

International Designations and Chemical Composition Limits for Aluminum Hardeners

(North American and International Registration Record)



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FOREWORD

Listed herein are designations and chemical composition limits for aluminum hardeners registered in accordance with the *Recommendation – International Designation System for Aluminum Hardeners*, which is printed on page 11. Additions may be made as required according to the rules outlined in the Declaration of Accord, printed on page 15, and aluminum hardeners will be deleted when no longer in commercial use (See table of Inactive Aluminum Hardeners).

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

The following organizations are signatories to the Declaration of Accord on the Recommendation:

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REGISTERED CHEMICAL COMPOSITION LIMITS ^{1, 2}

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

Designation		Date Registered	Registered By	Si	Fe	Cu	Mn	Cr	Ni	Ti	B	V		Others ⁴		Al
Registered	Alternate													Each	Total ³	
H2000	20% Ca	1990-11-05	USA	0.20	0.30	....	....	....	....	....	....	0.05	Ca 18.0-22.0	0.03	0.10	Rem.
H2001	10% Ca	2005-08-18	EAA	0.30	0.30	....	....	....	....	....	0.01	....	Ca 9.0-11.0 Zn 0.04 max Pb 0.02 max Sn 0.02 max	0.04	0.10	Rem.
H2002	1% Be	2009-07-20	USA	0.20	0.40	0.05	0.02	0.02	0.02	0.02	....	....	Be 0.9-1.2 Mg 0.20 max Zn 0.10 max	0.05	0.15	Rem.
H2003	3% Bi	1975-01-01	USA	0.20	0.20	....	....	....	....	....	....	....	Bi 2.7-3.3	0.03	....	Rem.
H2004	2.5% Be	2009-07-20	USA	0.20	0.40	0.05	0.02	0.02	0.02	....	....	....	Be 2.2-3.0 Mg 0.50 max Zn 0.10 max	0.05	0.15	Rem.
H2005	5% Be	1977-02-10	USA	0.20	0.40	0.05	0.02	0.02	0.02	0.02	....	....	Be 4.5-6.0 Mg 0.50 max Zn 0.10 max	0.05	0.15	Rem.
H2007	10% Sr	1982-04-13	USA	0.20	0.30	....	....	....	....	....	....	....	Sr 9.0-11.0 Mg 0.05 max Ba 0.10 max Ca 0.03 max P 0.01 max	0.05	0.15	Rem.
H2010	25% Mg	1983-08-02	USA	0.10	0.15	....	....	....	....	....	....	....	Mg 23.0-27.0	0.03	0.10	Rem.
H2011	50% Mg	1983-08-02	USA	0.10	0.15	....	....	....	....	....	....	....	Mg 48-52	0.03	0.10	Rem.
H2012	3.5% Sr	1983-08-02	USA	0.20	0.30	....	....	....	....	....	....	....	Sr 3.2-3.8 Ca 0.03 max P 0.01 max	0.03	0.10	Rem.
H2016	8% Bi	1984-07-12	USA	0.20	0.30	....	....	....	....	....	....	....	Bi 7.5-8.5 Zn 0.10 max	0.05	0.20	Rem.
H2017	10%Sr-1%Ti-0.2%B	1986-02-21	USA	0.20	0.30	....	....	....	....	0.9-1.2	0.15-0.25	....	Sr 9.0-11.0 Ca 0.02 max	0.05	0.15	Rem.
H2018	5% Sr	2009-07-20	USA	0.20	0.30	....	....	....	....	....	....	....	Sr 4.5-5.5 Ba 0.05 max Ca 0.05 max	0.04	0.10	Rem.
H2019	15% Sr	2001-07-18	USA	0.20	0.30	....	....	....	....	....	....	....	Sr 14.0-16.0 P 0.01 max Ba 0.10 max Ca 0.05 max	0.05	0.15	Rem.
H2020	20% Sr	2009-07-20	USA	0.20	0.30	....	....	....	....	....	....	....	Sr 18.0-22.0 Ba 0.10 max	0.05	0.15	Rem.
H2025	2% Sc	2009-07-20	USA	0.05	0.05	....	....	....	....	....	....	....	Sc 1.8-2.2	0.03	0.10	Rem.
H2030	68% Mg	2009-07-20	USA	0.10	0.15	....	0.10	....	....	....	....	....	Mg 65-71	0.05	0.15	Rem.
H2035	10% Bi	2009-07-20	USA	0.20	0.30								Bi 9.0-11.0	0.05	0.20	Rem.

