

Designation: B918/B918M - 17a B918/B918M - 20

# Standard Practice for Heat Treatment of Wrought Aluminum Alloys<sup>1</sup>

This standard is issued under the fixed designation B918/B918M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\varepsilon$ ) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the U.S. Department of Defense.

#### 1. Scope\*

- 1.1 This practice is intended for use in the heat treatment of wrought aluminum alloys for general purpose applications.
- 1.1.1 The heat treatment of wrought aluminum alloys used in specific aerospace applications is covered in AMS 2772. AMS 2772.
  - 1.1.2 Heat treatment of aluminum alloy castings for general purpose applications is covered in Practice B917/B917M.
- 1.2 Times and temperatures appearing in the heat-treatment tables are typical for various forms, sizes, and manufacturing methods and may not provide the optimum heat treatment for a specific item.
- 1.3 Some alloys in the 6xxx series may achieve the T4 temper by quenching from within the solution temperature range during or immediately following a hot working process, such as upon emerging from an extrusion die. Such alternatives to furnace heating and immersion quenching are indicated in Table 1 Table 2, by Footnote footnote L, for heat treatment of wrought aluminum alloys. However, this practice does not cover the requirements for a controlled extrusion press or hot rolling mill solution heat treatment. treatment; it only covers the requirements of artificial aging, annealing and associated pyrometry of those processes for products solution heat treated in accordance with Practices B807/B807M and B947. (Refer to Practice B807B807/B807M for extrusion press solution heat treatment of aluminum alloys and to Practice B947 for hot rolling mill solution heat treatment of aluminum alloys.)
- 1.4 *Units*—The values stated in either Metric or US Customary units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.
- 1.5 This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety safety, health, and health environmental practices and determine the applicability of regulatory limitations prior to use.
- 1.6 This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.

#### 2. Referenced Documents

- 2.1 The following documents, of the issue in effect on the date of material purchase, form a part of this specification practice to the extent referenced herein:
  - 2.2 ASTM Standards:<sup>2</sup>

B557 Test Methods for Tension Testing Wrought and Cast Aluminum- and Magnesium-Alloy Products

B557M Test Methods for Tension Testing Wrought and Cast Aluminum- and Magnesium-Alloy Products (Metric)

B807/B807M Practice for Extrusion Press Solution Heat Treatment for Aluminum Alloys

B881 Terminology Relating to Aluminum- and Magnesium-Alloy Products

B917/B917M Practice for Heat Treatment of Aluminum-Alloy Castings from All Processes

<sup>&</sup>lt;sup>1</sup> This practice is under the jurisdiction of ASTM Committee B07 on Light Metals and Alloys and is the direct responsibility of Subcommittee B07.03 on Aluminum Alloy Wrought Products.

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<sup>&</sup>lt;sup>2</sup> Available from SAE International, 400 Commonwealth Dr., Warrendale, PA 15096-0001, http://www.sae.org.

<sup>&</sup>lt;sup>2</sup> For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.



## TABLE 21 Recommended Heat Treatment for Wrought Aluminum Alloys<sup>A,W</sup>

	IABLE 21 Recomm	Solution	wrought Alumii		recipitation	
		Heat Treatment		Hea	at Treatment <sup>B</sup>	
Product	Metal Temperature, <del>±10°F [±6°C]±10 °F [±6 °C]</del>	Quench Temperature, °F [°C] <sup>E</sup>	Temper	Metal Temperature, ±10°F [±6°C]±10 °F [±6 °C] <sup>V</sup>	Time at Temperature, h	Temper
		2011 Alloy <sup>A</sup>				
Cold-finished wire, rod, Cold-finished wire, rod, and bar	945-995 [507-535] 945-995 [507-535]	<del>110 [43] max</del> 110 [43] max	<del>T3<sup>E</sup></del> <u>T3</u> T4	<del>320 [160]</del> <u>320 [160]</u> 	14 14	<del>T8                                    </del>
			<del>T451<sup>G</sup></del> <u>T451</u>	<del></del> <del>:</del>	<del></del>	<del></del>
Drawn tube Drawn tube and pipe	<del>975 [524]</del> 975 [524]	<del>110 [43] max</del> 110 [43] max	<del>T3<sup>F</sup></del> <u>T3</u>	<del>320 [160]</del> 320 [160]	14 14	<del>T8</del> <u>T8</u>
-			T4511 <sup>G</sup> T4511			
		2014 Alloy <sup>A</sup>		<u></u>	···	<u> </u>
Flat sheet, bare	925 945 [496 507]	110 [43] max	<del>T3<sup>F</sup></del>	<del></del>	• • •	<del></del>
Flat sheet, bare or Alclad	925–945 [496–507] 935 [502] <u>"</u>	110 [43] max	<u>T3</u> T42 	320 [160] <i><sup>U</sup></i>	18–20 <u></u>	<u></u> υ 
Coiled sheet, bare or Alclad	925–945 [496–507] 935 [502] <i><sup>U</sup></i>	110 [43] max	T4 T42	320 [160] 320 [160] <u>"</u>	18 18–20 <u></u>	Τ6 Τ62 <u></u>
Plate, bare or Alclad	925-945 [496-507]	<del>110 [43] max</del>	<del>T451<sup>G</sup></del>	<del>320 [160]</del>	<del>18</del>	T651 <sup>G</sup>
Plate, bare or Alclad	925–945 [496–507] 935 [502] <u>"</u>	110 [43] max	T451 T42	320 [160] 350 [177]	8−9 <u>∪</u>	T651 T62 <u></u>
Cold-finished wire, rod,	925–945 [496–507]	110 [43] max	T4	350 [177]	9	T6
and bar			<del>T451<sup>H</sup></del>	<del>350 [177]</del>	9	<del>T651<sup>H</sup></del>
and bar	935 [502] <u></u>		T451 T42	350 [177] 350 [177]	<u>9</u> 8–9_ <i>∪</i>	T651 T62 <u></u>
Extruded wire, rod, bar,	925–945 [496–507]	110 [43] max	T4	350 [177]	9	T6
profiles, and tube	Chttps	·//standar	T4510 <sup>H</sup>	<del>350 [177]</del>	9	T6510 <sup>H</sup>
profiles, tube, and pipe			T4510	350 [177]	<del>9</del>	T6510
			<del>T4511 </del>	<del>350 [177]</del> 350 [177]	<del>9</del> 9	T6511 <sup>H</sup> T6511
	935 [502] <sup>U</sup>	cument P	T42	350 [177] 350 [177]	8–9 <u>–</u>	T62 <u>U</u>
Drawn tube and pipe	925–945 [496–507] 935 [502] <u></u>	110 [43] max	T4 T42	350 [177] 350 [177] <u></u>	9 8–9 <u>–</u>	Τ6 Τ62 <u></u> _
Die forgings	925–945 [496–507]	140–180 [60–82]	T4 hd6_b9ah-da	350 [177] 22300cb00b/2s	tm-h918-b9	T6 18m=20
Hand forgings and rolled	925–945 [496–507]	140-180 [60-82]	T4	350 [177]	9	T6
rings	935 [502] 935 [502] <sup>U</sup>		<del>T452<sup>/</sup></del> T452	350 [177] 350 [177] <sup>U</sup>	10 <sup>U</sup>	T652 <sup>I</sup> T652 <sup>U</sup>
rings	935 [502]	2017 Alloy <sup>A</sup>	1452	350 [177]	105	1652
Cold-finished wire, rod,	925–950 [496–510]	110 [43] max	T4			
and bar and bar			<del>T451<sup>H</sup></del> T451	<del></del>	<del></del>	• • •
			T42	···	• • • • • • • • • • • • • • • • • • • •	· · ·
Die ferginge	940-970 [504-521]	2018 Alloy <sup>A</sup>	<del>T4</del>	240 [171]	<del>10</del>	<del>T61</del>
Die forgings  Die forgings	940–970 [504–521]	Boiling Water <sup>T</sup>	<del>14</del> T4	<del>340 [171]</del> 340 [171]	10	T61
		2024 Alloy <sup>A</sup>				
Flat sheet, bare	910 930 [488 499]	110 [43] max	<del>T3</del> F	<del>375 [191]</del>	<del>12</del>	T81 <sup>F</sup>
Flat sheet, bare or Alclad	910–930 [488–499] <del>920 [493]</del>	110 [43] max	<u>T3</u> <del>T361 <sup>J</sup></del>	<u>375 [191]</u> <del>375 [191]</del>	12 8	<u>T81</u> <del>T861                                    </del>
or Alclad	920 [493] <sup>U</sup>		<u>T361</u>	375 [191 <sup><i>Ū</i></sup>	$8^U$	T861 <sup><i>U</i></sup>
			T42 T42	$375 [191]^{\overline{U}}$ $375 [191]^{\overline{U}}$	9–10 <i><sup>U</sup></i> 16–18 <i><sup>U</sup></i>	T62 <sup>U</sup> T72 <u>U</u>
Coiled sheet, bare	910–930 [488–499]	110 [43] max	 T4	375 [191]	9–10	 Т6
or Alclad	920 [493] <u>"</u>		T42 T42	375 [191] <sup>U</sup> 375 [191] <sup>U</sup>	9 <u>/</u> 16–18 <u>/</u>	T62 <sup><i>U</i></sup> T72 <u><sup><i>U</i></sup></u>
Plate, bare or Alclad	910-930 [488-499]	<del>110 [43] max</del>	<del></del>	375 [191]	 <del>12</del>	 <del>T851</del> <sup>G</sup>
Plate, bare or Alclad	910–930 [488–499]	110 [43] max	T351	375 [191]	12	T851
	<del>920 [493]</del>		T361 <sup>-J</sup>	<del>375 [191]</del>	8	T861 <sup>J</sup>
	920 [493] <sup>U</sup>		<u>T361</u> T42	375 [191] <sup>U</sup> 375 [191] <sup>U</sup>	9–10 <u>″</u>	T861 <sup>U</sup> T62 <u>U</u>
Cold-finished wire, rod, Cold-finished wire, rod,	<del>910-930 [488-499]</del> 910-930 [488-499]	110 [43] max	——————————————————————————————————————	<del>375 [191]</del>		T851 <sup>H</sup>
Colu-III II SHEU WIFE, FOU,	<u>910-990 [400-499]</u>	110 [43] max	1351	375 [191]	<u>12</u>	<u>T851</u>

