



REGISTRATION RECORD SERIES

Tempers For Aluminum And Aluminum Alloy Products

The Aluminum Association

Incorporated

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FOREWORD

Listed in this booklet are tempers for aluminum and aluminum alloy products registered with The Aluminum Association but not contained in the Association's Aluminum Standards and Data. Property data and other information furnished by the registrants are included.

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

Tempers for wrought products are given on pages 1-22 and for castings on page 23. Inactive alloys and tempers are listed on pages 26-32.

An explanation for The Aluminum Association's "Temper Designation System" is given in the Aluminum Standards and Data and in the American National Standard ANSI H35.1.

All new registrations and changes to previously registered mechanical property limits are marked and defined. In addition, the registration column also includes a revision date to indicate changes to the property limits originally registered.

TEMPER REGISTRATION

When any aluminum or aluminum alloy material is produced in a temper not previously applied to that material, the temper, along with the alloy designation and product form to which it applies, may be registered with The Aluminum Association.

PROCEDURE FOR INDIVIDUAL REGISTRATION OF TEMPER

1. Any person, firm or corporation may apply to The Aluminum Association to register a new temper.
2. Selection of the temper designation usually is left to the discretion of the Technical Committee on Product Standards, but consideration will be given to the applicant's choice when circumstances so warrant.
3. The temper is registered when, in the opinion of the Technical Committee on Product Standards, it is judged to be technically correct and complete with respect to the following:
 - a. The temper designation conforms to ANSI H35.1 "Alloy and Temper Designation Systems for Aluminum" (reprinted in The Aluminum Association manual Aluminum Standards and Data).
 - b. The material is offered for sale in the proposed temper and is available for use by more than one user.
 - c. The mechanical property limits applicable to the temper are included. (Limits are shown as tentative unless established in accordance with the data base criteria outlined under "Mechanical Properties" in Section 6, "Standards Section" of the Aluminum Standards and Data).
 - d. The following additional information is included when characteristics, in addition to mechanical properties, are specified for the temper:
 - (1) Test methods by which conformance with the requirements for specified characteristics can be evaluated, OR
 - (2) Details of the practice to be followed in producing the temper.
 - e. The minimum tensile strength limit applicable to the O temper accompany the request for registration of H tempers.
 - f. The indication of a variation in treatment of a basic T temper is limited to one additional digit (excluding zero) unless all available digits have been used, and except as provided for in the Appendix to ANSI H35.1.

TEMPER REGISTRATION (continued)

PROCEDURES FOR ALUMINUM ASSOCIATION TECHNICAL DIVISION (AATD) REGISTRATION OF TEMPERS

A temper for an aluminum alloy material may be registered as an AATD temper when, through formal ballot of the Technical Committee on Product Standards, it is judged to be technically correct with respect to the following:

- a. The temper designation conforms to ANSI H35.1 "Alloy and Temper Designation Systems for Aluminum" (reprinted in The Aluminum Association manual Aluminum Standards and Data).
- b. The material is offered for sale in the proposed temper by more than one producer.
- c. The minimum and/or maximum mechanical property limits applicable to the temper are included.
- d. The following additional information is included when characteristics, in addition to mechanical properties, are specified for the temper:
 - (1) Test methods by which conformance with the requirements for the specified characteristics can be evaluated, OR
 - (2) Details of the practices to be followed in producing the temper.
- e. The minimum tensile strength limit applicable to the O temper accompany the request for registration of H tempers.
- f. The indication of a variation in treatment of a basic T temper is limited to one additional digit (excluding zero) unless all available digits have been used, and except as provided for in the Appendix to ANSI H35.1.
- g. The temper is not being applied to an alloy designated as experimental (with prefix "X").

