
1095	1988-05-23	5152	1963-06-03
1197	1958-09-10	X5452	1971-06-17
	(Superseded by 1199)	5552	1997-02-03
1099 ¹⁰	1965-12-09	+ 5652	2005-04-13
2003 ¹⁰	1997-11-28	5053	1968-08-19
X2316 ¹⁰	1965-03-31	X5153	1967-04-26
X2119	1966-03-07	5854	1996-10-02
2020	1974-11-01	X5055	1956-10-19
2225	1966-07-12	5155	1971-07-14
+ 2048 ¹⁰	2005-04-13	5056A ⁵²	1992-02-21
2053	1983-11-09	+ 5357	2005-04-13
+ 2080 ¹⁰	2005-06-02	5757	1963-05-14
X2096 ¹⁰	2000-12-08	5857	1963-06-10
3303	1997-02-03	5957	1963-06-03
3205	1965-11-05	X5080 ¹⁰	1963-10-22
+ 3006 ¹⁰	2005-04-13	5280	1996-10-02
3008	1996-03-15	X5084	1965-04-27
3018	1998-01-16	X5184	1965-04-27
4001	1965-11-05	X5085	1977-08-04
4101	1965-11-05	X5090	1977-07-18
4002	1981-05-29	5091 ¹⁰	2000-04-26
X4003	1975-01-27	6001 ¹⁰	1955-07-08
X4005	1977-06-01	+ 6301	2005-04-13
+ 4011 ¹⁰	2005-06-02	+ 6004 ¹⁰	2005-04-13
4012	1965-11-05	+ 6007 ¹⁰	2005-04-13
4543	1997-02-03	6017 ¹⁰	1997-02-03

PREVIOUSLY ASSIGNED BUT PRESENTLY INACTIVE ALLOY DESIGNATIONS¹⁹ (continued)

<u>DESIGNATION</u>	<u>DATE RECLASSIFIED</u>		<u>DESIGNATION</u>	<u>DATE RECLASSIFIED</u>
X6030 ¹⁰	2001-01-25	+	8076 ¹⁰	2005-04-13
6051 ¹⁰	1963-12-12		8276	1996-10-02
X6251	1965-03-31		8177	1997-02-03
6253	2002-05-22	+	8280 ¹⁰	2005-04-13
X6161	1963-06-03		X8380	1964-12-18
6062 ¹⁰	1964-09-04		X8480	1964-12-18
X6163	1964-12-18		8081 ¹⁰	1997-02-03
6263	1955-07-12		X8090A	1989-01-13
6363	1964-12-18		X8092	1991-10-24
6563	1967-04-26		X8192	1991-10-24
6663	1967-04-26			
6863	1996-10-02			
X6064	1965-03-31			
X6067	1974-11-01			
6071	1966-07-12			
6090	1992-06-01			
7001 ¹⁰	1997-02-03			
7002	1966-07-12			
7104	1988-05-23			
X7006	1963-09-10			
X7106 ¹⁰	1980-04-16			
X7007	1972-02-16			
+ 7008 ¹⁰	2005-04-13			
7109	1996-03-15			
7011 ¹⁰	1999-06-17			
7013 ¹⁰	1997-02-03			
7027	1996-06-26			
X7038	1967-04-26			
7139	1966-09-09			
7146	1997-02-03			
7051	1996-10-02			
7070	1988-05-23			
X7272	1965-03-31			
7472	1997-02-03			
X7275	1963-06-03			
7277 ¹⁰	2000-11-06			
7079	1989-03-22			
7179	1989-06-06			
X7279	1963-06-03			
X7080	1971-01-04			
7091 ¹⁰	1997-02-03			
8001 ¹⁰	1997-02-03			
X8002	1964-12-18			
X8003	1964-12-18			
8004	1996-10-02			
8009 ¹⁰	2000-06-19			
8212	1967-04-26			
8013	1971-11-01			
+ 8020 ¹⁰	2005-04-13			