See footnotes on page 5.

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Designation		Date Registered	Registered By	Si	Fe	Cu	Mn	Cr	Ni	Ti	B	V		Others ⁴		Al
Registered	Alternate													Each	Total ³	
H2132	32% Cu	1975-01-01	USA	0.20	0.30	32-34	....	....	....	....	....	....	....	0.05	0.15	Rem.
H2148	50% Cu	2005-08-18	EAA	0.30	0.30	47-53	....	....	....	....	0.01	....	Zn 0.05 max Pb 0.02 max Sn 0.02 max	0.04	0.10	Rem.
H2149	50% Cu	2005-08-18	EAA	0.50	0.7	47-53	0.40	0.10	0.20	0.10	....	....	Mg 0.50 max Zn 0.20 max	0.05	0.15	Rem.
H2150	50% Cu	1989-01-30	USA	0.10	0.15	48-52	....	....	....	....	....	....	....	0.05	0.15	Rem.
H2154	54% Cu	1975-01-01	USA	0.10	0.10	51-57	....	....	....	....	....	....	....	0.05	....	Rem.
H2201	5% Ti-0.1% B	1975-01-01	USA	0.30	0.35	....	....	....	....	4.5-5.5	0.10-0.20	0.25	....	0.03	0.10	Rem.
H2202	5% Ti-0.6% B	1975-01-01	USA	0.20	0.30	....	....	....	....	4.5-5.5	0.50-0.7	0.20	....	0.03	0.10	Rem.
H2203	3% B	1975-01-01	USA	0.20	0.30	....	....	....	....	....	2.5-3.5	....	K 1.0 max Na 0.50 max	0.03	0.10	Rem.
H2204	4% B	1975-01-01	USA	0.20	0.30	....	....	....	....	....	3.5-4.5	....	K 1.0 max Na 0.50 max	0.03	0.10	Rem.
H2206	6% Ti	1975-01-01	USA	0.30	0.35	....	....	....	....	5.5-6.5	0.004	0.30	....	0.03	0.10	Rem.
H2207	5% Ti-0.2% B	1977-01-19	USA	0.30	0.35	....	....	....	....	4.5-5.5	0.15-0.25	0.25	....	0.03	0.10	Rem.
H2209	10% Ti	2005-08-18	EAA	0.30	0.7	0.20	0.45	0.10	0.20	9.0-11.0	....	0.50	Mg 0.50 max Zn 0.20 max	0.05	0.15	Rem.
H2210	10% Ti	1975-01-01	USA	0.30	0.35	....	....	....	0.05	9.0-11.0	0.004	0.50	....	0.03	0.10	Rem.
H2211	10% Ti-1% B	1977-01-19	USA	0.30	0.35	....	....	....	0.05	9.0-11.0	0.9-1.5	0.50	....	0.03	0.15	Rem.
H2213	10% Ti-0.4% B	1983-12-28	USA	0.20	0.30	....	....	....	....	9.0-11.0	0.30-0.50	0.10	....	0.03	0.10	Rem.
H2214	3%Ti-1% B	1984-12-06	USA	0.20	0.30	....	....	....	....	2.8-3.4	0.7-1.1	0.05	....	0.03	0.10	Rem.
H2217	5% B	1986-05-19	USA	0.20	0.30	....	....	....	....	0.05	4.5-5.5	....	K 1.0 max Na 0.50 max	0.03	0.10	Rem.
H2218	6% Ti-0.4% B	1987-09-28	USA	0.20	0.30	....	....	....	....	5.5-6.5	0.30-0.50	0.15	....	0.03	0.10	Rem.
H2219	3% Ti-0.4% B	1987-09-28	USA	0.20	0.30	....	....	....	....	2.7-3.3	0.30-0.50	0.15	....	0.03	0.10	Rem.
H2220	3% Ti-0.2% B	1987-09-28	USA	0.20	0.30	....	....	....	....	2.7-3.3	0.15-0.25	0.15	....	0.03	0.10	Rem.
H2221	10% B	2001-05-10	USA	0.25	0.30	...	...	...	...	...	9.0-11.0	...	K 1.0 max Na 0.50 max	0.03	0.10	Rem.
H2222	8% B	2001-07-18	USA	0.25	0.30	...	...	...	...	0.05	7.5-9.0	...	K 1.0 max Na 0.50 max	0.03	0.10	Rem.
H2223	1.7% Ti-1.4% B	2009-07-20	USA	0.20	0.30	...	...	...	...	1.3-2.2	1.1-1.7	0.05	...	0.03	0.10	Rem.
H2231	3% Ti-0.15% C	1997-02-27	USA	0.30	1.5	....	....	....	....	2.6-3.4	0.004	0.30	C 0.08-0.22	0.03	0.10	Rem.
H2252	5% Ti-1% B	1996-10-08	USA	0.20	0.30					4.5-5.5	0.8-1.2	0.20		0.03	0.10	Rem.

