

ADDENDUM TO 2018 TAN SHEETS
Temper for Aluminum and Aluminum Alloy Products Metric Edition

May 28, 2025

New and Revised Registrations Since Publication of 2018 Tan Sheets											
Registered			Product	Thickness, mm		Tensile Strength, MPa			Elongation Percent in ²¹		Remarks ²
Alloy Temper	By	Date		Over	Thru	Basis ¹	Ult.	Yield	50 mm	5D or 5.65 √A	
2033-T3	Eural Gnutti S.p.A.	5/11/2024	Bar, Rod & Wire	3.20	30.00	Min ⁶	370	240	7	7	Cold Finished.
				30.00	80.00	Min ⁶	340	220	7	7	
2033-T351	Eural Gnutti S.p.A.	5/11/2024	Bar, Rod & Wire	3.20	80.00	Min ⁶	370	240	5	5	Cold Finished.
2033-T6	Eural Gnutti S.p.A.	5/11/2024	Extruded Bar, Rod & Wire	3.20	80.00	Min ⁶	370	250	8	8	
				80.00	250.00	Min ⁶	340	220	8	8	
2033-T6	Eural Gnutti S.p.A.	5/11/2024	Extruded Profiles	3.20	40.00	Min ⁶	340	220	8	8	
2033-T6510	Eural Gnutti S.p.A.	5/11/2024	Extruded Bar, Rod & Wire	3.20	80.00	Min ⁶	370	250	8	8	
				80.00	250.00	Min ⁶	340	220	8	8	
2033-T6510	Eural Gnutti S.p.A.	5/11/2024	Extruded Profiles	3.20	40.00	Min ⁶	340	220	8	8	
2033-T6511	Eural Gnutti S.p.A.	5/11/2024	Extruded Bar, Rod & Wire	3.20	80.00	Min ⁶	370	250	8	8	
				80.00	250.00	Min ⁶	340	220	8	8	
2033-T6511	Eural Gnutti S.p.A.	5/11/2024	Extruded Profiles	3.20	40.00	Min ⁶	340	220	8	8	
2033-T8	Eural Gnutti S.p.A.	5/11/2024	Bar, Rod & Wire	3.20	80.00	Min ⁶	370	270	8	8	Cold Finished.
2043-T85	Universal Alloy	02/07/2019	Extrusion	1.00	6.30	*Min ⁶	525	485	6	-	*Tentative
				6.30	12.50	*Min ⁶	540	505	7	-	Cross-sectional area less than or equal to 15000 mm ² and circle size less than or equal to 410 mm.
				12.50	25.00	*Min ⁶	550	515	-	6	Solution heat treated and cold worked in the range 3-6% and artificially aged.
				25.00	60.00	*Min ⁶	565	540	-	6	<u>Stress Corrosion Resistance</u> For ST specimens taken from section thicknesses 20 mm and greater, See footnote 4b.

Unless specified below, for all referenced footnotes refer to the Yellow and/or Tan Sheets as applicable.

FN 4.b. Material shall be capable of passing the stress corrosion cracking test described in ASTM G47 when stressed to: b. 240 MPa.

FN 4.e. Material shall be capable of passing the stress corrosion cracking test described in ASTM G47 when stressed to: e. 310 MPa.

FN 9 Long Transverse

FN 10 Short Transverse

FN 15.b. Material shall be capable of demonstrating exfoliation corrosion resistance. Exfoliation corrosion resistance shall be determined in accordance with ASTM G34 and material shall not exhibit exfoliation corrosion greater than that illustrated by Photo EB, Figure 2. The applicable sample plane for testing is indicated by one of the following locations: b. At the T/10 plane.

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New and Revised Registrations Since Publication of 2018 Tan Sheets