REQUIREMENTS FOR PROPOSED CHANGES TO REGISTERED TEMPERS

Proposed changes to a registered designation's mechanical properties and/or characteristics:

- a. Require approval by formal ballot of the Technical Committee on Product Standards for registered tempers having "minimum" and/or "maximum" mechanical property limits.
- b. Require a 30-day review by the Technical Committee on Product Standards for registered tempers having "tentative" mechanical property limits, or tempers applied to experimental alloys (with prefix "X"). The registrant has the final authority to change the temper limits, provided the change complies with item 3 under Individual Registration of Tempers. Changes proposed by others than the registrant are acceptable only with the approval of the registrant.

REQUIREMENTS FOR DELETION OF TEMPERS FROM THE REGISTRATION LIST

1. When any alloy is removed from the active alloy registration list, all tempers applicable to that alloy are automatically removed from the active temper registration list.
2. Approval of the Technical Committee on Product Standards through formal ballot is required to effect deletion of any registered temper from the active registration list, except as provided by the preceding sentence.

Classification of the listed properties is as specified in the column headed "Basis"

WROUGHT PRODUCTS
1100-1235

Alloy Temper	Registered		Product	Thickness, in.	Tensile Strength, ksi			Elongation Percent in 2 in. or 4 D	Remarks ²
	By	Date			Basis ¹	Ult.	Yield		
1100-O2	Alumax	04/04/78	Fin Stock	0.005-0.012	Min Max	11.0 16.0	5.0 -	15 -	Minimum amount of cold work controlled. Temper controlled within especially close limits. Extra hard temper closely controlled.
1100-H151	Alcoa	-	Tube	-	Min	17.0	-	-	
1100-H181	Alcoa	-	Sheet	0.013-0.019	Min	21.0	20.0	1	
1100-H185	AATD	-	Impact	0.028 & over	Min ⁶	22.0	20.0	-	
1100-H19	Alcoa	02/23/56	Wire	0.006-0.063	Min	24.0	-	-	
1100-H191	Alcoa	-	Sheet	0.013-0.019	Min	23.0	22.0	1	
1200-O	AATD	07/01/68	Sheet & Plate	0.006-3.000	Min Max	10.0 15.0	- -	* -	*15% for 0.006-0.019 20% for 0.020-0.031 25% for 0.032-0.050 30% for 0.051-0.249 28% for 0.250-3.000 *3% for 0.017-0.019 4% for 0.020-0.031 6% for 0.032-0.050 8% for 0.051-0.113 9% for 0.114-0.499 12% for 0.500-2.000 *1% for 0.009-0.012 2% for 0.013-0.019 3% for 0.020-0.031 4% for 0.032-0.050 5% for 0.051-0.113 6% for 0.114-0.499 10% for 0.500-1.000 *1% for 0.006-0.019 2% for 0.020-0.031 3% for 0.032-0.050 4% for 0.051-0.162 *1% for 0.006-0.019 2% for 0.020-0.031 3% for 0.032-0.050 4% for 0.051-0.128
1200-H112	AATD	07/01/68	Sheet, Plate & Extrusion	-	Min	10.0	-	25	
1200-H12	AATD	07/01/68	Sheet & Plate	0.017-2.000	Min Max	13.0 18.0	- -	* -	
1200-H14	AATD	07/01/68	Sheet & Plate	0.009-1.000	Min Max	15.0 20.0	- -	* -	
1200-H16	AATD	07/01/68	Sheet	0.006-0.162	Min Max	18.0 23.0	- -	* -	
1200-H18	AATD	07/01/68	Sheet	0.006-0.128	Min	20.0	-	*	
1235-O	Alcoa	05/12/80	Drawn Tube (Straight)	0.014-0.500	Min Max	10.0 15.0	3.0 -	35 -	
1235-O	Alcoa	05/12/80	Drawn Tube (Coiled)	0.014-0.065	Min Max	11.0 16.0	3.5 -	35 -	

Footnotes appear beginning on page 24.