See footnotes on page 5.

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Registered	Alternate													Each	Total ³	
H2258	5% Ti-0.18% C	1999-05-20	USA	0.30	0.35					4.5-5.5	0.005	0.30	C 0.13-0.23	0.03	0.10	Rem.
H2264	6% Ti-0.04% C	1996-03-12	USA	0.20	0.35	....	....	....	....	5.5-6.5	0.004	0.05	C 0.03-0.05	0.03	0.10	Rem.
H2302	36% Si	1983-08-02	USA	34-39	0.50	....	....	....	....	0.07	0.01	0.06	P 0.01 max	0.05	0.15	Rem.
H2312	12% Si	1975-01-01	USA	11.0-13.0	0.35	0.10	....	....	....	....	....	....	....	0.05	0.15	Rem.
H2320	20% Si	2005-08-18	EAA	18.0-22.0	0.30	....	....	....	....	....	0.01	....	Pb 0.02 max Sn 0.02 max Zn 0.04 max Ca 0.06 max	0.04	0.10	Rem.
H2321	20% Si	2005-08-18	EAA	18.0-22.0	0.7	0.20	0.40	0.10	0.20	0.10	....	....	Mg 0.50 max Ca 0.06 max	0.05	0.15	Rem.
H2350	50% Si	1975-01-01	USA	47-54	0.50	....	....	....	....	0.07	0.01	0.06	....	0.05	....	Rem.
H2410	10% Mn	2005-08-18	EAA	0.30	0.30	....	9.0-11.0	....	....	....	0.01	....	Pb 0.02 max Sn 0.02 max Zn 0.04 max	0.04	0.10	Rem.
H2411	10% Mn	2005-08-18	EAA	0.50	0.7	0.20	9.0-11.0	0.10	0.20	0.10	....	....	Mg 0.50 max Zn 0.20 max	0.05	0.15	Rem.
H2425	25% Mn	1975-01-01	USA	0.20	0.25	....	24.0-26.0	....	....	....	....	....	....	0.03	0.15	Rem.
H2461	61% Mn	1975-01-01	USA	0.15	0.25	....	58-64	....	....	....	....	....	....	0.03	0.10	Rem.
H2475	75% Mn	1975-01-01	USA	0.10	0.20	....	74-76	0.10	....	....	....	....	....	0.05	0.15	Rem.
H2485	85% Mn	1995-01-04	USA	0.10	0.20	....	84-86	0.10	....	....	....	....	....	0.05	0.15	Rem.
H2500	10% Ni	1975-01-01	USA	0.15	0.20	....	....	....	9.0-11.0	....	....	....	....	0.03	0.10	Rem.
H2501	20% Ni	1983-08-02	USA	0.15	0.20	....	....	....	18.0-22.0	....	....	....	....	0.03	0.10	Rem.
H2575	75% Ni	1975-10-10	USA	....	0.10	....	....	0.05	74-76	....	....	....	Co 0.10 max	0.05	0.15	Rem.
H2600	10% Zr	1983-08-02	USA	0.20	0.25	....	....	....	....	0.05	....	....	Zr 9.0-11.0	0.03	0.15	Rem.
H2602	2.5% V	1977-01-19	USA	0.20	0.25	....	....	....	....	0.03	0.01	2.0-3.0	....	0.03	0.10	Rem.
H2603	3% Zr	1977-02-07	USA	0.20	0.25	....	....	....	....	0.05	....	....	Zr 2.7-3.3	0.03	0.10	Rem.
H2605	5% V	1977-01-19	USA	0.20	0.25	....	....	....	....	0.03	0.01	4.5-5.5	....	0.03	0.10	Rem.
H2606	6% Zr	1975-01-01	USA	0.20	0.25	....	....	....	....	0.05	....	....	Zr 5.5-6.5	0.03	0.10	Rem.
H2607	5% Zr	2005-08-18	EAA	0.30	0.30	....	....	....	....	....	0.01	....	Zr 4.5-5.5 Ca 0.010 max Na 0.005 max Pb 0.010 max Sn 0.010 max Zn 0.04 max	0.04	0.10	Rem.
H2610	10% V	2005-08-18	EAA	0.30	0.30						0.01	9.0-11.0	Pb 0.02 max Sn 0.02 max Zn 0.04 max	0.04	0.10	Rem.