		TABLE I CONUIT	ueu			
		Solution Heat Treatment			recipitation at Treatment <sup>B</sup>	
Product	Metal Temperature, <u>±10°F [±6°C]±10 °F [±6 °C]</u> <sup>C,D,V</sup>	Quench Temperature, °F [°C] <sup>E</sup>	Temper	Metal Temperature, ±10°F [±6°C]±10 °F [±6°C] <sup>V</sup>	Time at Temperature, h	Temper
and bar			<del>T36<sup>J</sup></del>			<del></del>
and bar			<u>T36</u> T4	<u></u>	···	<u></u> Тб
	920 [493] <u></u>		T42	375 [191] 375 [191] <u></u>	12 12–13 <u> </u>	T62 <u></u>
Extruded wire, rod, bar,	910-930 [488-499]		 <del>T3<sup>_</sup></del>	 <del>375 [191]</del>		 <del>T81</del> <sup>E</sup>
Extruded wire, rod, bar,	910–930 [488–499] 910–930 [488–499]	110 [43] max	T3	375 [191] 375 [191]	12	T81
profiles, and tube	<del></del>		<del>T3510</del> <sup>⊬</sup>	<del>375 [191]</del>	12	T8510 <sup>H</sup>
profiles, tube, and pipe			T3510 <del>T3511<sup>H</sup></del>	375 [191] <del>375 [191]</del>	<u>12</u>	<u>T8510</u> <del>T8511<sup>⊬</sup></del>
			T3511	375 [191]	12	T8511
	920 [493] <u>"</u>		T42	375 [191] <sup>0</sup>	12 <del>-1</del> 3 <u>"</u>	T62 <u></u>
Drawn tube	910-930 [488-499]	<del>110 [43] max</del>	T3 <sup>F</sup>	<del>375 [191]</del>	<del>12</del>	<del>T8<sup>F</sup></del>
Drawn tube and pipe	910–930 [488–499]	110 [43] max	<u>T3</u> T42	375 [191]	12	T8
	920 [493] <sup>U</sup>			375 [191] <sup>U</sup>	9–10 <u></u>	T62 <sup>U</sup>
Die Forgings	910-930 [488-499]	110 [43] max 2025 Alloy <sup>A</sup>	<del>T3<sup>F</sup></del>	<del>375 [191]</del>	11	T81 <sup>F</sup>
Die forgings	950–970 [510–521]	140–160 [60–71]	T4	350 [177]	9	T6
Cold-finished, wire	925–950 [496–510]	<b>2117 Alloy</b> <sup>A</sup> 110 [43] max	T4			
or rod	323-330 [430-310]	110 [40] 1110	14	•••		
		2124 Alloy <sup>A</sup>				
Plate Plate	<del>910 930 [488 499]</del> 910–930 [488–499]	110 [43] max 110 [43] max	T3F	<del>375 [191]</del> 375 [191]	<del>12</del>	<del>T8 /</del> T8
Plate	910-930 [488-499]	110 [43] max	T31 <sup>G</sup>	375 [191] 370 [188]	<u>12</u>	18 <del>T8151</del>
			T31	370 [188]	12	T8151
	<del>920 [493]</del>		T4 T1	375 [191] 375 [191]	9 <del>12</del>	T6 <del>T82<sup><i>E</i></sup></del>
	920 [493] <sup>U</sup>		Т3	375 [191] <sup>U</sup>	$12^{U}$	$T82^{\mathit{U}}$
		2218 Alloy <sup>A</sup>	T42	375 [191] <sup>Ū</sup>	10 <u>U</u>	T62 <sup>U</sup>
<del>Die forgings</del>	940-960 [504-516]	212 [100]	<del>T4</del>	340 [171]	<del>10</del>	<del>T61</del>
Die forgings	940-960 [504-516]	Boiling Water <sup>T</sup>	<u>T4</u>	340 [171]	10	<u>T61</u>
	950 [510] <sup>U</sup>		8M-20 T4 T4	460 [238] 340 [171] <sup>U</sup>	6 10 <sup>0</sup>	Τ7 Τ62 <sup>υ</sup>
https://standards.	iteh.ai/catalog/standards/	/sist/34b828e1-1089-	4bd6-b9 <b>14</b> b-da	$223\ 460\ [238]^{\overline{U}}$ /as	stm-b <sub>6</sub> <del>-</del> 8-b9	18 <sub>T72</sub> <u>0</u> 0
Flat sheet, bare	985-1005 [529-541]	2219 Alloy <sup>A</sup> 110 [43] max	<del>T31</del> <sup>E</sup>	<del>350 [177]</del>	18	<del>T81<i>F</i></del>
Flat sheet, bare	985–1005 [529–541]	110 [43] max	T31	350 [177]	18 24	T81
or Alclad			<del>T37</del> <sup>K</sup>	<del>325 [163]</del>		<del>T87</del> <i>K</i>
or Alclad	995 [535] <u></u>		<u>T37</u> T42	325 [163] 375 [191] <u></u>	2 <u>4</u> 17–19 <u> </u>	<u>T87</u> T62 <u></u>
Plate			 <del>T37<sup>K</sup></del>		 <del>17–19</del>	<del>-</del>
Plate	<del>985–1005 [529–541]</del> 985–1005 [529–541]	<del>110 [43] max</del> 110 [43] max	T37	<del>325 [163]</del> 325 [163]	17–19	T87
			<del>T351</del> <sup>G</sup>	<del>350 [177]</del>	18	<del>T851</del> <sup>G</sup>
	995 [535] <sup>U</sup>		<u>T351</u> T42	350 [177] 375 [191] <sup>U</sup>	<u>18</u> 35–37 <sup>∪</sup>	T851 T62 <sup><i>U</i></sup>
	990 [999]					
Cold-finished wire, rod,	985–1005 [529–541]	110 [43] max	T4	375 [191]	18	T6
and bar and bar			<del>T351<sup>H</sup></del> T351	<del>375 [191]</del> 375 [191]	<del>18</del> 18	<del>T851<sup>H</sup></del> T851
			<del></del>	<del></del>		
Extruded wire, rod, bar,	985-1005 [529-541]	110 [43] max	<del>T31 <sup>E</sup></del> T31	<del>375 [191]</del> 375 [191]	<del>18</del> 18	<del>T81<sup>F</sup></del> T81
Extruded wire, rod, bar, profiles, and tube	985–1005 [529–541]	110 [43] max	<u>T31</u> <del>T3510<sup>H</sup></del>	<u>375 [191]</u> <del>375 [191]</del>	18 18	<u>T81</u> <del>T8510⊬</del>
profiles, tube, and pipe			T3510	375 [191]	<u>18</u>	T8510
			<del>T3511<sup>H</sup></del> T3511	<del>375 [191]</del> 375 [191]	<del>18</del> 18	<del>T8511<sup>H</sup></del> T8511
	995 [535] <sup>U</sup>		T42	375 [191] <sup>U</sup>	35–37 <sup>0</sup>	T62 <sup>U</sup>
	· -		Т3	375 [191] <u>"</u>	17–19 <u>–</u>	$T82\overline{U}$
Die forgings and rolled	985–1005 [529–541]	110 [43] max	T4	375 [191]	26	T6
rings	995 [335] <u>U</u>	- F1	T42	375 [191] <sup><i>U</i></sup>	25–27 <sup>U</sup>	$T62^{U}$
			<del>T352</del> /	<del>350 [177]</del> 350 [177] <sup>∪</sup>	17-19	<del>T82</del> <sup>7</sup> T92
			<u>T352</u> 	350 [177] <sup>U</sup>	<u>17–19<sup>U</sup> </u>	<u>T82<sup>U</sup></u>