Classification of the listed properties is as specified in the column headed "Basis"

Alloy Temper	Registered		Product	Thickness, in.	Tensile Strength, ksi			Elongation Percent in 2 in. or 4 D	Remarks ²
	By	Date			Basis ¹	Ult.	Yield		
1235-H18	Alcoa	05/12/80	Drawn Tube	0.014-0.500	Min	18.0	16.0	3	
1235-H111	Alcoa	05/12/80	Drawn Tube	0.014-0.500	Min	11.0	7.5	30	
1145-H12	AATD	11/06/67	Sheet	-	Min Max	11.0 16.0	- -	- -	Fin Stock.
1145-H16	AATD	11/06/67	Sheet	-	Min Max	16.0 21.0	- -	- -	Fin Stock.
1145-H18	AATD	11/06/67	Sheet	-	Min	18.0	-	-	Fin Stock.
1345-H24	Reynolds	05/17/63	Wire	0.030-0.250	Min	14.0	-	-	
1345-H26	Reynolds	05/17/63	Wire	0.030-0.250	Min	16.0	-	-	
1350-H113	AATD	05/28/71	Wire	Up thru #1 1/0 & over	Min Max Min Max	12.0 20.0 9.0 20.0	- - - -	- - - -	Conforms to ICEA requirements for solid conductors.
1350-H141	Alcoa	06/20/69	Wire	Up thru 0.374	Min	15.0	-	-	
1350-H142	Alcoa	09/09/69	Wire	Up thru 0.374	Min Max	15.0 22.0	- -	- -	Applicable to insulated conductors and currently specified as "1/2 to 3/4 hard".
1350-H161	Alcoa	09/09/69	Wire	Up thru 0.374	Min	17.0	-	-	Applicable to insulated conductors and currently specified as "3/4 to full hard".
++ 2008-T4	Alcoa	10/20/87 Revised 03/09/95	Sheet	0.025-0.075	Min	32.0	15.0	22	
++ 2010-T4	Reynolds	06/16/94 Revised 10/29/98	Sheet	0.025-0.070	Min	32.0	16.0	22	
+ 2010-T41	Reynolds	12/19/95 Revised 10/29/98	Sheet	0.025-0.070	Min	32.0	16.0	22	The material shall exhibit (1) No lines or ridges in the rolling direction after buffing or polishing a blank, typically 2 by 9 inches, oriented with the long axis in the long transverse direction and stretching 5%, or (2) Random distribution of grain orientations with no continuous bands of cube oriented grains as determined by microtexture analysis of the rolling surface of the sheet using orientation image microscopy (OIM).
2011-T6 & -T651	Kaiser	11/01/93	Rod	0.375-6.500	Min	54.0	40.0	10	Cold finished rod.
2014-T41	Alcoa	-	Die Forging	-	Min	52.0	27.0	12	Quenched from solution temperature to provide minimum internal stress. Because the T41 temper has lowered resistance to corrosion, it should be used only for forgings which are to be artificially aged to the T61 temper before use.

Footnotes appear beginning on page 24.