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Designation		Date Registered	Registered By	Si	Fe	Cu	Mn	Cr	Ni	Ti	B	V		Others ⁴		Al
Registered	Alternate													Each	Total ³	
H2612	10% Zr	2005-08-18	EAA	0.30	0.45	0.20	....	....	0.20	0.20	....	....	Zr 9.0-11.0 Sn 0.20	0.05	0.15	Rem.
H2615	15% Zr	1986-02-21	USA	0.35	0.35	....	....	....	....	....	....	....	Zr 13.5-16.0	0.05	0.15	Rem.
H2632	3% Zr-2% V	1975-01-01	USA	0.20	0.25	....	....	....	....	....	....	1.8-2.2	Zr 2.7-3.3	0.03	0.10	Rem.
H2633	6% Zr - 4% V	2001-05-10	USA	0.35	0.35	....	....	....	....	....	....	3.5-4.5	Zr 5.5-6.5	0.05	0.15	Rem.
H2700	10% Sr-14% Si	1977-02-10	USA	12.0-16.0	1.5	0.05	0.10	0.05	0.05	0.10	....	0.05	Sr 9.0-11.0 Ba 0.50 max Ca 0.50 max P 0.01 max Zr 0.10 max	0.05	0.15	Rem.
H2810	10% Fe	2005-08-18	EAA	0.30	9.0-11.0	....	....	....	....	....	0.01	....	Pb 0.02 max Sn 0.02 max Zn 0.04 max	0.04	0.10	Rem.
H2811	10% Fe	2005-08-18	EAA	0.50	9.0-11.0	0.20	0.40	0.10	0.20	0.10	....	....	Mg 0.50 max Zn 0.20 max	0.05	0.15	Rem.
H2825	25% Fe	1975-01-01	USA	0.30	23.0-27.0	0.05	0.20	....	....	....	....	....	....	0.05	....	Rem.
H2845	45% Fe	2005-08-18	EAA	0.30	43-47	....	0.30	....	....	....	0.01	....	Pb 0.02 max Sn 0.02 max Zn 0.04 max C 0.10 max	0.04	0.10	Rem.
H2875	75% Fe	1975-10-10	USA	....	74-76	0.15	0.25	0.10	0.10	....	....	....	....	0.05	0.15	Rem.
H2880	80% Fe	1994-03-31	USA	....	79-81	0.15	0.30	0.10	0.10	....	....	....	....	0.05	0.15	Rem.
H2918	10% Cr	2005-08-18	EAA	0.30	0.30	....	....	9.0-11.0	....	....	0.01	....	Pb 0.02 max Sn 0.02 max Zn 0.04 max	0.04	0.10	Rem.
H2919	20% Cr	2005-08-18	EAA	0.30	0.30	....	....	18.0-22.0	....	....	0.01	....	Pb 0.02 max Sn 0.02 max Zn 0.04 max	0.04	0.10	Rem.
H2920	20% Cr	1975-01-01	USA	0.30	0.55	0.10	....	19.0-21.0	....	....	....	....	....	0.05	0.15	Rem.
H2921	20% Cr	2005-08-18	EAA	0.50	0.7	0.20	0.40	18.0-22.0	0.20	0.10	....	....	Mg 0.50 max Zn 0.20 max	0.05	0.15	Rem.
H2975	75% Cr	1975-10-10	USA	0.30	0.50	....	0.10	74-76	....	....	....	....	....	0.05	0.15	Rem.

See footnotes on page 5.