		TABLE 1 Continu	ieu			
_		Solution Heat Treatment			Precipitation at Treatment <sup>B</sup>	
Product	Metal Temperature, ±10°F [±6°C]±10 °F [±6 °C] <sup>C,D,V</sup> _	Quench Temperature, °F [°C] <sup>E</sup>	Temper	Metal Temperature, ±10°F [±6°C]±10 °F [±6 °C] <sup>V</sup>	Time at Temperature, h	Temper
Hand forgings	985–1005 [529–541] 995 [335] <u>"</u>	110 [43] max	T4 T42	375 [191] 375 [191] <u></u>	26 25–27 <u></u>	T6 T62 <u></u>
			<del>T352<sup>/</sup></del> T352	350 [177] 350 [177] <sup>U</sup>	<del>17–19</del> 17–19 <sup>0</sup>	T852 <sup>1</sup> T852 <sup>0</sup>
		2618 Alloy <sup>A</sup>	1002	330 [177]	17-19	1032
Die, hand, and rolled	<del>975 995 [524 535]</del>	<del>212 [100]</del>	<del>T4</del>	<del>390 [199]</del>	<del>20</del>	<del>T61</del>
Die, hand, and rolled ring forgings	975–995 [524–535] 985 [529] <sup>U</sup>	Boiling Water <sup>T</sup>	<u>T4</u> T42	390 [199] 390 [199] <sup>U</sup>	2 <u>0</u> 19–21 <u></u>	<u>T61</u> T62 <sup>∪</sup>
Die forgings	940–970 [504–521]	4032 Alloy 140–180 [60–82]	T4	340 [171]	10	T6
	955 [513] <sup>U</sup>		T42	340 [171] <sup>U</sup>	9–11 <u></u>	T62 <sup>U</sup>
Extruded rod, bar,	<sup>L</sup>	6005 Alloy	T1	350 [177]	8	T5
profiles, and tube profiles, tube, and pipe						
		6005A Alloy				
Extruded rod, bar,	L		T1	350 [177]	8	T5
profiles, and tube profiles, tube, and pipe			<del>T4</del> T4	<del>350 [177]</del> 350 [177]	<del>8</del> 8	T61
		6013 Alloy <sup>A</sup>		550 [177]	<u>v</u>	
Sheet, bare	1045–1065 [563–574]	110 [43] max	T4	375 [191]	4	T6
	1000 [538] <u>"</u>		T42	or 345 [174] 375 [191] <u></u>	8 4–5 <u> </u>	T62 <u></u>
Plate, bare	1020-1050 [549-566]	110 [43] max	<del></del>	345 [174]	8–16	T651 <sup>G</sup>
Plate, bare	1020-1050 [549-566]	110 [42] may		345 [174]	<u>8–16</u>	<u>T651</u>
Cold-finished wire, rod,	<del>1040-1060 [560-571]</del>	110 [43] max	rarus -	275 [101]	4	−−−− <del>T651</del> <sup>H</sup>
Cold-finished wire, rod,	1040-1060 [560-571]	110 [43] max		<del>375 [191]</del> 375 [191]	4	T651
and bar	(bttpg	//ctondor	ام تلاما	<del>375 [191]</del>	<del>-</del> <del>4</del>	<del>T8F</del>
and bar	muus.	//Stallual	US.ILEI	375 [191]	4	<u>T8</u>
Rod, bar & extrusion	1010-1050 [543-566]	6020 Alloy <sup>A</sup>	₩ <u>υ</u>	<del>355 [176]</del>	8-10	<del>T6511<sup>H</sup></del>
Rod, bar & extrusion	1010-1050 [543-566] 1010-1050 [543-566]	110 [43] max	rev <u>w</u> ev	355 [179]	<u>8–10</u> 8–10	T6511
Wire, rod, & bar	<del>1010-1050 [543-566]</del>	110 [43] max	$W^{\mathit{U}}$	<del>355 [176]</del>	<del>8-10</del>	<del>T8</del> F
Wire, rod, & bar	1010-1050 [543-566]	110 [43] max	<u>W'</u>	355 [179]	<u>8–10</u>	<u>T8</u>
Extruded rod, bar, and	1010–1050 [543–566]	6041 Alloy 110 [43] max	T4	350 [176]	8	T6
profiles //Standards.ite	eh.ai/catalog/standards/si	st/34b <del>828e1-1</del> 089-4	4bd6-b9 <del>a</del> b-da T4511	350 [176]	stm-b <del>9</del> 18-b9	18m=20 T6511
		6042 Alloy				
Extruded rod, bar, and profiles	1010–1050 [543–566]	110 [43] max	<u>T1</u>	350 [176]	8	<u>T5</u>
			<u>T1</u>	<u>350 [176]</u>	<u>8</u>	<u>T5511</u>
Cold-finished wire and	960–980 [516–527]	<b>6053 Alloy</b> <sup>A</sup> 110 [43] max	T4	355 [179]	8	T61
rod	960–960 [516–527]	110 [43] max			o 	
Die forgings	960–980 [516–527]	110 [43] max	T4	340 [171]	10	Т6
	970 [521] <sup><i>U</i></sup>		T42	340 [171] <sup>0</sup>	10 <u></u>	T62 <sup>U</sup>
Sheet, bare or Alclad	960-1075 [516-579] <sup>M</sup>	6061 Alloy <sup>A</sup>	<del>T4</del>	200 [160]	18	<del>T6</del>
Sheet, bare or Alclad	960–1075 [516–579] <sup>F</sup>	110 [43] max 110 [43] max	<del>14</del> T4	<del>320 [160]</del> 320 [160]	<del>18</del> 18	<del>16</del> T6
	985 [529] <sup>U</sup>	o [ to] max	T42	350 [177] <sup>U</sup>	8–10 <sup><i>U</i></sup>	$\overline{162}^{U}$
			<del>T42<sup>Z</sup></del> T42 <sup>P</sup>	320 [160] <sup>Z</sup> 320 [160] <sup>P,U</sup>	<del>17–19<sup>Z</sup></del> 17–19 <sup>P, U</sup>	<del>T62<sup>∑</sup></del> T62 <sup>P,U</sup>
	<u></u>	<u></u>	<u> 142.</u> 	<u> </u>	11-19 ,-	102,-
		A				
Plate	960-1075 [516-579]	6061 Alloy <sup>A</sup> (Continue 110 [43] max	<del>ed)</del> <del>T451<sup>G</sup></del>	<del>320 [160]</del>	18	<del>T651</del> <sup>G</sup>
Plate	960–1075 [516–579] 960–1075 [516–579]	110 [43] max	T451=	320 [160] 320 [160]	18	T651
	985 [529] <u>"</u>		T42	350 [177] <u>U</u>	18 <u>0</u>	T62 <u>U</u>
Tread Sheet and Plate <sup>N,O</sup>	960–1075 [516–579]	<del>110 [43] max</del>	<del>T4</del>	<del>320 [160]</del>	<del>18</del>	<del>T6</del>
Tread Sheet and Plate <sup>G</sup>	960–1075 [516–579]	110 [43] max	T4	320 [160]	18	<u>T6</u>
		<del></del>			<del>-</del>	

		TABLE I Continue	<del></del>			
		Solution Heat Treatment			recipitation at Treatment <sup>B</sup>	
Product	Metal Temperature,  ±10°F [±6°C]±10 °F [±6 °C] <sup>C,D,V</sup>	Quench Temperature, °F [°C] <sup>E</sup>	Temper	Metal Temperature, ±10°F [±6°C]±10 °F [±6 °C] <sup>V</sup>	Time at Temperature, h	Temper
Cold-finished wire, rod,	960-1075 [516-579]	110 [43] max <sup>P</sup>	<del>T4</del>	<del>350 [177]</del>	8	<del>T6</del>
Cold-finished wire, rod,	960–1075 [516–579]	110 [43] max <sup>H</sup>	T4	350 [177]	<u>8</u>	T6
and bar	000 1010 [010 010]	110 [10] 11101	<u></u>	or 320 [160]	18	<u></u>
a.i.a 2a.			<del>T3                                    </del>	<del>340 [171]</del>	8	<del>T89<sup>Q,R</sup></del>
			Т3	340 [171]	8	T89
				or 320 [160]	18	
			<del>T4</del>	<del>350 [177]</del>	8	<del>T94</del> ≤
			T4	350 [177]		T94
			<del>T451</del> H	<del>350 [177]</del>	<u>8</u>	T651H
			T451	350 [177]	8	T651
	985 [529] <u>"</u>		T42	350 [177] <u>U</u>	8–10 <sup>U</sup>	T62 <u>0</u>
Extruded rod, bar,	<sup>L</sup>		T1	350 [177]	8	T51
profiles, and tube	960-1075 [516-579] <sup>L</sup>	<del>110 [43] max<sup>P</sup></del>	<del>T4</del>	<del>350 [177]</del>	8	<del>T6</del>
profiles, tube, and pipe	960-1075 [516-579] <sup>L</sup>	110 [43] max <sup>H</sup>	<u>T4</u>	<u>350 [177]</u>	<u>8</u>	<u>T6</u>
			<del>T4510<sup>H</sup></del>	<del>350 [177]</del>	8	<del>T6510<sup>H</sup></del>
			T4510	350 [177]	<u>8</u>	T6510
			<del>T4511<sup>H</sup></del>	<del>350 [177]</del>		<del>T6511<sup>H</sup></del>
			<u>T4511</u>	350 [177]	<u>8</u>	T6511
	985 [529] <u>"</u>		T42	350 [177] <u>"</u>	8–10 <u>/</u>	T62 <u>U</u>
Structural profiles	960-1075 [516-579] <sup>L</sup>	110 [43] max <sup>P</sup>	<del>T4</del>	<del>350 [177]</del>	8	<del>T6</del>
Structural profiles	960–1075 [516–579] <sup>L</sup>	110 [43] max <sup>H</sup>	<u>T4</u>	350 [177]	<u>8</u>	<u>T6</u>
Pipe	960–1075 [516–579] <sup><u>/</u></sup>	110 [43] max <sup>P</sup>	∓ <del>4</del>	 <del>350 [177]</del>	8	<del>T6</del>
Drawn tube and pipe	960–1075 [516–579] <sup>L</sup>	110 [43] max	T4	320 [160]	18	
		ten Stanu		or 340 [171]	8	
	985 [529] <u>"</u>		T42	340 [171] <i>u</i>	8 <u>"</u>	T62 <u></u>
Die and hand forgings	960–1075 [516–579]	110 [43] max	ds.lt4er	350 [177] or 340 [171]	8 10	T6
		our mont D	WOX/LOXX			
Rolled rings	960–1075 [516–579]	110 [43] max	TEV_T4_V	350 [177]	8	T6
	<del>985 [529]</del>		<del>T452</del> <sup>T</sup>	<del>350 [177]</del>	<del>8-10</del>	T652 <sup>T</sup>
	985 [529] <sup>U</sup>	COCO Alley	T452	350 [177] <sup>U</sup>	8–10	T652 <sup>U</sup>
Extruded rod, bar, tube,	L	6063 Alloy ASTM R.9 18/B9 18	M-20 T1	400 [204]	1–2	T5
pipe, and profiles			  bd6-b9 <del>a</del> b-da	or 360 [182] 400 [204] <sup>U</sup>	$\frac{3}{1-2}u - 69$	18 <sub>T52</sub> 00
				or 360 [182] <sup>U</sup>	3	10102_0
	960-1010 [516-543] <sup>L</sup>	110 [43] max <sup>P</sup>	<del>T4</del>	<del>350 [177]</del>	8	<del>T6</del>
	960-1010 [516-543] <sup>L</sup>	110 [43] max <sup>H</sup>	T4	350 [177]		T6
			_	or 360 [182]	<u>8</u> 6	_
	985 [529] <u>"</u>		T42	350 [177] <i>u</i>	8–10 <u></u>	T62 <u></u> _
Drawn tube and pipe	960–1010 [516–543] <sup>L</sup>	110 [43] max	T4	350 [177]	8	T6
			<del>T3<sup>F</sup></del>	<del>350 [177]</del>	8	<del>T83</del> <sup>R</sup>
			Т3	350 [177]		T83
			<del>13</del> F	<del>350 [177]</del>	<u>8</u>	T831 <sup>R</sup>
			T3	350 [177]	<u>8</u>	T831
			<del>13</del> F	<del>350 [177]</del>	8	T832 <sup>R</sup>
			Т3	350 [177]	<u>8</u>	T832
	,,		T31 <sup>F</sup>	<del></del>	<del></del>	
	985 [529] <sup>U</sup>		T42	350 [177] <sup>U</sup>	8–10 <sup><i>U</i></sup>	T62 <u></u>
		6064 Alloy				
Pipe	<del>960-1010 [516-543]<sup>L</sup></del>	110 [43] max <sup>P</sup>	<del>T4</del>	<del>360 [182]</del>	6	<del>T6</del>
Extruded rod, bar,	<u>L</u>	<u></u>	<u>T4</u>	350 [177]	<u>8</u>	<u>T6</u>
profiles, tube, and pipe			T4511	<del>or 350 [177]</del> 350 [177]	<del>8</del> 8	T6511
p.omoo, tabo, and pipe		6066 Alloy		550 [177]	<u> </u>	
Extruded rod, bar,	960–1010 [516–543] <u>^</u>	110 [43] max	T4	350 [177]	8	T6
profiles, and tube			<del>T4510<sup>H</sup></del>	<del>350 [177]</del>	8	T6510 <sup>H</sup>
profiles, tube, and pipe			T4510	350 [177]	<u>8</u>	T6510
			<del>T4511<sup>H</sup></del>	<del>350 [177]</del>		T6511 <sup>H</sup>
	985 [529] <sup>U</sup>		<u>T4511</u> T42	350 [177] 350 [177] <sup>U</sup>	8− <u>1</u> 0 <sup><i>U</i></sup>	T6511 T62 <sup><i>U</i></sup>
	·					
Die forgings	960–1010 [516–543]	110 [43] max	T4	350 [177]	8	T6
		6070 Alloy				