REGISTERED CHEMICAL COMPOSITION LIMITS OF INACTIVE ORIGINAL ALLOYS^{1,2}

REGISTERED DESIGNATION	REGISTERED BY	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ga	V	OTHERS ³⁹		ALUMINUM	
													Each	Total ²	Minimum	
1030	USA	0.35	0.6	0.10	0.05	0.05	....	...	0.10	0.03	....	0.05	....	0.03	....	99.30 ⁴
1035	USA	0.35	0.6	0.10	0.05	0.05	....	....	0.10	0.03	....	0.05	....	0.03	....	99.35 ⁴
1040	USA	0.30	0.50	0.10	0.05	0.05	....	....	0.10	0.03	....	0.05	....	0.03	....	99.40 ⁴
1045	USA	0.30	0.45	0.10	0.05	0.05	....	....	0.05	0.03	....	0.05	....	0.03	....	99.45 ⁴
1075	USA	0.20	0.20	0.04	0.03	0.03	....	....	0.04	0.03	....	0.05	....	0.03	....	99.75 ⁴
1099	USA	....	....	....	....	....	....	....	....	....	....	....	....	....	....	99.99 ⁵
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 Zr ²⁵	0.05	0.15	Remainder
X2316	USA	0.50-1.5	1.2	3.5-5.0	0.50-1.0	0.30-0.6	....	0.6	0.8	....	....	....	0.30 Pb	0.15	0.30	Remainder
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	Remainder
2080	USA	0.10	0.20	3.3-4.1	0.25	1.5-2.2	....	....	0.10	....	....	....	0.08-0.25 Zr ⁴⁵	0.05	0.15	Remainder
X2096	USA	0.12	0.15	2.3-3.0	0.25	0.25-0.8	....	....	0.25	0.10	....	....	0.04-0.18 Zr ⁶⁰	0.05	0.15	Remainder
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	Remainder
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	Remainder
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	Remainder
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	Remainder
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 Zr ³²	0.05	0.15	Remainder
X5080	USA	0.35 Si + Fe		0.10	0.20-0.7	3.5-4.5	0.05-0.20	....	1.7-2.8	0.20	....	....	....	0.05	0.15	Remainder
5091	USA	0.20	0.30	....	....	3.7-4.2	....	....	....	....	....	....	56	0.05	0.15	Remainder
6001	USA	0.35-0.7	0.6	0.10	0.03	0.35-0.7	0.03	....	0.10	....	....	....	....	0.03	0.10	Remainder
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	Remainder
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 Zr	0.05	0.15	Remainder
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	Remainder
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	....	....	37	0.05	0.15	Remainder
6051	USA	0.6-1.2	1.0	0.15	0.20	0.45-0.8	....	....	0.25	....	....	....	....	0.05	0.15	Remainder
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	Remainder
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	Remainder
X7106	USA	0.20	0.30	0.10	0.10-0.40	2.0-2.8	0.06-0.20	....	4.0-4.8	0.01-0.06	....	....	0.10-0.20 Zr	0.05	0.15	Remainder
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	Remainder
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	Remainder
7013	USA	0.6	0.7	0.10	1.0-1.5	....	....	....	1.5-2.0	....	....	....	....	0.05	0.15	Remainder
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	Remainder
7091	USA	0.12	0.15	1.1-1.8	....	2.0-3.0	....	....	5.8-7.1	....	....	....	0.20-0.6 Co ³⁷	0.05	0.15	Remainder
8001	USA	0.17	0.45-0.7	0.15	....	....	....	0.9-1.3	0.05	....	....	....	13	0.05	0.15	Remainder
8009	USA	1.7-1.9	8.4-8.9	....	0.10	....	0.10	....	0.25	0.10	....	1.1-1.5	50	0.05	0.15	Remainder
8020	USA	0.10	0.10	0.005	0.005	....	....	....	0.005	....	....	0.05	14	0.03	0.10	Remainder
8076	USA	0.10	0.6-0.9	0.04	....	0.08-0.22	....	....	0.05	....	....	....	0.04 B	0.03	0.10	Remainder
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 Sn	0.05	0.15	Remainder
8081	USA	0.7	0.7	0.7-1.3	0.10	....	....	....	0.05	0.10	....	....	18.0-22.0 Sn	0.05	0.15	Remainder

CROSS REFERENCE OF INTERNATIONAL DESIGNATIONS

DECLARATION OF ACCORD (DOA) TO ISO*

DOA DESIGNATION	ISO DESIGNATION	DOA DESIGNATION	ISO DESIGNATION	DOA DESIGNATION	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.

RECOMMENDATION
 INTERNATIONAL DESIGNATION SYSTEM
 FOR WROUGHT ALUMINUM AND WROUGHT ALUMINUM ALLOYS

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 in accordance with this Recommendation may be used by any country, but there is no obligation to use them. 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

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 ^{1,2,3}	
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 percentage⁴. 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 (Mg₂Si 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 will be in order of group sequence Cu, Mn, Si, Mg, Mg₂Si, 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 alloy⁵ and alloy modifications; integers 1 through 9, which are assigned consecutively, indicate alloy modifications.

5. Modifications

A modification of the original alloy⁵ is limited to any one or a combination of the following:

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

<u>Arithmetic Mean of Limits for Alloying Elements in Original Alloy</u>	<u>Maximum Change</u>
Up 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 should not be registered as a modification if it meets the requirements for a national variation.

6. National Variations

National variations of wrought aluminum and wrought aluminum alloys registered by another country 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 national variation registered, but omitting I, O, and Q.