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WROUGHT PRODUCTS
2014-2024

Alloy Temper	Registered		Product	Thickness, In.	Tensile Strength, ksi			Elongation Percent in 2 in. or 4 D	Remarks ²
	By	Date			Basis ¹	Ult.	Yield		
2014-T61	Alcoa	-	Die Forging	Up thru 2.000	Min ³	57.0	45.0	6	To provide low level of internal stress. Artificially aged from T41.
2014-T611	Alcoa	04/15/68	Die Forging	Up thru 2.000	Min ³	62.0	53.0	6	To provide low level of internal stress with mechanical properties between those of the T6 and T61 tempers.
2014-T64	Alcoa	-	Extrusion	-	Min	59.0	52.0	7	For stock with lower residual stresses.
2017-H15 & -H25	Alcoa	09/12/89	Wire & Rod	Up thru 1.000	Min Max	35.0 45.0	- -	- -	For rivet and cold heading wire.
2018-T71	Alcoa	-	Die Forging	-	Min ³	40.0	30.0	9	Used for air-cooled cylinder heads.
2218-T71	Alcoa	-	Die Forging	-	Min ³	40.0	30.0	8	To stabilize mechanical properties for elevated temperature applications.
2618-T71	Alcoa	01/10/80	Die & Hand Forging	Up thru 4.000	Min ³	48.0	38.0	6	To minimize internal stress and give maximum dimensional stability.
2219-T31	Alcoa	06/30/60	Drawn Tube	Up thru 0.500	Min	45.0	26.0	12	Solution heat treated and cold worked a specific controlled amount.
2219-T7	Alcoa	01/10/80	Forged Piston	Up thru 3.000	Min ³ Min ⁸	55.0 53.0	32.0 30.0	8 4	Intended to give minimum growth and maximum stability. BHN 93 minimum.
2219-T71	Alcoa	01/10/80	Die Forging	Up thru 3.000	Min ³	50.0	32.0	8	Used to minimize internal stress and to give maximum dimensional stability. BHN 93 minimum.
2219-T851	Alcoa	05/28/86	Die Forging	Up thru 2.000	Min ⁶ Min ⁹	62.0 60.0	50.0 46.0	6 3	
2519-T87	Alcoa	03/14/86	Armor Plate	0.500-1.500 1.501-2.000 2.001-3.000 3.001-4.000	Min ⁶ Min ⁹ Min ⁶ Min ⁹ Min ⁶ Min ⁹ Min ⁶ Min ⁹	66.0 68.0 66.0 68.0 67.0 68.0 68.0 68.0	59.0 58.0 59.0 58.0 60.0 59.0 61.0 59.0	10 7 9 7 8 6 7 5	Solution heat treated, cold worked approximately 8% and artificially aged.
2024-T3	Alcoa	05/22/85	Foil	0.0016-0.0025	Min	48.0	36.0	2	Limits same as MIL-A-81596.
2024-T81	Alcoa	08/23/83	Drawn Tube	0.010-0.024 0.025-0.049 0.050-0.500	Min Min Min	66.0 66.0 66.0	58.0 58.0 58.0	- * *	*Full Section *Cut Out 5%4% 6%5%
2024-T81	Alcoa	05/22/85	Foil	0.0016-0.0025	Min	60.0	55.0	1	Limits same as MIL-A-81596.