		TABLE 1 Continue	ed			
		Solution Heat Treatment			recipitation at Treatment <sup>B</sup>	
Product	Metal Temperature, $\pm 10^{\circ}$ F [ $\pm 6^{\circ}$ C] $^{C,D,V}$	Quench Temperature, °F [°C] <sup>E</sup>	Temper	Metal Temperature, ±10°F [±6°C]±10 °F [±6 °C] <sup>V</sup>	Time at Temperature, h	Temper
Extruded rod, bar,	1015 [546] <sup>L</sup>	110 [43] max	T4	320 [160]	18	T6
profiles, and tube profiles, tube, and pipe			<del>T42</del> T42	320 [160] 320 [160] <sup>U</sup>	18 <sup>U</sup>	T62 T62 <sup>U</sup>
promes, tube, and pipe		6082 Alloy	142	320 [100]	10	102
Extruded rod, bar,	9 <del>80 [527]<sup>L</sup></del>	<del></del>	<del>T1</del>	<del>350 [177]</del>	8	<del>T5</del>
Extruded rod, bar,	980 [527] <sup>L</sup>	<u></u>	<u>T1</u> <del>T1</del>	350 [177]	<u>8</u>	<u>T6</u> <del>T5511<sup>⊭</sup></del>
profiles, and tube profiles, tube, and pipe			+ <del>1</del> <u>T1</u>	<del>350 [177]</del> 350 [177]	<u>8</u> <u>8</u>	T6511
		6101 Alloy				
Extruded rod, bar,	9 <del>70 [521]<sup>L</sup></del>	110 [43] max <sup>P</sup>	<del>T4</del>	<del>390 [199]</del>	<del>10</del>	<del>T6</del>
Extruded rod, bar,	970 [521] <sup>L</sup>	110 [43] max <sup>H</sup>	<u>T4</u>	390 [199]	10 5	<u>T6</u>
profiles, and tube profiles, tube, and pipe			<del>14</del> T4	440 [227] 440 [227]		<del>T61</del> T61
promes, tube, and pipe			<del>14</del> T4	410 [210]	<u>5</u> 9	T63
			T4	535 [279]	7	T64
			T4	430 [221]	3	T65
		6105 Alloy				
Extruded rod, bar, profiles, and tube	<sup>L</sup>		T1 <del>T4</del>	350 [177] <del>350 [177]</del>	8 <del>8</del>	T5 <del>T6</del>
profiles, tube, and pipe			T4	350 [177]	8	<del>16</del>
promoc, tabo, and pipo		6110 Alloy		000 [177]	<u> </u>	
Cold-finished wire, rod,	<del>980–1050 [527–566]</del>	110 [43] max	<del>T4</del> <sup>S</sup>	<del>380 [193]</del>	8	<del>T9</del> S
Cold-finished wire, rod, and bar	980–1050 [527–566]	110 [43] max	<u>T4</u>	380 [193]	8	<u>T9</u>
Die forgings	950–980 [510–527]	6151 Alloy 110 [43] max	T4	340 [171]	10	T6
	950-980 [510-527]	110 [45] Illax	.] 4 1	340 [171]		
Rolled rings	960 [516]	110 [43] max	U.S. T4 C.	340 [171]	10	T6
	225 55 421//		T452 <sup>/</sup>	340 [171]	<del>10</del>	T652 <sup>1</sup>
	965 [518] <sup>U</sup>	6162 Alloy	T452	340 [171] <sup>U</sup>	10	T652 <sup>U</sup>
Extruded rod, bar,	<sup>L</sup>		T1	350 [177]	8	T5
profiles, and tube			<del>T1510</del>	<del>350 [177]</del>	8	T5510
profiles, tube, and pipe			<u>T1510</u>	350 [177]	<u>8</u>	T5510
	000 [507]			350 [177]	8	T5511
	980 [527] <sup>L</sup> iteh.ai/catalog/standards/si	st/34b828e1-1089-4	T4 bd6-bt4510-d	350 [177] 350 [177] b/as	stm-b\( \frac{8}{8} \) 8-b9	T6 1 T6510
			T45111	350 [177]	8	T6511
		6201 Alloy				
Wire	<del>950 [510]</del>	110 [43] max	<del>T3</del>	<del>320 [160]</del>	4	T81 <sup>R</sup>
Wire	950 [510]	110 [43] max 6262 Alloy	<u>T3</u>	320 [160]	4	T81
Cold-finished wire,	960–1050 [516–566]	110 [43] max	T4	340 [171]	8	T6
rod, and bar			<del>T4</del>	<del>340 [171]</del>	8	<del>T9</del> ≤
rod, and bar			<u>T4</u>	340 [171]	<u>8</u>	<u>T9</u>
			<del>T451</del> H	<del>340 [171]</del>	8	T651 <sup>H</sup>
	1005 [541] <i><sup>U</sup></i>		<u>T451</u> T42	340 [171] 340 [171] <u></u>	8 <u>.</u> 8_	T651 T62 <u></u>
Extruded rod, bar,	960–1050 [516–566] <sup>L</sup>	110 [43] max	T4	350 [177]	12	T6
profiles, and tube	111 1000 [0.0 000]		T4510 <sup>H</sup>	350 [177]	<del>12</del>	T6510 <sup>H</sup>
profiles, tube, and pipe			T4510	350 [177]	12 12	T6510
			<del>T4511<sup>H</sup></del>	<del>350 [177]</del>		<del>T6511<sup>H</sup></del>
	1005 [544]/		T4511	350 [177]	11 12/	T6511
	1005 [541] <u>/</u>		T42	350 [177] <u>/</u> 	11–13 <u>″</u>	T62 <u></u>
Drawn tube and pipe	960–1050 [516–566]	110 [43] max	T4	340 [171]	8	T6
	F		<del>T4</del> <sup>S</sup>	<del>340 [171]</del>	8	<del>T9</del> ≤
			<u>T4</u>	340 [171]	8	<u>T9</u> ,,
	1005 [541] <sup>U</sup>	COE4 AU	T42	340 [171] <i><sup>U</sup></i>	8 <u>-</u>	T62 <u>U</u>
Extruded rod, bar,		6351 Alloy	T1	350 [177]	8	T5
profiles, and tube		• • •		350 [177] 350 [177]	8	T51
profiles, tube, and pipe				350 [177]	8	<u>T51</u>
	<sup>L</sup>		T11	250 [121]	10	T54
	060 1010 [516 540]	110 [42] mc=P	Τ4	or 350 [177]	8	Te
	960-1010 [516-543] <sup>L</sup> 960-1010 [516-543] <sup>L</sup>	110 [43] max <sup>P</sup> 110 [43] max <sup>H</sup>	<del>T4</del> T4	<del>350 [177]</del> 350 [177]	<del>8</del> 8	<del>T6</del> 
	<u>900-1010 [310-343]</u>	TTO [40] IIIAX	14	330 [177]	<u>0</u>	10