Registered			Product	Thickness, mm		Tensile Strength, MPa			Elongation Percent in ²¹		Remarks ²
Alloy Temper	By	Date		Over	Thru	Basis ¹	Ult.	Yield	50 mm	5D or 5.65 √A	
											Exfoliation Corrosion Resistance See footnote 15b. Note: ASTM G85 Annex A2 Dry-Bottom MASTMAASIS Method for 2 weeks.
2050 T34	Constellium	01/25/2016 Revised 08/04/17 Revised 02/01/2019	Plate	12.50	165.00	Min ⁹	345	235	-	15	Solution heat treated and cold worked 3-4.5%.
2050-T84	Constellium	11/21/2022	Plate	165.00	180.00	*Min ⁶ *Min ⁹ *Min ¹⁰	485 485 470	455 435 400	- - -	3 3 1.5	*Tentative Solution heat treated and cold worked approximately 3-4.5% and artificially aged.
				180.00	200.00	*Min ⁶ *Min ⁹ *Min ¹⁰	475 475 455	450 425 395	- - -	3 2 1.5	<u>Stress Corrosion Resistance</u> For thicknesses 165.00 – 200.00 mm. Direct C-rings and Tensile specimens machined and tested in accordance with ASTM G47 shall show no evidence of stress corrosion failure when tested in the short transverse direction at 310 MPa and exposed for 30 days. <u>Fracture Toughness¹⁴</u> – Min K _{IC} For thicknesses 165.00 – 180.00 mm L-T direction 24 MPaVm T-L direction 20 MPaVm S-L direction 18 MPaVm For thicknesses 180.00 – 200.00 mm L-T direction 22 MPaVm T-L direction 18 MPaVm S-L direction 16 MPaVm
2077-T4	Eural Gnutti S.p.A.	5/11/2024	Extruded Bar, Rod & Wire	3.20 75.00 150.00 200.00	75.00 150.00 200.00 250.00	Min ⁶ Min ⁶ Min ⁶ Min ⁶	400 390 370 360	270 260 240 220	10 9 8 7	10 9 8 7	

Unless specified below, for all referenced footnotes refer to the Yellow and/or Tan Sheets as applicable.

FN 4.b. Material shall be capable of passing the stress corrosion cracking test described in ASTM G47 when stressed to: b. 240 MPa.

FN 4.e. Material shall be capable of passing the stress corrosion cracking test described in ASTM G47 when stressed to: e. 310 MPa.

FN 9 Long Transverse

FN 10 Short Transverse

FN 15.b. Material shall be capable of demonstrating exfoliation corrosion resistance. Exfoliation corrosion resistance shall be determined in accordance with ASTM G34 and material shall not exhibit exfoliation corrosion greater than that illustrated by Photo EB, Figure 2. The applicable sample plane for testing is indicated by one of the following locations: b. At the T/10 plane.

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Registered			Product	Thickness, mm		Tensile Strength, MPa			Elongation Percent in ²¹		Remarks ²
Alloy Temper	By	Date		Over	Thru	Basis ¹	Ult.	Yield	50 mm	5D or 5.65 √A	
2077-T4511	Eural Gnutti S.p.A.	5/11/2024	Extruded Bar, Rod & Wire	3.20	75.00	Min ⁶	400	270	10	10	
				75.00	150.00	Min ⁶	390	260	9	9	
				150.00	200.00	Min ⁶	370	240	8	8	
				200.00	250.00	Min ⁶	360	220	7	7	
2077-T6	Eural Gnutti S.p.A.	5/11/2024	Bar, Rod & Wire	3.20	80.00	Min ⁶	480	400	5	5	Cold Finished.
2077-T6	Eural Gnutti S.p.A.	5/11/2024	Extruded Bar, Rod & Wire	3.20	150.00	Min ⁶	455	380	5	5	
				150.00	200.00	Min ⁶	420	280	8	8	
				200.00	250.00	Min ⁶	400	270	8	8	
2077-T651	Eural Gnutti S.p.A.	5/11/2024	Bar, Rod & Wire	3.20	80.00	Min ⁶	480	400	5	5	Cold Finished.
2077-T6511	Eural Gnutti S.p.A.	5/11/2024	Extruded Bar, Rod & Wire	3.20	150.00	Min ⁶	455	380	5	5	
				150.00	200.00	Min ⁶	420	280	8	8	
				200.00	250.00	Min ⁶	400	270	8	8	
2081-T84	Kaiser	11/16/2018	Plate	25.00	50.00	*Min ⁶	525	505	-	7	*Tentative Solution heat treated and cold worked 2-5%.
						*Min ⁹	525	485	-	6	
				50.00	76.00	*Min ⁶	510	490	-	5	
						*Min ⁹	515	470	-	5	
						*Min ¹⁰	495	425	-	2	
				76.00	100.00	*Min ⁶	505	485	-	5	
						*Min ⁹	510	460	-	3	
						*Min ¹⁰	490	425	-	2	

Unless specified below, for all referenced footnotes refer to the Yellow and/or Tan Sheets as applicable.

FN 4.b. Material shall be capable of passing the stress corrosion cracking test described in ASTM G47 when stressed to: b. 240 MPa.

FN 4.e. Material shall be capable of passing the stress corrosion cracking test described in ASTM G47 when stressed to: e. 310 MPa.