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Alloy Temper	Registered		Product	Thickness, in.	Tensile Strength, ksi			Elongation Percent in 2 in. or 4 D	Remarks ²
	By	Date			Basis ¹	Ult.	Yield		
2024-T84	Alcoa	-	Tube	-	Min	70.0	65.0	3	Amount of cold work between solution heat treatment and artificial aging is controlled at about 4%.
2124-O	Reynolds	09/12/83	Sheet	0.050-0.187	Max	32.0	14.0	12 (Min)	<u>Fracture Toughness</u> ¹⁴ — Min K _{IC} For thicknesses 1.500-2.000 inches L-T direction 26 ksi $\sqrt{\text{in.}}$ T-L direction 23 ksi $\sqrt{\text{in.}}$ S-L direction 19 ksi $\sqrt{\text{in.}}$ For thicknesses 2.001-4.000 inches L-T direction 26 ksi $\sqrt{\text{in.}}$ T-L direction 22 ksi $\sqrt{\text{in.}}$ S-L direction 20 ksi $\sqrt{\text{in.}}$ For thicknesses 4.001-6.000 inches L-T direction 25 ksi $\sqrt{\text{in.}}$ T-L direction 21 ksi $\sqrt{\text{in.}}$ S-L direction 21 ksi $\sqrt{\text{in.}}$
2124-T62	Reynolds	09/12/83	Sheet	0.050-0.187	Min	62.0	48.0	5	
2124-T8151	Alcoa	10/06/86	Plate	1.001-1.499	Min ⁶	68.0	62.0	8	
					Min ⁹	68.0	62.0	7	
				1.500-2.000	Min ⁶	68.0	62.0	8	
					Min ⁹	68.0	62.0	7	
					Min ¹⁰	65.0	57.0	2	
				2.001-3.000	Min ⁶	67.0	60.0	8	
					Min ⁹	67.0	60.0	7	
					Min ¹⁰	64.0	57.0	2	
				3.001-4.000	Min ⁶	67.0	59.0	7	
					Min ⁹	67.0	59.0	6	
					Min ¹⁰	64.0	57.0	2	
				4.001-5.000	Min ⁶	66.0	58.0	6	
					Min ⁹	66.0	58.0	6	
					Min ¹⁰	63.0	55.0	2	
				5.001-6.000	Min ⁶	65.0	57.0	6	
					Min ⁹	65.0	56.0	5	
					Min ¹⁰	62.0	54.0	2	
2224-T3510 & -T3511	Boeing	12/21/78	Extrusion	0.250-0.749 0.750-1.500	Min ⁶ Min ⁶	65.0 69.0	48.0 50.0	12 10	Requires special extrusion practice; standard 2024 heat treatment.
++ 2324-T39	Boeing	12/21/78 Revised 03/25/98	Plate	0.750-1.300	Min ⁶ Min ⁹	68.0 71.0	62.0 58.0	10 8	Standard 2024 solution treatment and quench followed by 11% nominal cold roll and 1% minimum stretcher stress relief.
				1.301-1.500	Min ⁶ Min ⁹	67.0 71.0	61.0 57.0	10 8	
+ Alclad 2524-T3	Alcoa	02/27/97	Sheet & Plate	0.032-0.062	Min ⁹	59.0	39.0	15	
				0.063-0.128	Min ⁹	61.0	40.0	15	
				0.129-0.249	Min ⁹	62.0	40.0	15	
				0.250-0.310	Min ⁹	62.0	40.0	15	
+ 2026-T3511	Alcoa	06/22/00	Extruded Rod, Bar, Profiles	Up thru 0.249 0.250-0.499 0.500-1.499	Min ⁶	66.0	48.0	11	
					Min ⁶	70.0	52.0	12	
					Min ⁶	72.0	53.0	11	
					Min ⁹	66.0	46.0	8	
				1.500-2.249	Min ⁶	73.0	54.0	11	
					Min ⁹	64.0	44.0	8	
				2.250-3.250	Min ⁶ Min ⁹	73.0 61.0	54.0 42.0	10 8	
2038-T4	Reynolds	10/10/82	Sheet	0.025-0.070	Min	40.0	20.0	20	Automotive sheet.
2038-T6	Reynolds	10/10/82	Sheet	0.025-0.070	Min	50.0	44.0	8	Automotive Sheet

Footnotes appear beginning on page 24.