A national variation has composition limits which are similar but not identical to those registered by another country, with differences such as:

- (a) Differences in arithmetic mean of limits for an individual alloying element or combination of elements expressed as an alloying element, or both, not exceeding the following amounts:

<u>Arithmetic Mean of Limits for Alloying Elements in Original Alloy or Modification</u>	<u>Maximum Difference</u>
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) Different limits of impurities 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) Different limits on grain refining elements.
- (e) Inclusion of a minimum limit for iron or silicon, or both.

An alloy meeting these requirements should not be registered as a new alloy or alloy modification.

See footnotes on page 25

FOOTNOTES

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

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

Less than 0.001 percent	0.000X
0.001 but less than 0.01 percent	0.00X
0.01 but less than 0.10 percent	0.00X
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 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)	

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

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

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

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

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

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

- (a) Only one alloy in any alloy family (having the same first, third and fourth digits) is considered the "original" alloy, and it is always used as the basis for registration of a modification.
- (b) All active and inactive alloys whose second digit is "0" are considered the "original" alloys for each specific alloy family.
- (c) For those alloy families with no second digit "0" registered, the alloy with the lowest second digit is considered the "original" alloy whether the alloy is active or inactive and a note (10)* is added following the designation. No registration shall be granted for a designation with a lower second digit for these alloy families.
- (d) No designation changes are made to any and all of the currently registered original alloys whether active or inactive.

* See footnote 10 on page 13.

APPENDIX A

USE OF DESIGNATIONS

- A.1 All countries using designations in accordance with this Recommendation should use the same numerical designation for those wrought aluminum or wrought aluminum alloys having identical chemical composition limits. They should register the limits and the designations should be used by all other countries using these designations.
- A.2 A numerical designation should be used without a suffix letter to indicate the initial chemical composition limits registered for that numerical designation.
- A.3 A numerical designation should be used with a serial suffix letter to indicate chemical composition limits which are different from but closely similar to the initial chemical composition limits registered for that numerical designation by another country. Such designations shall be considered to be national variations.
- A.4 A new numerical designation should be assigned only for wrought aluminum or a wrought aluminum alloy having chemical composition limits significantly different from other wrought aluminum or wrought aluminum alloys for which designations have previously been assigned.
- A.5 Designations should be allotted in the following order of precedence:
 - A.5.1 The registered designation should be used if composition limits are identical to those previously registered by another country.
 - A.5.2 A suffix letter should be used with the previously registered numerical designation for an alloy if composition limits meet the requirements for a national variation .
 - A.5.3 The numerical designation for an alloy modification should be assigned if the composition limits meet the requirements for an alloy modification unless the limits also meet the requirements for a national variation.
 - A.5.4 A new numerical designation should be assigned only for a significantly different alloy composition exceeding the allowable limits for a national variation and modification from any original alloy and not meeting the requirements A.5.2 or A.5.3. In this case a number must be assigned which has not been used and which will not be assigned by any other country using numerical designations conforming to this Recommendation.

APPENDIX B

DEACTIVATION OF REGISTERED ALLOYS

- B.1 All countries using designations in accordance with this Recommendation should review, at least once in every five years, the alloys registered by them to see if these alloys are still commercially active. If not, alloys should be proposed for deactivation. Any inactive alloy can still be reactivated when such need arises.

APPENDIX C

GENERAL GUIDELINES FOR DETERMINING COMPLIANCE WITH "SALE OF ALLOY" AND "COMMERCIAL QUANTITY" FOR PURPOSES OF REGISTERING WROUGHT ALUMINUM AND WROUGHT ALUMINUM ALLOYS **(See Declaration of Accord, Item 1)**

- C.1 Sale of Alloy

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

DECLARATION OF ACCORD ON AN INTERNATIONAL ALLOY DESIGNATION SYSTEM FOR WROUGHT ALUMINUM AND WROUGHT ALUMINUM ALLOYS

It is agreed by the parties hereto that the following rules will apply in assigning alloy designations in accordance with the recommendation dated December 15, 1970 and revised March 2002 for an International Designation System for Wrought Aluminum and Wrought Aluminum Alloys:

1. To be eligible for registration, an aluminum or aluminum alloy shall be offered for sale currently and shall have been supplied in the previous twelve months, in both cases in commercial quantities. The complete composition limits must be registered and the former designation if any, should be shown.
2. All requests for international registration must be submitted to The Aluminum Association by a signatory of the Declaration of Accord. The signatory, in carrying out this function, will endeavor to restrict registrations to those required for international, regional or national standards or standards of equivalent importance in the commercial field. In view of its historic usage of these designations, more latitude is ceded to The Aluminum Association in this regard.
3. It will be the duty of each signatory to inform all other signatories of proposed composition limits or proposed changes in limits. Number assignments will be made by The Aluminum Association when negotiations on composition limits are complete among all signatories to the Declaration of Accord.
4. No designation or chemical composition limits will become final until at least 60 days after announcement to all participating organizations. During this 60-day period, all questions and objections regarding the designation or chemical composition limits must be submitted; or an extension of the period must be requested. Technical objections must be substantially resolved prior to final registration.
5. Only the organization that registered the designation may make a change in chemical composition limits for the alloy, and when a change is proposed, all participating organizations must be notified and given 60 days to comment.
6. After the 60-day period the registering organization shall confirm the registered designation and the composition limits to each participating organization.
7. This Declaration of Accord may be executed in several counterparts and all so executed shall constitute one agreement.