FN 9 Long Transverse

FN 10 Short Transverse

FN 15.b. Material shall be capable of demonstrating exfoliation corrosion resistance. Exfoliation corrosion resistance shall be determined in accordance with ASTM G34 and material shall not exhibit exfoliation corrosion greater than that illustrated by Photo EB, Figure 2. The applicable sample plane for testing is indicated by one of the following locations: b. At the T/10 plane.

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Registered			Product	Thickness, mm		Tensile Strength, MPa			Elongation Percent in ²¹		Remarks ²
Alloy Temper	By	Date		Over	Thru	Basis ¹	Ult.	Yield	50 mm	5D or 5.65 √A	
2297-T87	McCook Metals Constellium	06/21/2000 Revised 06/03/2004 Revised 01/12/2022	Plate	40.00	50.00	Min ⁶	440	400	-	9	<u>Stress Corrosion Resistance</u> 30 days at 310 MPa when tested in the ST direction per ASTM G47 in the thickness range of 80.00-130.00 mm. Product outside this thickness range will continue to exhibit capability of 30 days at 205 MPa. <u>Exfoliation Corrosion Resistance</u> See footnote 15.b. <u>Fracture Toughness</u> ¹⁴ – Min K _{IC} For thicknesses over 40.00 thru 80.00 mm L-T direction 35 MPa √m T-L direction 30 MPa √m S-L direction 22 MPa √m For thicknesses over 80.00 thru 100.00 mm L-T direction 34 MPa √m T-L direction 30 MPa √m S-L direction 22 MPa √m For thicknesses over 100.00 thru 125.00 mm L-T direction 33 MPa √m T-L direction 29 MPa √m S-L direction 20 MPa √m For thicknesses over 125.00 thru 160.00 mm L-T direction 32 MPa √m T-L direction 27 MPa √m S-L direction 20 MPa √m
						Min ⁹	455	415	-	7	
						Min ¹⁰	450	395	-	2	
				50.00	60.00	Min ⁶	435	395	-	8	
						Min ⁹	440	400	-	6	
						Min ¹⁰	440	385	-	2	
				60.00	80.00	Min ⁶	425	395	-	8	
						Min ⁹	440	400	-	6	
						Min ¹⁰	425	380	-	2	
				80.00	100.00	Min ⁶	430	395	-	4	
						Min ⁹	430	395	-	3	
						Min ¹⁰	405	370	-	1.5	
				100.00	125.00	Min ⁶	420	385	-	4	
						Min ⁹	420	385	-	3	
						Min ¹⁰	400	360	-	1.5	
				125.00	160.00	Min ⁶	415	380	-	4	
						Min ⁹	415	380	-	3	
						Min ¹⁰	395	360	-	1.5	

Unless specified below, for all referenced footnotes refer to the Yellow and/or Tan Sheets as applicable.

FN 4.b. Material shall be capable of passing the stress corrosion cracking test described in ASTM G47 when stressed to: b. 240 MPa.

FN 4.e. Material shall be capable of passing the stress corrosion cracking test described in ASTM G47 when stressed to: e. 310 MPa.

FN 9 Long Transverse

FN 10 Short Transverse

FN 15.b. Material shall be capable of demonstrating exfoliation corrosion resistance. Exfoliation corrosion resistance shall be determined in accordance with ASTM G34 and material shall not exhibit exfoliation corrosion greater than that illustrated by Photo EB, Figure 2. The applicable sample plane for testing is indicated by one of the following locations: b. At the T/10 plane.

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Registered			Product	Thickness, mm		Tensile Strength, MPa			Elongation Percent in ²¹		Remarks ²
Alloy Temper	By	Date		Over	Thru	Basis ¹	Ult.	Yield	50 mm	5D or 5.65 √A	
2397-T87	Alcoa Revised Arconic	02/12/2003 Revised 08/17/2005 Revised 08/02/2018	Plate	80.00	100.00	Min ⁶ Min ⁹ Min ¹⁰	425 425 415	395 395 370	- - -	4 4 1.5	<u>Stress Corrosion Resistance</u> See footnote 4.b. <u>Exfoliation Corrosion Resistance</u> See footnote 15.b. <u>Fracture Toughness¹⁴ – Min K_{IC}</u> For thickness over 80.00 thru 100.00 L-T direction 34 MPa Vm T-L direction 30 MPa Vm S-L direction 22 MPa Vm
6061-T651	Constellium	09/09/2019	Plate	152.00 203.00 254.00	203.00 254.00 305.00	*Min ⁹ *Min ⁹ *Min ⁹	290 280 275	250 235 220	- - -	8 7 7	*Tentative
7140-T7351	Constellium	02/17/2025	Plate	100.00 120.00 160.00 180.00	120.00 160.00 180.00 200.00	*Min ⁶ *Min ⁹ *Min ¹⁰ *Min ⁶ *Min ⁹ *Min ¹⁰ *Min ⁶ *Min ⁹ *Min ¹⁰ *Min ⁶ *Min ⁹ *Min ¹⁰	470 475 455 470 475 450 460 470 440 460 470 440	415 405 370 415 405 370 405 400 365 400 395 365	- - - - - - - - - - - -	9 6 4 9 5 4 8 5 4 7 4 4	*Tentative <u>Stress Corrosion Resistance</u> See footnote 4e. <u>Fracture Toughness¹⁴ – Min K_{IC} or K_Q</u> For thicknesses over 100.00 thru 120.00 mm L-T direction 38 MPaVm T-L direction 27 MPaVm S-L direction 30 MPaVm For thicknesses over 120.00 thru 160.00 mm L-T direction 36 MPaVm T-L direction 27 MPaVm S-L direction 30 MPaVm