		Solution Heat Treatment			recipitation at Treatment <sup>B</sup>	
Product	Metal Temperature, <del>±10°F [±6°C]</del> ±10 °F [±6 °C] <sup>C,D</sup>	Quench Temperature,  orange of the control of the c	Temper	Metal Temperature, ±10°F [±6°C]±10 °F [±6 °C] <sup>V</sup>	Time at Temperature, h	Temper
		6463 Alloy				
Extruded rod, bar, profiles, and tube	<sup>L</sup>		T1	400 [204] or 360 [182]	1 <del>3</del>	T5
profiles, tube, and pipe		_		or 360 [182]	3 8	
	9 <del>70 [521]<sup>L</sup></del>	110 [43] max <sup>P</sup>	<del>T4</del>	<del>350 [177]</del>	8	<del>T6</del>
	970 [521] <sup>L</sup>	110 [43] max <sup>H</sup>	<u>T4</u>	350 [177] or 360 [182]	<u>8</u> 6	<u>T6</u>
Extruded rod, bar,	<sup>L</sup>	7005 Alloy	T1	room temperature	72 plus	T53
and profiles	•••	•••	11	225 [107]	8 plus	133
		7049 Alloy <sup>A</sup>		300 [149]	16	
Extruded rod, bar,	<del>860-900 [460-482]</del>	<del>110 [43] max</del>	₩511 <sup><i>H,U</i></sup>	room temperature	48 plus	T76511 <sup>H</sup>
Extruded rod, bar,	860-900 [460-482]	110 [43] max	<u>W511</u> ′	room temperature	48 plus	T76511
and profiles				250 [121]	24 plus	
				375 [163]	13	
			₩511 <sup>H,U</sup>	room temperature	48 plus	<del>T73511<sup>H</sup></del>
			<u>W511</u> ′	room temperature	48 plus	<u>T73511</u>
				250 [121] 330 [166]	24 plus 17	
 Die and hand forgings	860-900 [460-482]	140 160 [60 71]	₩ <u>υ</u>		 <del>48 plus</del>	<del></del>
Die and hand forgings*	860–900 [460–482]	140–160 [60–71]	W'	room temperature	48 plus	T73
210 4114 114114 101911190	000 000 [.00 .02]	<u> [66 7.1]</u>	<u></u>	250 [121]	8–24	<u>c</u>
				340 [171]	6–16	
			₩51 <sup>1,U</sup>	room temperature	8-24 plus	<del>T7351/</del>
			W51'	room temperature	8–24 plus	T7351
			al US	250 [121]	8–24 plus	
				335 [168]	6–16	
	<del>875 [468]</del>		₩52 <sup>1.U</sup>	room temperature	<del>24 plus</del>	<del>T7352</del> /
	875 [468] <sup>U</sup>		W52'	room temperature <sup>U</sup>	24 plus <sup>U</sup>	$T7352^{U}$
			•	250 [151] 250 [121] <sup>U</sup>	<del>8–24 plus</del> 8–24 plus <sup>U</sup>	
*Continued on next page		ocument P	review	250 [151] 250 [121] <sup>U</sup>	<del>8–24 plus</del> 8–24 plus <sup>U</sup>	330 <b>[51-6166]</b>
*Continued on next page	. De	7049 Alloy (Continued	review	250 [121] <sup>0</sup>		330 [5H6166] <u>-</u>
*Continued on next page  Die and hand forgings (Continued)	875 [468] <sup>U</sup>	7049 Alloy (Continued ASTM B918/B918	W <sup>U</sup> W'		8–24 plus <sup>U</sup>	
Die and hand forgings (Continued)		ASTM B918/B918 s/sist/34b828e1-1089-4	W <sup>U</sup> W'	room temperature room temperature 250 [121] <sup>U</sup> 250 [121] <sup>U</sup>	8–24 plus <sup>U</sup> 48 min  48 min <sup>U</sup> 24 min plus <sup>U</sup>	<del>T732</del>
Die and hand forgings (Continued) Thups//standards.	875 [468] <sup>U</sup> itch.ai/catalog/standards	ASTM B918/B918 s/sist/34b828e1-1089-4	W <sup>u</sup> W' M-20 bdo-b9ab-da	250 [121] <sup>U</sup> room temperature room temperature <sup>U</sup> 250 [121] <sup>U</sup> 325 [163] <sup>U</sup>	48 min 48 min 48 min 24 min plus <sup>U</sup> 13–14 <sup>U</sup>	<del>17732</del> 1732 <sup>0</sup>
Die and hand forgings (Continued) Thups://standards.	875 [468] <sup>U</sup> itch.ai/catalog/standard: 880-900 [471-482]	ASTM B918/B918 5/SISU34D828e1-1089-4 7050 Alloy <sup>A</sup> 110 [43] max	W51 <sup>G.U</sup>	250 [121] <sup>U</sup> room temperature room temperature 250 [121] <sup>U</sup> 325 [163] <sup>U</sup> 250 [121]	48 min 48 min 48 min 24 min plus <sup>U</sup> 13–14 <sup>U</sup> 4 24 plus	7732 7732 18m 20
Die and hand forgings (Continued) Thups//standards.	875 [468] <sup>U</sup> itch.ai/catalog/standards	ASTM B918/B918 s/sist/34b828e1-1089-4	W <sup>u</sup> W' M-20 bdo-b9ab-da	250 [121] <sup>U</sup> room temperature room temperature <sup>U</sup> 250 [121] <sup>U</sup> 325 [163] <sup>U</sup> 250 [121] 250 [121]	48 min 48 min 24 min plus 13–14 4-24 plus 4-24 plus 4-24 plus	<del>17732</del> 1732 <sup>0</sup>
Die and hand forgings (Continued) Thups://standards.	875 [468] <sup>U</sup> itch.ai/catalog/standard: 880-900 [471-482]	ASTM B918/B918 5/SISU34D828e1-1089-4 7050 Alloy <sup>A</sup> 110 [43] max	W51 <sup>G.U</sup>	250 [121] <sup>U</sup> room temperature room temperature <sup>U</sup> 250 [121] <sup>U</sup> 325 [163] <sup>U</sup> 250 [121] 250 [121] 250 [121] 350 [177]	48 min 48 min 48 min 24 min plus <sup>U</sup> 13–14 <sup>U</sup> 4 24 plus	7732 7732 18m 20
Die and hand forgings (Continued) Thups://standards.	875 [468] <sup>U</sup> itch.ai/catalog/standard: 880-900 [471-482]	ASTM B918/B918 5/SISU34D828e1-1089-4 7050 Alloy <sup>A</sup> 110 [43] max	W51°C	250 [121] <sup>U</sup> room temperature room temperature <sup>U</sup> 250 [121] <sup>U</sup> 325 [163] <sup>U</sup> 2250 [121] 250 [121] 350 [177] 250 [121] 250 [121]	48 min 48 min 24 min plus 13–14 14 14 15 14 15 15 16 16 16 16 16 16 16 16 16 16 16 16 16	T732 <sup>0</sup> T8III-20  T7351 <sup>9</sup> T7351
Die and hand forgings (Continued) Tittps://standards.	875 [468] <sup>U</sup> itch.ai/catalog/standard: 880-900 [471-482]	ASTM B918/B918 5/SISU34D828e1-1089-4 7050 Alloy <sup>A</sup> 110 [43] max	W51°- W51°- W51°- W51′-	250 [121] <sup>U</sup> room temperature room temperature <sup>U</sup> 250 [121] <sup>U</sup> 325 [163] <sup>U</sup> 250 [121] 250 [121] 250 [121] 350 [177] 250 [121]	48 min 48 min 24 min plus 13–14 14 14 15 15 15 15 15 15 15 15 15 15 15 15 15	T732 <sup>U</sup> 18m-2U  T7351 <sup>G</sup> T7351  T7451 <sup>G</sup> T7451
Die and hand forgings (Continued) Tittps://standards.	875 [468] <sup>U</sup> itch.ai/catalog/standard: 880-900 [471-482]	ASTM B918/B918 5/SISU34D828e1-1089-4 7050 Alloy <sup>A</sup> 110 [43] max	W51°- W51°- W51°- W51°- W51°- W51°- W51°- W51°-	250 [121] <sup>U</sup> room temperature room temperature 250 [121] <sup>U</sup> 325 [163] <sup>U</sup> 250 [121] 250 [121] 350 [127] 250 [121] 250 [121] 250 [121] 325 [163] 250 [121]	48 min 48 min 24 min plus 13–14  4 - 24 plus 4 - 24 plus 4 - 24 plus 8 - 16 3 - 6 plus 24 - 30 3 - 6 plus	T732 <sup>U</sup> T732 <sup>U</sup> T7351 <sup>G</sup> T7351 T7451 <sup>G</sup> T7451 T7651 <sup>G</sup>
Die and hand forgings (Continued) Tittps://standards.	875 [468] <sup>U</sup> itch.ai/catalog/standard: 880-900 [471-482]	ASTM B918/B918 5/SISU34D828e1-1089-4 7050 Alloy <sup>A</sup> 110 [43] max	W51°- W51°- W51°- W51′-	250 [121] <sup>U</sup> room temperature room temperature 250 [121] <sup>U</sup> 325 [163] <sup>U</sup> 250 [121] 350 [121] 350 [177] 250 [121] 350 [121] 325 [163] 250 [121] 325 [163] 250 [121] 250 [121]	48 min 48 min 24 min plus 13–14  4 24 plus 4 –24 plus 4 –24 plus 8 –16 3 –6 plus 24 –30 3 –6 plus 3 –6 plus 3 –6 plus	T732 <sup>U</sup> 18m-2U  T7351 <sup>G</sup> T7351  T7451 <sup>G</sup> T7451
Die and hand forgings (Continued) Thups://standards.	875 [468] <sup>U</sup> iteh.ai/catalog/standard:  880 900 [471 482] 880 900 [471 482]	ASTM B918/B918 5/SISU34D828e1-1089-4 7050 Alloy <sup>A</sup> 110 [43] max	W51' W51' W51' W51' W51'	250 [121] <sup>U</sup> room temperature room temperature 250 [121] <sup>U</sup> 325 [163] <sup>U</sup> 250 [121] 350 [121] 350 [127] 250 [121] 350 [121] 325 [163] 250 [121] 325 [163] 250 [121] 325 [163]	48 min 48 min 24 min plus 13–14  4-24 plus 4-24 plus 4-24 plus 8-16 3-6 plus 24-30 3-6 plus 3-6 plus 12–15	T732 <sup>U</sup> T732 <sup>U</sup> T7351 <sup>Q</sup> T7351 T7451 <sup>Q</sup> T7451 T7651 <sup>Q</sup> T7651
Die and hand forgings (Continued) Thups://standards.	875 [468] <sup>U</sup> itch.al/catalog/standards  880-900 [471-482] 880-900 [471-482]	ASTM B918/B918 5/SISU34D828e1-1089-4 7050 Alloy <sup>A</sup> 110 [43] max	W51 <sup>G,U</sup> W51 <sup>G,U</sup> W51 <sup>C</sup>	250 [121] <sup>U</sup> room temperature room temperature <sup>U</sup> 250 [121] <sup>U</sup> 325 [163] <sup>U</sup> 250 [121] 250 [121] 350 [177] 250 [121] 250 [121] 325 [163] 250 [121] 325 [163] 250 [121] 325 [163] 250 [121]	48 min 48 min 24 min plus 13–14  4-24 plus 4-24 plus 4-24 plus 8-16 3-6 plus 3-6 plus 24-30 3-6 plus 3-6 plus 12-15 6-8 plus	T732 <sup>U</sup> T732 <sup>U</sup> T732 <sup>U</sup> T7351 <sup>G</sup> T7351 T7451 <sup>G</sup> T7451 T7651 <sup>G</sup> T7651 T742
Die and hand forgings (Continued) Thups://standards.	875 [468] <sup>U</sup> iteh.ai/catalog/standard:  880 900 [471 482] 880 900 [471 482]	ASTM B918/B918 5/SISU34D828e1-1089-4 7050 Alloy <sup>A</sup> 110 [43] max	W51' W51' W51' W51' W51'	250 [121] <sup>U</sup> room temperature room temperature 250 [121] <sup>U</sup> 325 [163] <sup>U</sup> 250 [121] 250 [121] 350 [177] 250 [121] 355 [163] 250 [121] 325 [163] 250 [121] 325 [163] 250 [121] 250 [121] 325 [163] 250 [121] 325 [163] 250 [121] 325 [163] 250 [121]	48 min 48 min 24 min plus 13–14  4 24 plus 4 – 24 plus 4 – 24 plus 8 – 16 3 – 6 plus 24 – 30 3 – 6 plus 24 – 30 3 – 6 plus 12–15 6 – 8 plus 6 – 8 plus 6 – 8 plus	T732 <sup>U</sup> T732 <sup>U</sup> T7351 <sup>Q</sup> T7351 T7451 <sup>Q</sup> T7451 T7651 <sup>Q</sup> T7651
Die and hand forgings (Continued) Tittps://standards.	875 [468] <sup>U</sup> itch.al/catalog/standards  880-900 [471-482] 880-900 [471-482]	ASTM B918/B918 5/SISU34D828e1-1089-4 7050 Alloy <sup>A</sup> 110 [43] max	W51°SU W51°SU W51°SU W51°SU W51°SU W51°SU W51°SU W51°SU W51°SU W51°SU W51°SU W51°SU	250 [121] <sup>U</sup> room temperature room temperature 250 [121] <sup>U</sup> 325 [163] <sup>U</sup> 250 [121] 350 [127] 250 [121] 350 [127] 250 [121] 325 [163] 250 [121] 325 [163] 250 [121] 325 [163] 250 [121] 325 [163] 250 [121] 325 [163] 250 [121] 325 [163] 250 [121] 350 [177] <sup>U</sup>	48 min 48 min 24 min plus 13–14  4 24 plus 4 – 24 plus 4 – 24 plus 8 – 16 3 – 6 plus 3 – 6 plus 24 – 30 3 – 6 plus 12 – 15 6 – 8 plus 6 – 8 plus 6 – 8 plus 6 – 8 plus	T732 <sup>U</sup> T732 <sup>U</sup> T7351 <sup>Q</sup> T7351 T7451 <sup>Q</sup> T7451 T7651 T7651 T742 T742 <sup>U</sup>
Die and hand forgings (Continued) Thups://standards.	875 [468] <sup>U</sup> itch.al/catalog/standards  880-900 [471-482] 880-900 [471-482]	ASTM B918/B918 5/SISU34D828e1-1089-4 7050 Alloy <sup>A</sup> 110 [43] max	W51 G.U W51 G.U W51' W51' W51' W51' W51' W51G.U W51' W51G.U W51'	250 [121] <sup>U</sup> room temperature room temperature 250 [121] <sup>U</sup> 325 [163] <sup>U</sup> 250 [121] 350 [121] 350 [121] 250 [121] 325 [163] 250 [121] 325 [163] 250 [121] 325 [163] 250 [121] 325 [163] 250 [121] 350 [121] 350 [121] 250 [121] 250 [121] 250 [121] 250 [121]	48 min 48 min 24 min plus 13–14  4 - 24 plus 4 - 24 plus 4 - 24 plus 3 - 6 plus 3 - 6 plus 3 - 6 plus 12 - 15 6 - 8 plus 6 - 8 plus 6 - 8 plus	T732 <sup>U</sup> T732 <sup>U</sup> T732 <sup>U</sup> T7351 <sup>G</sup> T7351 T7451 T7451 T7651 <sup>G</sup> T7651 T742 <sup>U</sup> T762