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WROUGHT PRODUCTS
2090-2297

Alloy Temper	Registered		Product	Thickness, in.	Tensile Strength, ksi			Elongation in 2 inches or 4 D	Remarks ²
	By	Date			Basis ¹	Ult.	Yield		
2090-T3	Alcoa	02/28/89 Revised 03/23/99	Sheet	0.032-0.249	Min	46.0	31.0	6	
2090-T83	Alcoa	03/15/88 Revised 03/09/98	Sheet	0.032-0.125	Min ⁶	77.0	70.0	3	
					Min ⁹	73.0	66.0	5	
				0.126-0.249	Min ⁶	75.0	70.0	4	
					Min ⁹	73.0	66.0	5	
2090-T86	Alcoa	08/11/88 Revised 07/30/90	Extrusion	Up thru 0.124	Min ⁶	78.0	71.0	4	
				0.125-0.249	Min ⁶	78.0	71.0	5	
				0.250-0.499	Min ⁶	80.0	73.0	5	
					Min ⁹	76.0	68.0	-	
2297-T87	McCook Metals	06/21/00	Plate	1.500-2.000	*Min ⁶	65.0	60.0	7	* Tentative <u>Fracture Toughness</u>¹⁴ — Min K_{IC} For thicknesses 1.500-2.000 inches L-T direction 34 ksi $\sqrt{\text{in.}}$ T-L direction 28 ksi $\sqrt{\text{in.}}$ S-L direction 23 ksi $\sqrt{\text{in.}}$ For thicknesses 2.001-3.000 inches L-T direction 32 ksi $\sqrt{\text{in.}}$ T-L direction 27 ksi $\sqrt{\text{in.}}$ S-L direction 21 ksi $\sqrt{\text{in.}}$ For thicknesses 3.001-4.000 inches L-T direction 31 ksi $\sqrt{\text{in.}}$ T-L direction 27 ksi $\sqrt{\text{in.}}$ S-L direction 20 ksi $\sqrt{\text{in.}}$ For thicknesses 4.001-5.000 inches L-T direction 30 ksi $\sqrt{\text{in.}}$ T-L direction 26 ksi $\sqrt{\text{in.}}$ S-L direction 18 ksi $\sqrt{\text{in.}}$ For thicknesses 5.001-6.000 inches L-T direction 29 ksi $\sqrt{\text{in.}}$ T-L direction 25 ksi $\sqrt{\text{in.}}$ S-L direction 18 ksi $\sqrt{\text{in.}}$ <u>Exfoliation Corrosion Resistance</u> See Footnote 15.b. <u>Stress Corrosion Resistance</u> 30 days at 30 ksi when tested in the ST direction per ASTM G47.
					*Min ⁹	65.0	60.0	5	
					*Min ¹⁰	64.0	57.0	2	
				2.001-3.000	*Min ⁶	63.0	58.0	6	
					*Min ⁹	63.0	58.0	4	
					*Min ¹⁰	62.0	56.0	2	
				3.001-4.000	Min ⁶	62.0	57.0	5	
					Min ⁹	62.0	57.0	4	
					Min ¹⁰	59.0	54.0	1.5	
				4.001-5.000	Min ⁶	61.0	56.0	5	
					Min ⁹	61.0	56.0	4	
					Min ¹⁰	58.0	52.0	1.5	
				5.001-6.000	Min ⁶	60.0	55.0	5	
					Min ⁹	60.0	55.0	4	
					Min ¹⁰	57.0	52.0	1.5	

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Alloy Temper	Registered		Product	Thickness, in.	Tensile Strength, ksi			Elongation Percent in 2 in. or 4 D	Remarks ²
	By	Date			Basis ¹	Ult.	Yield		
3002-O	Alcoa	05/17/74	Sheet	0.025-0.063	Min Max	11.0 16.0	3.0 -	* -	*20% for 0.025-0.031 23% for 0.032-0.050 25% for 0.051-0.063
3102-O	AATD	03/19/80	Drawn Seamless Tube (Coiled & Straight)	0.018-0.049	Min Max	12.0 17.0	4.0 -	* -	*Full Section 30% - *Cut Out 20% -
				0.050-0.065	Min Max	12.0 17.0	4.0 -	* -	35% - 25% -
3102-H112	Bohn	04/07/76	Extruded Coiled Tube	0.028-0.050	Min Max	11.0 18.0	4.0 -	25 -	
Alclad 3102-O	AATD	06/04/79	Drawn Seamless Tube	0.018-0.049	Min Max	10.0 17.0	3.5 -	* -	*Full Section 30% - *Cut Out 20% -
				0.050-0.065	Min Max	10.0 17.0	3.5 -	* -	35% - 35% -
3003-H121	Howmet	02/13/79	Sheet	0.028-0.036	Min Max	17.0 23.0	12.0 -	16 -	Used for tread plate applications.
3003-H183	Alcoa	12/21/53	Tube	-	Min	27.0	-	-	
3003-H191	Alcoa	12/01/64	Sheet	-	Min Max	30.0 35.0	- -	- -	
3003-H231	Reynolds	01/03/91	Sheet	0.063-0.113 0.114-0.161 0.162-0.188	Min Min Min	19.0 19.0 19.0	15.0 15.0 15.0	5 6 7	
3003-H271	Alcoa	08/08/56	Sheet	-	Min	25.0	-	7	
3003-H281	Alcoa	12/01/83	Drawn Tube	0.025-0.049 0.050-0.249	Min Min	27.0 27.0	24.0 24.0	* *	*Full Section 5% 6% *Cut Out 4% 5%
Alclad 3003-H19	AATD	12/01/64	Sheet	0.006-0.063	Min	28.0	-	-	