Unless specified below, for all referenced footnotes refer to the Yellow and/or Tan Sheets as applicable.

FN 4.b. Material shall be capable of passing the stress corrosion cracking test described in ASTM G47 when stressed to: b. 240 MPa.

FN 4.e. Material shall be capable of passing the stress corrosion cracking test described in ASTM G47 when stressed to: e. 310 MPa.

FN 9 Long Transverse

FN 10 Short Transverse

FN 15.b. Material shall be capable of demonstrating exfoliation corrosion resistance. Exfoliation corrosion resistance shall be determined in accordance with ASTM G34 and material shall not exhibit exfoliation corrosion greater than that illustrated by Photo EB, Figure 2. The applicable sample plane for testing is indicated by one of the following locations: b. At the T/10 plane.

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Registered			Product	Thickness, mm		Tensile Strength, MPa			Elongation Percent in ²¹		Remarks ²
Alloy Temper	By	Date		Over	Thru	Basis ¹	Ult.	Yield	50 mm	5D or 5.65 √A	
				200.00	230.00	*Min ⁶	460	400	-	7	For thicknesses over 160.00 thru 180.00 mm L-T direction 34 MPaVm T-L direction 27 MPaVm S-L direction 30 MPaVm
						*Min ⁹	470	395	-	4	
						*Min ¹⁰	440	365	-	4	
				230.00	250.00	*Min ⁶	455	395	-	6	For thicknesses over 180.00 thru 200.00 mm L-T direction 32 MPaVm T-L direction 26 MPaVm S-L direction 30 MPaVm
						*Min ⁹	460	385	-	4	
						*Min ¹⁰	435	360	-	4	
											For thicknesses over 200.00 thru 230.00 mm L-T direction 30 MPaVm T-L direction 26 MPaVm S-L direction 30 MPaVm
											For thicknesses over 230.00 thru 250.00 mm L-T direction 30 MPaVm T-L direction 26 MPaVm S-L direction 30 MPaVm

Unless specified below, for all referenced footnotes refer to the Yellow and/or Tan Sheets as applicable.

FN 4.b. Material shall be capable of passing the stress corrosion cracking test described in ASTM G47 when stressed to: b. 240 MPa.

FN 4.e. Material shall be capable of passing the stress corrosion cracking test described in ASTM G47 when stressed to: e. 310 MPa.

FN 9 Long Transverse

FN 10 Short Transverse

FN 15.b. Material shall be capable of demonstrating exfoliation corrosion resistance. Exfoliation corrosion resistance shall be determined in accordance with ASTM G34 and material shall not exhibit exfoliation corrosion greater than that illustrated by Photo EB, Figure 2. The applicable sample plane for testing is indicated by one of the following locations: b. At the T/10 plane.