Die and hand forgings (Continued) Thups://standards.	875 [468] <sup>U</sup> itch.al/catalog/standards  880-900 [471-482] 880-900 [471-482]	ASTM B918/B918 5/SISU34D828e1-1089-4 7050 Alloy <sup>A</sup> 110 [43] max	W51°SU W51°SU W51°SU W51°SU W51°SU W51°SU W51°SU W51°SU W51°SU W51°SU W51°SU W51°SU	250 [121] <sup>U</sup> room temperature room temperature 250 [121] <sup>U</sup> 325 [163] <sup>U</sup> 250 [121] 350 [127] 250 [121] 350 [127] 250 [121] 325 [163] 250 [121] 325 [163] 250 [121] 325 [163] 250 [121] 325 [163] 250 [121] 325 [163] 250 [121] 325 [163] 250 [121] 350 [177] <sup>U</sup>	48 min 48 min 24 min plus 13–14  4 24 plus 4 – 24 plus 4 – 24 plus 8 – 16 3 – 6 plus 3 – 6 plus 24 – 30 3 – 6 plus 12 – 15 6 – 8 plus 6 – 8 plus 6 – 8 plus 6 – 8 plus	T732 <sup>U</sup> T732 <sup>U</sup> T7351 <sup>Q</sup> T7351 T7451 <sup>Q</sup> T7451 T7651 T7651 T742 T742 <sup>U</sup>
Die and hand forgings (Continued) Thups://standards.  Plate Plate	875 [468] <sup>U</sup> itch.ai/catalog/standards  880-900 [471-482] 880-900 [471-482]  890 [477] 890 [477] <sup>U</sup>	ASTM B918/B918 8/SISV34b828e1-1089-4 7050 Alloy <sup>A</sup> 110 [43] max 110 [43] max	W51 <sup>G,U</sup>	250 [121] <sup>U</sup> room temperature room temperature 250 [121] <sup>U</sup> 325 [163] <sup>U</sup> 250 [121] 350 [177] 250 [121] 350 [177] 250 [121] 325 [163] 250 [121] 325 [163] 250 [121] 325 [163] 250 [121] 325 [163] 250 [121] 350 [177] <sup>U</sup> 250 [121] <sup>U</sup> 350 [177] <sup>U</sup>	48 min 48 min 24 min plus 13–14  4-24 plus 4-24 plus 4-24 plus 8-16 3-6 plus 24-30 3-6 plus 24-30 3-6 plus 12–15 6-8 plus 6-5-7	T732 <sup>U</sup> T732 <sup>U</sup> T732 <sup>U</sup> T7351 <sup>Q</sup> T7351 T7451 <sup>Q</sup> T7451 T7651 T7651 T742 T742 T762 T762 <sup>U</sup>
Die and hand forgings (Continued)  https://standards.  Plate Plate Plate Cold-finished wire, rod	875 [468] <sup>U</sup> Itch.al/catalog/standards  880 900 [471 482]  880 900 [471 482]  890 [477]  890 [477] <sup>U</sup> 880 900 [471 482]	ASTM B918/B918 8/SISV34b828e1-1089-4 7050 Alloy <sup>A</sup> 110 [43] max 110 [43] max	W51 <sup>G,U</sup> W51 <sup>1</sup>	250 [121] <sup>U</sup> room temperature room temperature 250 [121] <sup>U</sup> 325 [163] <sup>U</sup> 250 [121] 350 [121] 350 [121] 350 [121] 350 [121] 325 [163] 250 [121] 325 [163] 250 [121] 325 [163] 250 [121] 350 [121] 350 [121] 350 [121] <sup>U</sup> 350 [177] <sup>U</sup> 250 [121] <sup>U</sup> 350 [121] <sup>U</sup> 350 [177] <sup>U</sup> 250 [121] 250 [121] 250 [121] 250 [121] 250 [121] 250 [121] 250 [121] 250 [121] 250 [121] 250 [121]	48 min 48 min 48 min 24 min plus 13–14  4 - 24 plus 4 - 24 plus 8 - 16 3 - 6 plus 24 - 30 3 - 6 plus 24 - 30 3 - 6 plus 12 - 15 6 - 8 plus 4 - 24 plus 6 - 8 plus	T732 <sup>U</sup> T732 <sup>U</sup> T732 <sup>U</sup> T732 <sup>U</sup> T7351 <sup>G</sup> T7351 T7451 <sup>G</sup> T7651 T7651 T762 T762 T762 <sup>U</sup> T762 T762 T762 <sup>U</sup>
Die and hand forgings (Continued) THUPS://standards.  Plate Plate	875 [468] <sup>U</sup> itch.ai/catalog/standards  880-900 [471-482] 880-900 [471-482]  890 [477] 890 [477] <sup>U</sup>	ASTM B918/B918 8/SISV34b828e1-1089-4 7050 Alloy <sup>A</sup> 110 [43] max 110 [43] max	W51 <sup>G,U</sup>	250 [121] <sup>U</sup> room temperature room temperature 250 [121] <sup>U</sup> 325 [163] <sup>U</sup> 250 [121] 350 [177] 250 [121] 350 [177] 250 [121] 325 [163] 250 [121] 325 [163] 250 [121] 325 [163] 250 [121] 325 [163] 250 [121] 350 [177] <sup>U</sup> 250 [121] <sup>U</sup> 350 [177] <sup>U</sup>	48 min 48 min 24 min plus 13–14  4-24 plus 4-24 plus 4-24 plus 8-16 3-6 plus 24-30 3-6 plus 24-30 3-6 plus 12–15 6-8 plus 6-5-7	T732 <sup>U</sup> T732 <sup>U</sup> T732 <sup>U</sup> T7351 <sup>Q</sup> T7351 T7451 <sup>Q</sup> T7451 T7651 <sup>Q</sup> T7651 T742 <sup>U</sup> T762 T762 <sup>U</sup>
Die and hand forgings (Continued) Tutps://standards.  Plate Plate Plate  Cold-finished wire, rod Cold-finished wire, rod	875 [468] <sup>U</sup> Itel: al/catalog/standard:  880-900 [471-482] 880-900 [471-482]  890 [477] <sup>U</sup> 890 [477] <sup>U</sup> 880-900 [471-482] 880-900 [471-482]	7050 Alloy <sup>A</sup> 110 [43] max 110 [43] max 110 [43] max 110 [43] max	W <sup>2</sup> W <sup>2</sup> W <sup>2</sup> W <sup>2</sup> W <sup>2</sup> W51 <sup>2</sup>	250 [121] <sup>U</sup> room temperature room temperature 250 [121] <sup>U</sup> 325 [163] <sup>U</sup> 250 [121] 350 [121] 350 [121] 350 [121] 350 [121] 325 [163] 250 [121] 325 [163] 250 [121] 325 [163] 250 [121] 350 [121] 350 [177] <sup>U</sup> 250 [121] <sup>U</sup> 350 [177] <sup>U</sup> 250 [121] <sup>U</sup> 350 [177] <sup>U</sup> 250 [121] 350 [177] <sup>U</sup> 250 [121] 350 [177] <sup>U</sup> 250 [121] 350 [177]	48 min 48 min 24 min plus 13–14 13–14 13–14 13–14 13–14 13–14 13–14 13–14 13–14 13–14 13–15 13–6 plus 13–6 plus 12–15 13–6 plus 13–14 13–14 14–24 plus 16–12 15–15 16–16 16 16 17 18 18 18 18 18 18 18 18 18 18 18 18 18	T732 <sup>U</sup> T732 <sup>U</sup> T732 <sup>U</sup> T7351 <sup>Q</sup> T7351 T7451 <sup>Q</sup> T7451 T7651 <sup>Q</sup> T7651 T762 T762 T762 T77
Die and hand forgings (Continued)  Tutps://standards.  Plate Plate Plate  Cold-finished wire, rod Cold-finished wire, rod  Extruded rod, bar,	875 [468] <sup>U</sup> Iteli.al/catalog/standard:  880-900 [471-482]  880-900 [471-482]  890 [477] <sup>U</sup> 880-900 [471-482]  880-900 [471-482]	7050 Alloy <sup>A</sup> 110 [43] max 110 [43] max 110 [43] max 110 [43] max	W <sup>1</sup> W <sup>2</sup> W <sup>2</sup> W <sup>3</sup> W51 <sup>6</sup> W51 <sup>7</sup>	250 [121] <sup>U</sup> room temperature room temperature 250 [121] <sup>U</sup> 325 [163] <sup>U</sup> 250 [121] 350 [121] 350 [121] 350 [121] 325 [163] 250 [121] 325 [163] 250 [121] 325 [163] 250 [121] 325 [163] 250 [121] 325 [163] 250 [121] 350 [177] <sup>U</sup> 250 [121] <sup>U</sup> 350 [177] <sup>U</sup> 250 [121] 350 [177] <sup>U</sup> 250 [121] 350 [177] 250 [121] 350 [177] 250 [121] 350 [177]	48 min 48 min 24 min plus 13–14  13–14  4 24 plus 4 –24 plus 8 –16 3 –6 plus 24 –30 3 –6 plus 3 –6 plus 12–15 6 –8 plus	T732 <sup>U</sup> T732 <sup>U</sup> T7351 <sup>Q</sup> T7351 T7451 T7451 T7651 <sup>Q</sup> T7651 T742 <sup>U</sup> T762 T762 T77510 <sup>U</sup> T77510 <sup>U</sup> T77510 <sup>U</sup>
Die and hand forgings (Continued)  Tutps://standards.  Plate Plate Plate  Cold-finished wire, rod Cold-finished wire, rod  Extruded rod, bar, Extruded rod, bar,	875 [468] <sup>U</sup> Itel: al/catalog/standard:  880-900 [471-482] 880-900 [471-482]  890 [477] <sup>U</sup> 890 [477] <sup>U</sup> 880-900 [471-482] 880-900 [471-482]	7050 Alloy <sup>A</sup> 110 [43] max 110 [43] max 110 [43] max 110 [43] max	W <sup>2</sup> W <sup>2</sup> W <sup>2</sup> W <sup>2</sup> W <sup>2</sup> W51 <sup>2</sup>	250 [121] <sup>U</sup> room temperature room temperature 250 [121] <sup>U</sup> 325 [163] <sup>U</sup> 223 UGCUUUV/as  250 [121] 350 [121] 350 [121] 350 [121] 325 [163] 250 [121] 325 [163] 250 [121] 325 [163] 250 [121] 355 [163] 250 [121] 355 [163] 250 [121] 350 [121] 350 [177] <sup>U</sup> 250 [121] 250 [121] 350 [177] 250 [121] 350 [177] 250 [121] 250 [121] 350 [177]	48 min 48 min 24 min plus 13–14  4-24 plus 4-24 plus 4-24 plus 8-16 3-6 plus 24-30 3-6 plus 12-15 6-8 plus 12-15 6-8 plus 6-9 plus 6-8 plus 6-9 plus 6-9 plus 6-12	T732 <sup>U</sup> T732 <sup>U</sup> T732 <sup>U</sup> T7351 <sup>Q</sup> T7351 T7451 <sup>Q</sup> T7451 T7651 <sup>Q</sup> T7651 T742 <sup>U</sup> T762 T762 T762 T77
Die and hand forgings (Continued)  Tutps://standards.  Plate Plate Plate  Cold-finished wire, rod Cold-finished wire, rod  Extruded rod, bar, Extruded rod, bar,	875 [468] <sup>U</sup> Iteli.al/catalog/standard:  880-900 [471-482]  880-900 [471-482]  890 [477] <sup>U</sup> 880-900 [471-482]  880-900 [471-482]	7050 Alloy <sup>A</sup> 110 [43] max 110 [43] max 110 [43] max 110 [43] max	W <sup>1</sup> W <sup>2</sup> W <sup>2</sup> W <sup>3</sup> W51 <sup>6</sup> W51 <sup>7</sup>	250 [121] <sup>U</sup> room temperature room temperature 250 [121] <sup>U</sup> 325 [163] <sup>U</sup> 250 [121] 350 [121] 350 [121] 350 [121] 325 [163] 250 [121] 325 [163] 250 [121] 325 [163] 250 [121] 325 [163] 250 [121] 325 [163] 250 [121] 350 [177] <sup>U</sup> 250 [121] <sup>U</sup> 350 [177] <sup>U</sup> 250 [121] 350 [177] <sup>U</sup> 250 [121] 350 [177] 250 [121] 350 [177] 250 [121] 350 [177]	48 min 48 min 24 min plus 13–14  13–14  4 24 plus 4 –24 plus 8 –16 3 –6 plus 24 –30 3 –6 plus 3 –6 plus 12–15 6 –8 plus	T732 <sup>U</sup> T732 <sup>U</sup> T7351 <sup>Q</sup> T7351 T7451 T7451 T7651 <sup>Q</sup> T7651 T742 <sup>U</sup> T762 T762 T77510 <sup>U</sup> T77510 <sup>U</sup> T77510 <sup>U</sup>
Die and hand forgings (Continued)  Tutps://standards.  Plate Plate Plate  Cold-finished wire, rod Cold-finished wire, rod  Extruded rod, bar, Extruded rod, bar,	875 [468] <sup>U</sup> Iteli.al/catalog/standard:  880-900 [471-482]  880-900 [471-482]  890 [477] <sup>U</sup> 880-900 [471-482]  880-900 [471-482]	7050 Alloy <sup>A</sup> 110 [43] max 110 [43] max 110 [43] max 110 [43] max	W51GU W51' W51' W51' W51' W51' W51' W51' W51'	250 [121] <sup>U</sup> room temperature room temperature 250 [121] <sup>U</sup> 325 [163] <sup>U</sup> 223 UGCDUOD/AS  250 [121] 250 [121] 350 [177] 250 [121] 352 [163] 250 [121] 325 [163] 250 [121] 325 [163] 250 [121] 355 [163] 250 [121] 350 [177] <sup>U</sup> 250 [121] <sup>U</sup> 350 [177] <sup>U</sup> 250 [121] 250 [121] 350 [177] 250 [121] 350 [177] 250 [121] 350 [177]	48 min 48 min 48 min 24 min plus 13–14  13–14  4 - 24 plus 4 - 24 plus 8 - 16 3 - 6 plus 24 - 30 3 - 6 plus 24 - 30 3 - 6 plus 12 - 15 6 - 8 plus 7 - 9 plus 8 - 9 plus 9 plus 8 - 9 plus 9 plus 9 plus	T732 <sup>U</sup> T732 <sup>U</sup> T732 <sup>U</sup> T7351 <sup>Q</sup> T7351 T7451 <sup>Q</sup> T7451 T7651 T7651 T762 <sup>U</sup> T762 <sup>U</sup> T77510 <sup>U</sup> T73510 <sup>U</sup> T73510
Die and hand forgings (Continued)  https://standards.  Plate Plate Plate Cold-finished wire, rod	875 [468] <sup>U</sup> Iteli.al/catalog/standard:  880-900 [471-482]  880-900 [471-482]  890 [477] <sup>U</sup> 880-900 [471-482]  880-900 [471-482]	7050 Alloy <sup>A</sup> 110 [43] max 110 [43] max 110 [43] max 110 [43] max	W516-W W51' W516-W W510' W510-W W510-W	250 [121] <sup>U</sup> room temperature room temperature 250 [121] <sup>U</sup> 325 [163] <sup>U</sup> 250 [121] 350 [177] 250 [121] 355 [163] 250 [121] 355 [163] 250 [121] 325 [163] 250 [121] 325 [163] 250 [121] 350 [177] <sup>U</sup> 250 [121] <sup>U</sup> 350 [177] <sup>U</sup> 250 [121] <sup>U</sup> 350 [177] <sup>U</sup> 250 [121] 350 [177] <sup>U</sup> 250 [121] 350 [177] 250 [121] 350 [177] 250 [121] 350 [177] 250 [121] 350 [177] 250 [121] 350 [177]	48 min 48 min 48 min 24 min plus 13–14  13–14  4 -24 plus 4 -24 plus 8 -16 3 -6 plus 3 -6 plus 3 -6 plus 12–15 6 -8 plus 6 -8	T732 <sup>U</sup> T732 <sup>U</sup> T732 <sup>U</sup> T7351 <sup>G</sup> T7451 T7451 T7451 T7651 <sup>G</sup> T7651 T762 T762 T762 T77 T7 T7 T7 T7 T73510 T74510 <sup>H</sup> T73510

