

**ADDENDUM TO 2018 EDITION OF YELLOW SHEETS**  
**Temper For Aluminum And Aluminum Alloy Products**

April 18, 2019

New and Revised Registrations Since Publication of 2018 Edition of Yellow Sheets									
Registered			Product	Thickness in.	Tensile Strength, ksi			Elongation Percent in 2 in. or 4D	Remarks <sup>2</sup>
Alloy Temper	By	Date			Basis <sup>1</sup>	Ult.	Yield		
2043-T85	Universal Alloy	02/07/2019	Extrusion	0.040-0.249	*Min <sup>6</sup>	76.0	70.0	6	*Tentative
				0.250-0.499	*Min <sup>6</sup>	78.0	73.0	7	Cross-sectional area less than or equal to 23 in <sup>2</sup> and circle size less than or equal to 16 in.  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 0.75 in 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
				0.500-0.999	*Min <sup>6</sup>	80.0	75.0	7	
				1.000-2.500	*Min <sup>6</sup>	82.0	78.0	7	
2050-T34	Constellium	01/25/2016 Revised 08/04/2017 Revised 02/01/2019	Plate	0.500-6.500	Min <sup>9</sup>	50.0	34.0	17	
2081-T84	Kaiser	11/16/2018	Plate	1.000-2.000	*Min <sup>6</sup>	76.0	73.0	8	*Tentative  Solution heat treated and cold worked 2-5%.
					*Min <sup>9</sup>	76.0	70.0	7	
				2.001-3.000	*Min <sup>6</sup>	74.0	71.0	6	
					*Min <sup>9</sup>	75.0	68.0	6	
					*Min <sup>10</sup>	72.0	62.0	2	

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

4.b. Material shall be capable of passing the stress corrosion cracking test described in ASTM G47 when stressed to: b. 35 ksi.

4.e. Material shall be capable of passing the stress corrosion cracking test described in ASTM G47 when stressed to: e. 45 ksi.

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			Basis <sup>1</sup>	Ult.	Yield		
				3.001-4.000	*Min <sup>6</sup> *Min <sup>9</sup> *Min <sup>10</sup>	73.0 74.0 71.0	70.0 67.0 62.0	6 4 2	
2397-T87	Aloca  Revised Arconic	02/12/2003 Revised 08/17/2005 Revised 08/02/2018	Plate	3.001-4.000	Min <sup>6</sup> Min <sup>9</sup> Min <sup>10</sup>	62.0 62.0 60.0	57.0 57.0 54.0	5 4 1.5	<u>Stress Corrosion Resistance</u> See footnote 4.b.  <u>Exfoliation Corrosion Resistance</u> See footnote 15.b.  <u>Fracture Toughness<sup>14</sup> – Min K<sub>IC</sub></u> For thickness 3.001-4.000 L-T direction 31 ksi√in. T-L direction 27 ksi√in. S-L direction 20 ksi√in.
7160-T7351	Constellium	11/08/2018	Plate	1.000-1.500  1.501-2.000  2.001-3.000  3.001-4.000	*Min <sup>6</sup> *Min <sup>9</sup>  *Min <sup>6</sup> *Min <sup>9</sup>  *Min <sup>6</sup> *Min <sup>9</sup> *Min <sup>10</sup>  *Min <sup>6</sup> *Min <sup>9</sup> *Min <sup>10</sup>	75.0 74.0  74.0 74.0  73.0 74.0 72.0  72.0 73.0 71.0	67.0 65.0  67.0 65.0  66.0 64.0 60.0  65.0 63.0 59.0	13 11  13 11  12 10 6  12 9 5	*Tentative  <u>Stress Corrosion Resistance</u> See footnote 4e.  <u>Fracture Toughness<sup>14</sup> – Min K<sub>IC</sub> or K<sub>Q</sub></u> For thicknesses 2.000-3.000 inches L-T direction 44 ksi√in T-L direction 35 ksi√in S-L direction 36 ksi√in  For thicknesses 3.001-4.000 inches L-T direction 37 ksi√in T-L direction 30 ksi√in S-L direction 36 ksi√in

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4.b. Material shall be capable of passing the stress corrosion cracking test described in ASTM G47 when stressed to: b. 35 ksi.