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Registered			Product	Thickness, mm		Tensile Strength, MPa			Elongation Percent in ²¹		Remarks ²
Alloy Temper	By	Date		Over	Thru	Basis ¹	Ult.	Yield	50 mm	5D or 5.65 √A	
7140-T7451	Alcan Revised Constellium	06/15/2005 04/16/2024	Plate	100.00	120.00	Min ⁶	490	455	-	8	<u>Stress Corrosion Resistance</u> See footnote 4.b. <u>Exfoliation Corrosion Resistance</u> See footnote 15.b.
						Min ⁹	505	450	-	4	
						Min ¹⁰	475	415	-	3	
				120.00	160.00	Min ⁶	490	455	-	7	
						Min ⁹	495	450	-	4	
						Min ¹⁰	475	415	-	3	
				160.00	180.00	Min ⁶	490	450	-	6	
						Min ⁹	495	440	-	4	
						Min ¹⁰	470	405	-	3	
				180.00	200.00	Min ⁶	485	450	-	5	
						Min ⁹	490	435	-	4	
						Min ¹⁰	470	400	-	3	
				200.00	230.00	Min ⁶	485	450	-	5	
						Min ⁹	490	435	-	4	
						Min ¹⁰	460	400	-	3	
				230.00	250.00	Min ⁶	485	450	-	4	
						Min ⁹	485	435	-	3	
						Min ¹⁰	460	400	-	3	
				100.00	120.00	Min ⁶	510	485	-	6	<u>Stress Corrosion Resistance</u> Material shall be capable of passing the stress corrosion cracking test described in ASTM G47 when stressed to 180 MPa for 20 days. <u>Exfoliation Corrosion Resistance</u> See footnote 15.b. Fracture Toughness ¹⁴ – Min K _{IC} For thicknesses over 100.00 thru 120.00 mm L-T direction 30 MPa√m T-L direction 24 MPa√m S-L direction 24 MPa√m
						Min ⁹	525	475	-	5	
						Min ¹⁰	505	435	-	3	
				120.00	160.00	Min ⁶	510	485	-	6	
						Min ⁹	515	470	-	3	
						Min ¹⁰	495	425	-	3	
				160.00	180.00	Min ⁶	505	475	-	6	
						Min ⁹	515	470	-	3	
						Min ¹⁰	490	425	-	3	

Unless specified below, for all referenced footnotes refer to the Yellow and/or Tan Sheets as applicable.

FN 4.b. Material shall be capable of passing the stress corrosion cracking test described in ASTM G47 when stressed to: b. 240 MPa.

FN 4.e. Material shall be capable of passing the stress corrosion cracking test described in ASTM G47 when stressed to: e. 310 MPa.

FN 9 Long Transverse

FN 10 Short Transverse

FN 15.b. Material shall be capable of demonstrating exfoliation corrosion resistance. Exfoliation corrosion resistance shall be determined in accordance with ASTM G34 and material shall not exhibit exfoliation corrosion greater than that illustrated by Photo EB, Figure 2. The applicable sample plane for testing is indicated by one of the following locations: b. At the T/10 plane.

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Alloy Temper	By	Date		Over	Thru	Basis ¹	Ult.	Yield	50 mm	5D or 5.65 √A	
				180.00	200.00	Min ⁶ Min ⁹ Min ¹⁰	495 510 490	475 460 420	- - -	5 3 3	For thicknesses over 120.00 thru 160.00 mm L-T direction 27 MPaVm T-L direction 23 MPaVm S-L direction 24 MPaVm
				200.00	230.00	Min ⁶ Min ⁹ Min ¹⁰	495 505 475	470 450 415	- - -	4 3 3	For thicknesses over 160.00 thru 180.00 mm L-T direction 26 MPaVm T-L direction 22 MPaVm S-L direction 24 MPaVm
				230.00	250.00	Min ⁶ Min ⁹ Min ¹⁰	490 490 470	460 440 405	- - -	4 2 3	For thicknesses over 180.00 thru 200.00 mm L-T direction 24 MPaVm T-L direction 21 MPaVm S-L direction 23 MPaVm For thicknesses over 200.00 thru 230.00 mm L-T direction 22 MPaVm T-L direction 20 MPaVm S-L direction 22 MPaVm For thicknesses over 230.00 thru 250.00 mm L-T direction 20 MPaVm T-L direction 19 MPaVm S-L direction 22 MPaVm
7048-T6511	Kaiser	04/08/2020	Extrusion	1.00	3.20	Min ⁶	465	435	10	-	
7055-T76511	Alcoa Revised Arconic	01/15/2001 Revised 06/20/2007 Revised 08/14/2020	Extruded Rod, Bar & Profiles	- 6.30 12.50	6.30 12.50 80.0	Min ⁶ Min ⁶ Min ⁶	615 620 625	585 585 595	7 9 -	- - 8	<u>Exfoliation Corrosion Resistance</u> See footnote 15.b. For thickness up thru 12.50 mm Cross Sectional Area 7700 square mm max. and Circle Size 250 mm max. For thickness 12.50 – 80.0 mm Cross Sectional Area 17000 square mm max. and Circle Size 390 mm max. Longitudinal Compressive Yield Strength: 600 MPa.

Unless specified below, for all referenced footnotes refer to the Yellow and/or Tan Sheets as applicable.