		Solution Heat Treatment			Precipitation at Treatment <sup>B</sup>	
Product	Metal Temperature, ±10°F [±6°C]±10 °F [±6 °C] <sup>C,D,V</sup>	Quench Temperature, °F [°C] <sup>E</sup>	Temper	Metal Temperature, ±10°F [±6°C]±10 °F [±6 °C] <sup>V</sup>	Time at Temperature, h	Temper
			W510 <sup>1</sup>	250 [121]	3–8 plus	T76510
			₩511 <sup>H,U</sup>	325 [163] <del>250 [121]</del>	15–18 <del>24 plus</del>	<del>T73511<sup>H</sup></del>
			W511 <sup>/</sup>	250 [121]	24 plus	T73511
			<u> </u>	350 [177]	12–15	170011
			₩511 <sup>H.U</sup>	<del>250 [121]</del>	<del>24 plus</del>	<del>T74511<sup>H</sup></del>
			<u>W511</u> <sup>7</sup>	250 [121]	24 plus	T74511
			N H. I. I	340 [171]	18–12	
			₩511 <sup>H,U</sup>	<del>250 [121]</del>	3 8 plus	T76511 <sup>H</sup>
			<u>W511</u> <sup>7</sup>	250 [121] 325 [163]	3–8 plus 15–18	T76511
	<del>890 [477]</del>		₩ <u>n</u>	250 [121]	6–8 plus	<del>T732</del>
	890 [477] <sup>U</sup>		<u>W'</u>	250 [121] <sup>U</sup>	6–8 plus <sup><i>U</i></sup>	T732 <sup>U</sup>
				350 [177] <sup>U</sup>	11.5–12.5 <sup>U</sup>	
			₩ <u>n</u>	<del>250 [121]</del>	6 8 plus	<del>T742</del>
			<u>W'</u>	250 [121] <sup>U</sup>	6–8 plus <sup>U</sup>	T742 <sup>U</sup>
			₩ <u>″</u>	350 [177] <u>U</u>	6-8 <u>"</u>	T700
			W'	<del>250 [121]</del> 250 [121] <sup>U</sup>	<del>6–8 plus</del> 6–8 plus <sup>U</sup>	<del>T762</del> T762 <sup>∪</sup>
			<u>vv</u>	350 [177] <sup>U</sup>	3.5–4.5 <sub>_</sub>	1702
Die forgings &	<del>880-900 [471-482]</del>	<del>140 160 [60 71]</del>	₩₽	<del>250 [121]</del>	<del>3 6 plus</del>	<del>174</del>
Die forgings &	880–900 [471–482]	140–160 [60–71]	<u>W'</u>	250 [121]	3–6 plus	T74
hand forgings				350 [177]	6–12	
			₩51 <sup>1,U</sup>	<del>250 [121]</del>	3-6 plus	<del>T7451</del>
			<u>W51</u> <sup>7</sup>	250 [121]	3–6 plus	T7451
			01211 W521.U	350 [177]	6–10	T7450
			W52 <sup>1</sup>	<del>250 [121]</del> 250 [121]	<del>3-6 plus</del> 3–6 plus	<del>T7452</del> T7452
			<u>vv32</u>	350 [177]	6–10	17432
			ros. Iwe en	room temperature	<del>72 plus</del>	<del>T6</del>
			<u>W'</u>	room temperature 250 [121]	72 plus 48	<u>T6</u>
	<del>890 [477]</del>		Prevwo	250 [121]	6 8 plus	<del>T742</del>
	890 $[477]^{U}$		<u>W'</u>	250 [121] <sup>U</sup>	6–8 plus <sup>U</sup>	T742 <sup>U</sup>
				350 [177] <u>0</u>	6-8 <u>u</u>	
			₩ <u>U</u>	<del>250 [121]</del>	6-8 plus	<del>T762</del>
			18M-20 <u>w'</u>	250 [121] <sup>U</sup> 350 [177] <sup>U</sup>	6–8 plus <sup>U</sup> 3.5–4.5 <sup>U</sup>	T762 <sup>U</sup>
https://standards.	.iteh.ai/catalog/standards/	SISV34082 7075 Alloy	9-4bd6-b9ab-da	<del>2230dcb06b/as</del>	stm-b9 18-b9	18m-20
Sheet, bare or Alclad	860-930 [460-499] <sup>V</sup>	110 [43] max	$\mathbf{M}_{\mathbf{n}}$	<del>250 [121]</del>	<del>24</del>	<del>T6</del>
Sheet, bare or Alclad	860-930 [460-499] <sup>J</sup>	110 [43] max	<u>W'</u>	250 [121]	<u>24</u>	<u>T6</u>
			<u>₩</u> <u>∪</u>	<del>225 [107]</del>	6–8 plus	<del>T73</del> ×
			<u>W'</u>	225 [107]	6–8 plus	T73 <sup>M</sup>
				325 [163] or 225 [107]	24–30 6–8 plus	
				335 [168] <sup>W</sup>	14–18	
				335 [168] <sup>K</sup>	14–18	
			$\mathbf{W}_{\Omega}$	<del>250 [121]</del>	3-5 plus	<del>T76<sup>X</sup></del>
			<u>W'</u>	250 [121]	3-5 plus	<u>T76<sup>M</sup></u>
	0=0 14001/V		****	325 [163]	15–18	
	870 [466] <sup>V, Y</sup>		₩ <u>″</u>	<del>250 [121]</del>	<del>23 25</del>	<del>T62</del>
	870 [466] <sup>U</sup>		<u>W'</u>	250 [121] <sup>U</sup>	23–25 <sup>U</sup>	<u>T62<sup>U</sup></u>
	860-930 [460-499] <sup>V, Y</sup>	<del>110 [43] max</del>	₩51 <sup><i>G,U</i></sup>		<del>24</del>	<del>T651</del> <sup>G</sup>
Plate, bare or Alclad*	860-930 [460-499] <sup>J,N</sup>	110 [43] max	<u>W51</u> ′	250 [121]	24	<u>T651</u>
				or 205 [96]	4 plus	
			₩51 <sup><i>G,U</i></sup>	315 [157]	8	T70546 X
			W51 <sup>4</sup>	<del>225 [107]</del> 225 [107]	<del>6–8 plus</del> 6–8 plus	T7351 <sup>G,X</sup> T7351 <sup>M</sup>
			1 GVV	325 [107]	24–30	17331
				or 225 [107]	6–8 plus	
				335 [168] <sup>W</sup>	14-18	
				335 [168] <sup>K</sup>	14-18	
			₩51 <sup>G,U</sup>	<del>250 [121]</del>	24	T7651 <sup>G,X</sup>
			<u>W51</u> ′	250 [121]	<u>24</u>	T7651 <sup>M</sup>
						T7651 <sup>M</sup>
				250 [121]	<u>24</u>	