Organization

Representative

Address

Date

Signature

DECLARATION D'ACCORD SUR UN SYSTEME DE DESIGNATION INTERNATIONALE POUR L'ALUMINIUM CORROYE ET SES ALLIAGES

Il est convenu entre les participants que les règles suivantes seront appliquées dans la désignation des alliages, en concordance avec la recommandation du 15 décembre 1970, révisée en mars 2002, pour un système de désignation internationale pour l'aluminium et ses alliages corroyés:

1. Pour être admis à l'enregistrement, un aluminium ou alliage d'aluminium doit être alors offert en vente et avoir été fourni au cours des douze derniers mois, en quantités commerciales dans les deux cas. Les limites de composition chimique et la designation, s'il en existe une, doivent être enregistrées.
2. Toute demande d'enregistrement international doit être soumise à l'Aluminum Association par un signataire de la Déclaration d'Accord. Ledit signataire, dans l'exercice de cette fonction, s'appliquera à limiter les enregistrements à ceux requis pour les normes internationales, régionales ou nationales, ou autres normes d'importance équivalente dans le secteur commercial. Compte tenu de l'utilisation historique de ces désignations, l'Aluminum Association dispose à cet égard d'une assez grande latitude.
3. Il appartiendra à chaque signataire d'informer les organisations correspondantes de tous les pays participants des limites de composition proposées ou des changements proposés de ces limites. Les attributions de numéros seront effectuées par l'Aluminum Association dès l'achèvement des négociations sur les limites de composition par tous les signataires de la Déclaration d'Accord.
4. Aucune désignation ou limites de composition chimique ne deviendra définitive avant moins 60 jours à compter de la date l'information donnée aux organisations participantes. Durant ces 60 jours, toutes questions et objections concernant cette désignation ou limites de composition chimique devront être soumise; ou une extension de la période devra demandée. Toutes objections techniques devront être résolues de façon substantielle avant l'enregistrement final.
5. Seule l'organisation qui a enregistré la designation peut faire un changement dans les limites de composition chimique de l'alliage; lorsqu'un changement est proposé, toutes les organisations participantes doivent être avisées et doivent présenter leurs remarques sous 60 jours.
6. Après la période de 60 jours l'organisation enregistrante confirmera la désignation enregistrée et les limites de composition à chaque organisation participante.
7. Cette Déclaration d'Accord pourra être reproduite en plusieurs exemplaires tout en constituant un seul agrément.

Organization

Representative

Address

Date

Signature

OTHER ALUMINUM ASSOCIATION REGISTRATION RECORDS AND REFERENCES

- **REGISTRATION RECORD OF INTERNATIONAL DESIGNATIONS AND CHEMICAL COMPOSITION LIMITS FOR UNALLOYED ALUMINUM** (Gold Sheets).
- **REGISTRATION RECORD OF ALUMINUM ASSOCIATION ALLOY DESIGNATIONS AND CHEMICAL COMPOSITION LIMITS FOR ALUMINUM ALLOYS IN THE FORM OF CASTINGS AND INGOT** (Pink Sheets).
- **REGISTRATION RECORD OF ALUMINUM ASSOCIATION DESIGNATIONS AND CHEMICAL COMPOSITION LIMITS FOR ALUMINUM HARDENERS** (Gray Sheets).
- **COMPONENTS OF CLAD ALUMINUM ALLOY PRODUCTS** (Lt. Green Sheets).
- **TEMPERS FOR ALUMINUM AND ALUMINUM ALLOY PRODUCTS** (Yellow Sheets).
- **TEMPERS FOR ALUMINUM AND ALUMINUM ALLOY PRODUCTS—METRIC EDITION** (Tan Sheets).
- **ALUMINUM STANDARDS AND DATA**
A reference book containing data on chemical compositions, mechanical and physical properties, tolerances and other information on aluminum mill products in general use, in US customary units.
- **ALUMINUM STANDARDS AND DATA Metric SI**
A reference book containing data on chemical compositions, mechanical and physical properties, tolerances and other information on aluminum mill products in general use, in metric units.

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