FN 4.b. Material shall be capable of passing the stress corrosion cracking test described in ASTM G47 when stressed to: b. 240 MPa.

FN 4.e. Material shall be capable of passing the stress corrosion cracking test described in ASTM G47 when stressed to: e. 310 MPa.

FN 9 Long Transverse

FN 10 Short Transverse

FN 15.b. Material shall be capable of demonstrating exfoliation corrosion resistance. Exfoliation corrosion resistance shall be determined in accordance with ASTM G34 and material shall not exhibit exfoliation corrosion greater than that illustrated by Photo EB, Figure 2. The applicable sample plane for testing is indicated by one of the following locations: b. At the T/10 plane.

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Alloy Temper	By	Date		Over	Thru	Basis ¹	Ult.	Yield	50 mm	5D or 5.65 √A	
7160-T7351	Constellium	11/08/2018 Revised 02/06/2020	Plate	25.00	40.00	Min ⁶ Min ⁹	510 510	460 450	- -	11 10	<u>Stress Corrosion Resistance</u> See footnote 4e. <u>Fracture Toughness</u> ¹⁴ – Min K _{IC} or K _Q For thicknesses 25.00 thru 80.00 mm L-T direction 44 MPa√m T-L direction 37 MPa√m For thicknesses 50.00 thru 80.00 mm L-T direction 49 MPa√m T-L direction 36 MPa√m S-L direction 38 MPa√m For thicknesses 80.00 thru 100.00 mm L-T direction 42 MPa√m T-L direction 33 MPa√m S-L direction 37 MPa√m For thicknesses 100.00 thru 120.00 mm L-T direction 40 MPa√m T-L direction 30 MPa√m S-L direction 34 MPa√m For thicknesses 120.00 thru 150.00 mm L-T direction 31 MPa√m T-L direction 27 MPa√m S-L direction 29 MPa√m
7160-T7451	Constellium	11/02/2018	Plate	25.00	40.00	*Min ⁶ *Min ⁹	530 525	490 475	- -	12 11	*Tentative <u>Stress Corrosion Resistance</u> See footnote 4b. <u>Fracture Toughness</u> ¹⁴ – Min K _{IC} or K _Q For thicknesses 25.00 thru 40.00 mm L-T direction 37 MPa√m T-L direction 32 MPa√m
				40.00	50.00	*Min ⁶ *Min ⁹ *Min ¹⁰	530 525 505	490 475 440	- - -	12 10 5	
				50.00	80.000	*Min ⁶ *Min ⁹ *Min ¹⁰	515 515 505	475 470 440	- - -	11 10 5	

Unless specified below, for all referenced footnotes refer to the Yellow and/or Tan Sheets as applicable.

FN 4.b. Material shall be capable of passing the stress corrosion cracking test described in ASTM G47 when stressed to: b. 240 MPa.

FN 4.e. Material shall be capable of passing the stress corrosion cracking test described in ASTM G47 when stressed to: e. 310 MPa.

FN 9 Long Transverse

FN 10 Short Transverse

FN 15.b. Material shall be capable of demonstrating exfoliation corrosion resistance. Exfoliation corrosion resistance shall be determined in accordance with ASTM G34 and material shall not exhibit exfoliation corrosion greater than that illustrated by Photo EB, Figure 2. The applicable sample plane for testing is indicated by one of the following locations: b. At the T/10 plane.

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Registered			Product	Thickness, mm		Tensile Strength, MPa			Elongation Percent in ²¹		Remarks ²
Alloy Temper	By	Date		Over	Thru	Basis ¹	Ult.	Yield	50 mm	5D or 5.65 √A	
				80.00	100.00	*Min ⁶	505	470	-	11	For thicknesses 40.00 thru 50.00 mm
						*Min ⁹	515	460	-	9	L-T direction 37 MPaVm
						*Min ¹⁰	495	425	-	4	T-L direction 32 MPaVm
				100.00	120.00	*Min ⁶	495	460	-	10	For thicknesses 50.00 thru 80.00 mm
						*Min ⁹	510	455	-	8	L-T direction 35 MPaVm
						*Min ¹⁰	485	420	-	3	T-L direction 30 MPaVm
											S-L direction 31 MPaVm
				120.00	150.00	*Min ⁶	495	455	-	9	For thicknesses 80.00 thru 100.00 mm
						*Min ⁹	505	450	-	5	L-T direction 33 MPaVm
						*Min ¹⁰	475	420	-	2	T-L direction 27 MPaVm
											S-L direction 30 MPaVm
											For thicknesses 100.00 thru 120.00 mm
											L-T direction 31 MPaVm
											T-L direction 26 MPaVm
											S-L direction 29 MPaVm
											For thicknesses 120.00 thru 150.00 mm
											L-T direction 29 MPaVm
											T-L direction 24 MPaVm
											S-L direction 27 MPaVm

Unless specified below, for all referenced footnotes refer to the Yellow and/or Tan Sheets as applicable.