4.e. Material shall be capable of passing the stress corrosion cracking test described in ASTM G47 when stressed to: e. 45 ksi.

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			Basis <sup>1</sup>	Ult.	Yield		
				4.001-5.000	*Min <sup>6</sup> *Min <sup>9</sup> *Min <sup>10</sup>	71.0 72.0 70.0	64.0 62.0 58.0	11 8 4	For thicknesses 4.001-5.000 inches L-T direction 34 ksi/in T-L direction 30 ksi/in S-L direction 32 ksi/in
				5.001-6.000	*Min <sup>6</sup> *Min <sup>9</sup> *Min <sup>10</sup>	70.0 71.0 69.0	63.0 61.0 58.0	11 7 3	For thicknesses 5.001-6.000 inches L-T direction 31 ksi/in T-L direction 28 ksi/in S-L direction 30 ksi/in
P 1	7160-T7451 Constellium	11/02/2018	Plate	1.000-1.500	*Min <sup>6</sup> *Min <sup>9</sup>	77.0 76.0	71.0 69.0	14 13	*Tentative <u>Stress Corrosion Resistance</u> See footnote 4b.
				1.501-2.000	*Min <sup>6</sup> *Min <sup>9</sup> *Min <sup>10</sup>	77.0 76.0 73.0	71.0 69.0 64.0	14 12 6	<u>Fracture Toughness<sup>14</sup></u> – Min K <sub>IC</sub> or K <sub>Q</sub> For thicknesses 1.000-1.500 inches L-T direction 34 ksi/in T-L direction 29 ksi/in
				2.001-3.000	*Min <sup>6</sup> *Min <sup>9</sup> *Min <sup>10</sup>	75.0 75.0 73.0	69.0 68.0 64.0	13 11 6	For thicknesses 1.501-2.000 inches L-T direction 34 ksi/in T-L direction 29 ksi/in
				3.001-4.000	*Min <sup>6</sup> *Min <sup>9</sup> *Min <sup>10</sup>	73.0 75.0 72.0	68.0 67.0 62.0	13 10 4	For thicknesses 2.001-3.000 inches L-T direction 32 ksi/in T-L direction 27 ksi/in
				4.001-5.000	*Min <sup>6</sup> *Min <sup>9</sup> *Min <sup>10</sup>	72.0 74.0 70.0	67.0 66.0 61.0	11 9 3	For thicknesses 3.001-4.000 inches L-T direction 30 ksi/in T-L direction 25 ksi/in S-L direction 27 ksi/in

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4.b. Material shall be capable of passing the stress corrosion cracking test described in ASTM G47 when stressed to: b. 35 ksi.

4.e. Material shall be capable of passing the stress corrosion cracking test described in ASTM G47 when stressed to: e. 45 ksi.