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Alloy Temper	Registered		Product	Thickness, in.	Tensile Strength, ksi			Elongation Percent in 2 in. or 4 D	Remarks ²
	By	Date			Basis ¹	Ult.	Yield		
3004-H151	AATD	-	Sheet	0.024-0.050	Min ²⁰	35.0	31.0	2	Special temper assigned for corrugated roofing and siding, V-beam roofing and siding, and ribbed siding (painted stucco embossed).
3004-H19	AATD	12/01/64	Sheet	0.006-0.063	Min	40.0	-	-	
3004-H241	Alcoa	-	Sheet & Plate	-	Min	33.0	-	-	
3004-H261	AATD	-	Sheet	0.024-0.050	Min ²⁰	35.0	31.0	2	
3004-H291	Kaiser	08/31/59	Sheet	0.030-0.080	Min	39.0	35.0	4	Special temper assigned for corrugated roofing and siding, V-beam roofing and siding, and ribbed siding (painted, stucco embossed).
3004-H361	AATD	-	Sheet	0.024-0.050	Min ²⁰	35.0	31.0	2	Special temper assigned for corrugated roofing and siding, V-beam roofing and siding, and ribbed siding (painted, stucco embossed).
3004-H392	Alcoa	12/01/64	Sheet	0.008-0.012	Min	42.0	40.0	-	Special purpose venetian blind stock.
Alclad 3004-H131	AATD	09/05/67	Sheet	0.036-0.050	Min ²⁰	31.0	26.0	2	Special temper assigned for ribbed roofing (unpainted). *1% for 0.009-0.019 2% for 0.020-0.050 3% for 0.051-0.113 4% for 0.114-0.499
Alclad 3004-H14	AATD	03/31/67	Sheet & Plate	0.009-0.499	Min Max	32.0 38.0	26.0 -	* -	
				0.500-1.000	Min Max	33.0 39.0	27.0 -	4 -	
Alclad 3004-H151	AATD	09/05/67	Sheet	0.024-0.050	Min ²⁰	34.0	30.0	2	
Alclad 3004-H16	AATD	03/31/67	Sheet	0.006-0.162	Min Max	35.0 41.0	30.0 -	- -	Special temper assigned for corrugated roofing and siding, V-beam roofing and siding, and ribbed siding (painted and unpainted, stucco embossed).
Alclad 3004-H19	AATD	12/01/64	Sheet	0.006-0.063	Min	39.0	-	-	
Alclad 3004-H241	AATD	09/05/67	Sheet	0.036-0.050	Min ²⁰	31.0	26.0	2	
Alclad 3004-H261	AATD	09/05/67	Sheet	0.024-0.050	Min ²⁰	34.0	30.0	2	
Alclad 3004-H291	Kaiser	11/24/61	Sheet	0.030-0.080	Min	38.0	34.0	5	Special temper assigned for corrugated roofing and siding, V-beam roofing and siding, and ribbed siding (painted and unpainted, stucco embossed).
Alclad 3004-H341	AATD	09/05/67	Sheet	0.036-0.050	Min ²⁰	31.0	26.0	2	Special temper assigned for ribbed roofing (unpainted).
Alclad 3004-H361	AATD	09/05/67	Sheet	0.024-0.050	Min ²⁰	34.0	30.0	2	Special temper assigned for corrugated roofing and siding, V-beam roofing and siding, and ribbed siding (painted and unpainted, stucco embossed).

Footnotes appear beginning on page 24.