FN 4.b. Material shall be capable of passing the stress corrosion cracking test described in ASTM G47 when stressed to: b. 240 MPa.

FN 4.e. Material shall be capable of passing the stress corrosion cracking test described in ASTM G47 when stressed to: e. 310 MPa.

FN 9 Long Transverse

FN 10 Short Transverse

FN 15.b. Material shall be capable of demonstrating exfoliation corrosion resistance. Exfoliation corrosion resistance shall be determined in accordance with ASTM G34 and material shall not exhibit exfoliation corrosion greater than that illustrated by Photo EB, Figure 2. The applicable sample plane for testing is indicated by one of the following locations: b. At the T/10 plane.

ADDENDUM TO 2018 TAN SHEETS
Tempers for Aluminum and Aluminum Alloy Products Metric Edition

May 28, 2025

New and Revised Registrations Since Publication of 2018 Tan Sheets											
Registered			Product	Thickness, mm		Tensile Strength, MPa			Elongation Percent in ²¹		Remarks ²
Alloy Temper	By	Date		Over	Thru	Basis ¹	Ult.	Yield	50 mm	5D or 5.65 √A	
7160-T7651	Constellium	12/05/2017 Revised 12/19/2018	Plate	25.00	40.00	Min ⁶ Min ⁹	545 540	510 495	- -	11 11	Stress Corrosion Resistance See footnote 4a.
				40.00	50.00	Min ⁶ Min ⁹ Min ¹⁰	540 540 515	510 495 455	- - -	10 10 5	Fracture Toughness ¹⁴ – Min K _{IC} or K _Q For thicknesses 25.00 thru 50.00 mm L-T direction 37 MPa√m T-L direction 32 MPa√m
				50.00	80.00	Min ⁶ Min ⁹ Min ¹⁰	525 530 510	495 490 450	- - -	10 10 4	For thicknesses 50.00 thru 80.00 mm L-T direction 35 MPa√m T-L direction 30 MPa√m S-L direction 32 MPa√m
				80.00	100.00	Min ⁶ Min ⁹ Min ¹⁰	515 530 505	495 485 440	- - -	10 9 4	For thicknesses 80.00 thru 100.00 mm L-T direction 32 MPa√m T-L direction 29 MPa√m S-L direction 31 MPa√m
				100.00	120.00	Min ⁶ Min ⁹ Min ¹⁰	510 525 505	490 475 440	- - -	10 8 4	For thicknesses 100.00 thru 120.00 mm L-T direction 27 MPa√m T-L direction 26 MPa√m S-L direction 29 MPa√m
				120.00	150.00	Min ⁶ Min ⁹ Min ¹⁰	510 515 495	485 470 435	- - -	9 7 4	For thicknesses 120.00 thru 150.00 mm L-T direction 24 MPa√m T-L direction 25 MPa√m S-L direction 26 MPa√m
7085-T711	Aloca Revised Arconic	10/25/2011 Revised 08/02/2018	Plate	12.50	40.00	Min ⁹	550	510	-	10	Solution heat treated, stretched 1.5 to 3%, and overaged for ballistic performance.
				40.00	50.00	Min ⁹	540	505	-	10	
				50.00	80.00	Min ⁹	530	495	-	9	Over 12.50 thru 80.00 plate meets armor plate requirements of MIL-DTL-32375 (MR) Class I Type A.
				80.00	100.00	Min ⁹	525	485	-	6	Exfoliation Corrosion Resistance See footnote 15.b.

Unless specified below, for all referenced footnotes refer to the Yellow and/or Tan Sheets as applicable.

FN 4.b. Material shall be capable of passing the stress corrosion cracking test described in ASTM G47 when stressed to: b. 240 MPa.

FN 4.e. Material shall be capable of passing the stress corrosion cracking test described in ASTM G47 when stressed to: e. 310 MPa.

FN 9 Long Transverse

FN 10 Short Transverse

FN 15.b. Material shall be capable of demonstrating exfoliation corrosion resistance. Exfoliation corrosion resistance shall be determined in accordance with ASTM G34 and material shall not exhibit exfoliation corrosion greater than that illustrated by Photo EB, Figure 2. The applicable sample plane for testing is indicated by one of the following locations: b. At the T/10 plane.