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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<b>Registered</b>			<b>Product</b>	<b>Thickness in.</b>	<b>Tensile Strength, ksi</b>			<b>Elongation Percent in 2 in. or 4D</b>	<b>Remarks<sup>2</sup></b>
<b>Alloy Temper</b>	<b>By</b>	<b>Date</b>			<b>Basis<sup>1</sup></b>	<b>Ult.</b>	<b>Yield</b>		
				5.001-6.000	*Min <sup>6</sup> *Min <sup>9</sup> *Min <sup>10</sup>	72.0 73.0 69.0	66.0 65.0 61.0	10 6 2	For thicknesses 4.001-5.000 inches L-T direction 28 ksi/in T-L direction 24 ksi/in S-L direction 26 ksi/in  For thicknesses 5.001-6.000 inches L-T direction 26 ksi/in T-L direction 22 ksi/in S-L direction 25 ksi/in
7160-T7651	Constellium	12/05/2017 Revised 12/19/2018	Plate	1.000-1.500	Min <sup>e</sup> Min <sup>9</sup>	79.0 78.0	74.0 72.0	13 13	<u>Stress Corrosion Resistance</u> See footnote 4a.
				1.501-2.000	Min <sup>e</sup> Min <sup>9</sup> Min <sup>10</sup>	78.0 78.0 75.0	74.0 72.0 66.0	12 12 6	<u>Fracture Toughness<sup>4</sup></u> – Min K <sub>IC</sub> or K <sub>IC</sub> For thicknesses 1.000-2.000 inches L-T direction 34 ksi/in T-L direction 29 ksi/in
				2.001-3.000	Min <sup>e</sup> Min <sup>9</sup> Min <sup>10</sup>	76.0 77.0 74.0	72.0 71.0 65.0	12 11 5	For thicknesses 2.001-3.000 inches L-T direction 32 ksi/in T-L direction 27 ksi/in S-L direction 29 ksi/in
				3.001-4.000	Min <sup>e</sup> Min <sup>9</sup> Min <sup>10</sup>	75.0 77.0 73.0	72.0 70.0 64.0	12 10 4	For thicknesses 2.001-3.000 inches L-T direction 32 ksi/in T-L direction 27 ksi/in S-L direction 29 ksi/in
				4.001-5.000	Min <sup>e</sup> Min <sup>9</sup> Min <sup>10</sup>	74.0 76.0 73.0	71.0 69.0 64.0	11 9 4	For thicknesses 3.001-4.000 inches L-T direction 29 ksi/in T-L direction 26 ksi/in S-L direction 28 ksi/in
7085-T711	Alcoa Revised Arconic	10/25/2011 Revised 08/02/2018	Plate	0.500-1.500	Min <sup>9</sup>	80.0	74.0	11	Solution heat treated, stretched 1.5 to 3%, and overaged for ballistic performance.
				1.501-2.000	Min <sup>9</sup>	78.0	73.0	11	0.500-3.000 in. plate meets armor plate requirements of MIL-DTL-32375 (MR) Class
				2.001-3.000	Min <sup>9</sup>	77.0	72.0	10	

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<b>Alloy Temper</b>	<b>By</b>	<b>Date</b>			<b>Basis<sup>1</sup></b>	<b>Ult.</b>	<b>Yield</b>		
				3.001-4.000	Min <sup>9</sup>	76.0	70.0	7	I Type A <u>Exfoliation Corrosion Resistance</u> See footnote 15.b.
7085-T721	Alcoa Revised Arconic	10/27/2011	Plate	0.500-1.500	Min <sup>9</sup>	68.0	60.0	12	Solution heat treated, stretched 1.5 to 3%, and overaged for ballistic performance. 0.500-3.000 in. plate meets armor plate requirements of MIL-DTL-32375 (MR) Class I Type B <u>Exfoliation Corrosion Resistance</u> See footnote 15.b.
		Revised		1.501-2.000	Min <sup>9</sup>	67.0	59.0	12	
		08/02/2018		2.001-3.000	Min <sup>9</sup>	67.0	58.0	11	
				3.001-4.000	Min <sup>9</sup>	66.0	57.0	10	

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Tentative Removed				Project Number
Alloy Temper	Product	By	Revised Date	
2397-T87	Plate	Arconic	08/02/2018	<u>PN18-63</u>
7085-T711	Plate	Arconic	08/02/2018	<u>PN18-63</u>
7085-T721	Plate	Arconic	08/02/2018	<u>PN18-63</u>
7160-T7651	Plate	Constellium	12/19/2018	<u>PN18-67</u>
2050-T34	Plate	Constellium	02/01/2019	<u>PN18-71</u>

Deactivated Tempers			Project Number
Alloy /Temper	Product	Date Deactivated	
Alclad 2024-O <sup>2</sup>	Sheet & Plate	08/11/2018	PS17-111
Alclad 2024-T351 <sup>2</sup>	Plate	08/11/2018	PS17-111
Alclad 2024-T42 <sup>2</sup>	Sheet & Plate	08/11/2018	PS17-111
1 ½% Alclad 2024-O <sup>2</sup>	Sheet & Plate	08/11/2018	PS17-111
1 ½% Alclad 2024-T351 <sup>2</sup>	Plate	08/11/2018	PS17-111
1 ½% Alclad 2024-T42 <sup>2</sup>	Sheet & Plate	08/11/2018	PS17-111

++ Deactivation is limited to specific gauge range(s) for the product indicated

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