

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

July 24, 2023

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	
2043-T85	Universal Alloy	02/07/2019	Extrusion	1.00	6.30	*Min ⁶	525	485	6	-	*Tentative Cross-sectional area less than or equal to 15000 mm ² and circle size less than or equal to 410 mm. Solution heat treated and cold worked in the range 3-6% and artificially aged. <u>Stress Corrosion Resistance</u> For ST specimens taken from section thicknesses 20 mm and greater, See footnote 4b. <u>Exfoliation Corrosion Resistance</u> See footnote 15b. Note: ASTM G85 Annex A2 Dry-Bottom MASTMAASIS Method for 2 weeks.
				6.30	12.50	*Min ⁶	540	505	7	-	
				12.50	25.00	*Min ⁶	550	515	-	6	
				25.00	60.00	*Min ⁶	565	540	-	6	
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%.
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 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	
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. <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. Fracture Toughness ¹⁴ – Min K _{IC} For thicknesses 165.00 – 180.00 mm L-T direction 24 MPa√m T-L direction 20 MPa√m S-L direction 18 MPa√m For thicknesses 180.00 – 200.00 mm L-T direction 22 MPa√m T-L direction 18 MPa√m S-L direction 16 MPa√m
				180.00	200.00	*Min ⁶ *Min ⁹ *Min ¹⁰	475 475 455	450 425 395	- - -	3 2 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 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	06/21/2000	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 rage will continue to exhibit capability of 30 days at 205 MPa. <u>Exfoliation Corrosion Resistance</u> See footnote 15.b. <u>Fracture Toughness¹⁴ – Min K_{IC}</u> 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	
		Revised						Min ⁹	455	415		-
	06/03/2004						Min ¹⁰	450	395	-		2
	Constellium	Revised		01/12/2022	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 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	
2397-T87	Alcoa Revised Arconic	02/12/2003	Plate	80.00	100.00	Min ⁶	425	395	-	4	<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 √m T-L direction 30 MPa √m S-L direction 22 MPa √m
		Revised 08/17/2005				Min ⁹	425	395	-	4	
		Revised 08/02/2018				Min ¹⁰	415	370	-	1.5	
6061-T651	Constellium	09/09/2019	Plate	152.00	203.00	*Min ⁹	290	250	-	8	*Tentative
				203.00	254.00	*Min ⁹	280	235	-	7	
				254.00	305.00	*Min ⁹	275	220	-	7	