ADDENDUM TO 2018 TAN SHEETS
Temper for Aluminum and Aluminum Alloy Products Metric Edition

May 28, 2025

New and Revised Registrations Since Publication of 2018 Tan Sheets											
Registered			Product	Thickness, mm		Tensile Strength, MPa			Elongation Percent in ²¹		Remarks ²
Alloy Temper	By	Date		Over	Thru	Basis ¹	Ult.	Yield	50 mm	5D or 5.65 √A	
7085-T721	Alcoa Revised Arconic	10/27/2011 Revised 08/02/2018	Plate	12.50 40.00 50.00 80.00	40.00 50.00 80.00 100.00	Min ⁹ Min ⁹ Min ⁹ Min ⁹	470 460 460 455	415 405 400 395	- - - -	10 10 10 9	Solution heat treated, stretched 1.5 to 3%, and overaged for blast performance. Over 12.50 thru 80.00 plate meets armor plate requirements of MIL-DTL-32375 (MR) Class I Type B. <u>Exfoliation Corrosion Resistance</u> See footnote 15.b.
7099-T731	Kaiser	03/13/2020	Plate	50.00	80.00	*Min ⁹	470	400	-	10	*Tentative Solution heat treated, stretched 1.5 to 3%, and artificially aged to meet armor plate requirements. Developed to meet armor plate requirements of MILDTL-32375 (Revision B Amendment 2). <u>Exfoliation Corrosion Resistance</u> See footnote 15.b.
A206-T4	Eck Industries	09/14/2020	Sand Casting	-	-	Min	350	215	9	-	Properties are from separate standard cast coupons.
A206-T7	Eck Industries	09/14/2020	Sand Casting	-	-	Min	345	240	2	-	Properties are from separate standard cast coupons.
E357-T6	Eck Industries	02/17/2017	Sand Casting	-	-	Min	276	234	1	-	Values represent properties obtained from separately cast bars and are derived from ASTM B-26, Standard Specification for Aluminum-Alloy Sand Castings.

Unless specified below, for all referenced footnotes refer to the Yellow and/or Tan Sheets as applicable.

FN 4.b. Material shall be capable of passing the stress corrosion cracking test described in ASTM G47 when stressed to: b. 240 MPa.

FN 4.e. Material shall be capable of passing the stress corrosion cracking test described in ASTM G47 when stressed to: e. 310 MPa.

FN 9 Long Transverse

FN 10 Short Transverse

FN 15.b. Material shall be capable of demonstrating exfoliation corrosion resistance. Exfoliation corrosion resistance shall be determined in accordance with ASTM G34 and material shall not exhibit exfoliation corrosion greater than that illustrated by Photo EB, Figure 2. The applicable sample plane for testing is indicated by one of the following locations: b. At the T/10 plane.

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Tentative Removed			
Alloy Temper	Product	By	Revised Date
2397-T87	Plate	Arconic	08/02/2018
7085-T711	Plate	Arconic	08/02/2018
7085-T721	Plate	Arconic	08/02/2018
7160-T7351	Plate	Constellium	02/06/2020
7160-T7651	Plate	Constellium	12/19/2018
2050-T34	Plate	Constellium	02/01/2019

Deactivated Registrations		
Alloy Temper	Product	Date Deactivated
Alclad 2024-O ²	Sheet & Plate	04/11/2018
Alclad 2024-T351 ²	Plate	04/11/2018
Alclad 2024-T42 ²	Sheet & Plate	04/11/2018
1 ½% Alclad 2024-O ²	Sheet & Plate	04/11/2018
1 ½% Alclad 2024-T351 ²	Plate	04/11/2018
1 ½% Alclad 2024-T42 ²	Sheet & Plate	04/11/2018

^{**}Deactivation is limited to specific gauge range(s) for the product indicated.

Unless specified below, for all referenced footnotes refer to the Yellow and/or Tan Sheets as applicable.

FN 4.b. Material shall be capable of passing the stress corrosion cracking test described in ASTM G47 when stressed to: b. 240 MPa.

FN 4.e. Material shall be capable of passing the stress corrosion cracking test described in ASTM G47 when stressed to: e. 310 MPa.

FN 9 Long Transverse

FN 10 Short Transverse

FN 15.b. Material shall be capable of demonstrating exfoliation corrosion resistance. Exfoliation corrosion resistance shall be determined in accordance with ASTM G34 and material shall not exhibit exfoliation corrosion greater than that illustrated by Photo EB, Figure 2. The applicable sample plane for testing is indicated by one of the following locations: b. At the T/10 plane.