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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 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-T7651	Alcan	08/01/06	Plate	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} MPa√m 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 For thicknesses over 120.00 thru 160.00 mm L-T direction 27 MPa√m T-L direction 23 MPa√m S-L direction 24 MPa√m For thicknesses over 160.00 thru 180.00 mm L-T direction 26 MPa√m T-L direction 22 MPa√m S-L direction 24 MPa√m For thicknesses over 180.00 thru 200.00 mm L-T direction 24 MPa√m T-L direction 21 MPa√m S-L direction 23 MPa√m For thicknesses over 200.00 thru 230.00 mm L-T direction 22 MPa√m T-L direction 20 MPa√m S-L direction 22 MPa√m For thicknesses over 230.00 thru 250.00 mm L-T direction 20 MPa√m T-L direction 19 MPa√m S-L direction 22 MPa√m	
	Revised						Min ⁹	525	475	-		5
	Constellium	03/27/14					Min ¹⁰	505	435	-		3
	Revised				120.00	160.00	Min ⁶	510	485	-		6
	Constellium	02/27/23					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
					180.00	200.00	Min ⁶	495	475	-		5
							Min ⁹	510	460	-		3
							Min ¹⁰	490	420	-		3
			200.00	230.00	Min ⁶	495	470	-	4			
					Min ⁹	505	450	-	3			
					Min ¹⁰	475	415	-	3			
			230.00	250.00	Min ⁶	490	460	-	4			
					Min ⁹	490	440	-	2			
					Min ¹⁰	470	405	-	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 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	
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	Min ⁶	615	585	7	-	<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.
				6.30	12.50	Min ⁶	620	585	9	-	
				12.50	80.0	Min ⁶	625	595	-	8	
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 Toughness¹⁴</u> – 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
				40.00	50.00	Min ⁶ Min ⁹	505 505	460 450	- -	11 10	
				50.00	80.00	Min ⁶ Min ⁹ Min ¹⁰	495 505 485	450 440 405	- - -	10 9 5	
				80.00	100.00	Min ⁶ Min ⁹ Min ¹⁰	490 495 485	440 435 400	- - -	10 8 4	
				100.00	120.00	Min ⁶ Min ⁹ Min ¹⁰	485 495 475	440 425 400	- - -	10 7 4	
				120.00	150.00	Min ⁶ Min ⁹ Min ¹⁰	485 490 470	435 420 400	- - -	10 6 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 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	
7160-T7451	Constellium	11/02/2018	Plate	25.00	40.00	*Min ⁶	530	490	-	12	*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 MPavm T-L direction 32 MPavm For thicknesses 40.00 thru 50.00 mm L-T direction 37 MPavm T-L direction 32 MPavm For thicknesses 50.00 thru 80.00 mm L-T direction 35 MPavm T-L direction 30 MPavm S-L direction 31 MPavm For thicknesses 80.00 thru 100.00 mm L-T direction 33 MPavm 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
						*Min ⁹	525	475	-	11	
				40.00	50.00	*Min ⁶	530	490	-	12	
						*Min ⁹	525	475	-	10	
						*Min ¹⁰	505	440	-	5	
				50.00	80.000	*Min ⁶	515	475	-	11	
						*Min ⁹	515	470	-	10	
						*Min ¹⁰	505	440	-	5	
				80.00	100.00	*Min ⁶	505	470	-	11	
						*Min ⁹	515	460	-	9	
						*Min ¹⁰	495	425	-	4	
				100.00	120.00	*Min ⁶	495	460	-	10	
						*Min ⁹	510	455	-	8	
						*Min ¹⁰	485	420	-	3	
				120.00	150.00	*Min ⁶	495	455	-	9	
						*Min ⁹	505	450	-	5	
						*Min ¹⁰	475	420	-	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 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	
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	<u>Stress Corrosion Resistance</u> See footnote 4a. <u>Fracture Toughness¹⁴</u> – 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 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 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 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 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
				40.00	50.00	Min ⁶ Min ⁹ Min ¹⁰	540 540 515	510 495 455	- - -	10 10 5	
				50.00	80.00	Min ⁶ Min ⁹ Min ¹⁰	525 530 510	495 490 450	- - -	10 10 4	
				80.00	100.00	Min ⁶ Min ⁹ Min ¹⁰	515 530 505	495 485 440	- - -	10 9 4	
				100.00	120.00	Min ⁶ Min ⁹ Min ¹⁰	510 525 505	490 475 440	- - -	10 8 4	
				120.00	150.00	Min ⁶ Min ⁹ Min ¹⁰	510 515 495	485 470 435	- - -	9 7 4	
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. Over 12.50 thru 80.00 plate meets armor plate requirements of MIL-DTL-32375 (MR) Class I Type A. <u>Exfoliation Corrosion Resistance</u> See footnote 15.b.
				40.00	50.00	Min ⁹	540	505	-	10	
				50.00	80.00	Min ⁹	530	495	-	9	
				80.00	100.00	Min ⁹	525	485	-	6	

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 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	
7085-T721	Alcoa Revised Arconic	10/27/2011 Revised 08/02/2018	Plate	12.50	40.00	Min ⁹	470	415	-	10	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.
				40.00	50.00	Min ⁹	460	405	-	10	
				50.00	80.00	Min ⁹	460	400	-	10	
				80.00	100.00	Min ⁹	455	395	-	9	
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.

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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 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

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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 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.