Product			Solution Heat Treatment			recipitation at Treatment <sup>B</sup>	
1916   1970	Product	Metal Temperature, <del>±10°F [±6°C]±10 °F [±6 °C]</del>	Quench Temperature,	Temper	Metal Temperature, ±10°F [±6°C]±10 °F	Time at	Temper
Tells   December of Alded   S70   [486]   \$\frac{1}{2}\$   \$\					or 205 [96]		
Continued)   Con			7075 Alloy <sup>A</sup> (Continue				
264-finished wire, rod, not bear with the product of the proof of th	Plate, bare or Alclad* (Continued)	<u>870 [466]<sup>H,U</sup></u>		<u>W</u> ′	or 205 [96] <sup>U</sup>	4 plus <sup>U</sup>	<u>T62<sup>0</sup></u>
Marting	Cold-finished wire, rod,	860-930 [460-499] <sup>V, Y</sup>	110 [43] max	₩ <u>u</u>	<del>250 [121]</del>	24	<del>T6</del>
Mg   Mg   Mg   Mg   Mg   Mg   Mg   Mg	Cold-finished wire, rod,	860-930 [460-499] <sup>J,N</sup>	110 [43] max				<u>T6</u>
### 150   177   18-10   24   1765   1						•	
### ### ### ### ### ### ### ### ### ##	nd bar			<u>vv'</u>			173"
W510   250   121   24   T55   T765				₩51 <sup>G,U</sup>			T651/
## 1735   \$70,466 \(\frac{V^*}{2}\)   \$870,466 \(\frac{V^*}{2}\)   \$870,46				W51 <sup>/</sup>			T651
870 [466] \(^2\) 10 [23] 870 [466] \(^2\) 10 [23] 10 [24] 16 [24] 16 [24] 16 [24] 16 [24] 17 [24] 17 [24] 17 [24] 17 [25] 1						•	T7351 <sup>/</sup>
### 265 [107]* 29-25   T62*    We' 255 [107]* 29-25   T62*   Struded-rod, bar; 860-930 [460-499]***   110 [43] max   Wi' 250 [121]   24   T6     Friendles, nucleus and pipe   110 [43] max   Wi' 250 [121]   24   T6     Friendles, nucleus and pipe   110 [43] max   Wi' 250 [121]   24   T6     Friendles, nucleus and pipe   110 [43] max   Wi' 250 [121]   24   T6     Friendles, nucleus and pipe   110 [43] max   Wi' 250 [121]   24   T6     Friendles, nucleus and pipe   110 [43] max   Wi' 250 [121]   24   Pipus     Friendles, nucleus and pipe   110 [43] max   Wi' 250 [121]   25   Pipus     Friendles, nucleus and pipe   110 [43] max   Wi' 250 [121]   25   Pipus     Friendles, nucleus and pipe   110 [43] max   Wi' 250 [121]   25   Pipus     Friendles, nucleus and pipe   110 [43] max   Wi' 250 [121]   25   Pipus     Friendles, nucleus and pipe   110 [43] max   Wi' 250 [121]   25   Pipus     Friendles, nucleus and pipe   110 [43] max   Wi' 250 [121]   25   Pipus     Friendles, nucleus and pipe   110 [43] max   Wi' 250 [121]   25   Pipus     Friendles, nucleus and pipe   110 [43] max   Wi' 250 [121]   25   Pipus     Friendles, nucleus and pipe   110 [43] max   Wi' 250 [121]   25   Pipus     Friendles, nucleus and pipe   110 [43] max   Wi' 250 [121]   25   Pipus     Friendles, nucleus and pipe   110 [43] max   Wi' 250 [121]   25   Pipus     Friendles, nucleus and pipe   110 [43] max   Wi' 250 [121]   25   Pipus     Friendles, nucleus and pipe   121 [43] max   121 [43] max     Friendles, nucleus and pipe   122 [43] max   123 [43] max     Friendles, nucleus and pipe   122 [43] max   123 [43] max     Friendles, nucleus and pipe   123 [43] max   123 [43] max     Friendles, nucleus and pipe   123 [43] max   123 [43] max     Friendles, nucleus and pipe   123 [43] max   123 [43] max     Friendles, nucleus and pipe   123 [43] max   123 [43] max     Friendles, nucleus and pipe   123 [43] max   123 [43] max     Friendles, nucleus and pipe   123 [43] max   123 [43] max     Friendles, nucleus and pipe   123 [43] max   123 [43] max     F				<u>W51′</u>			T7351
Bro   466     W   25   107     23-25    T62    Extruded rod, bar,   860-930   460-499     110   43  max   W   250   121    24   16   27   27   28   28   28   28   28   28		870 [466]V,Y		<b>₩</b> <sup>U</sup>			IEO
Structed rod. bar;   880 - 930   460 - 499    110   (43) max   W'   250   (121)   24   76							T62 <sup>0</sup>
Structed rod. bar, roffles, and tube roffles, and tube roffles, tube, and pipe   ITCH Standards   V				<del></del>	· <del></del>		
Teh Standards							
Teh Standards		860-930 [460-499]5,74	110 [43] max	<u>W'</u>			<u>16</u>
(https://standards.w/eh. 2851107] 6-8-plus 773' 6-8-plus 773' 550 177 6-8 plus 355 1688' 14-18 35 1688' 325 163] 3-5 plus 375 1850' 250 121] 3-5 plus 3-5 pl						•	
(https://standards.w/ eh. 285107] 6-8 plus 773' 350 177] 6-8 plus 350 188' 14-18 350 188' 14-18 350 188' 14-18 350 188' 14-18 350 188' 14-18 350 188' 14-18 350 188' 14-18 350 188' 14-18 350 188' 15-18 350 189' 15-18 350	romoo, tabo, ana pipo						
### Bold					300 [149]		
### Bold				$\frac{\Psi^{U}}{U}$			<del>T73</del> X
## Document Preview   07 225 [107]   6-8 plus   14-18   335 [168]K   14-18   335 [168]K   14-18   345 [168]K   14-18   355 [168]K   15-18   355 [168]K   15-				$\overline{\mathbf{M}}$			T73 <sup>///</sup>
### Page 14 - 18   335   168    14 - 18   345   168    14 - 18   355   168    15 - 18   176   168   176   168   176   168   176   168   176   168   176   168   176   168   176   168   176   168   176   168   176   168   176   17					005 [407]		
###   335   168   14-18   3-5 plus   776					335 [168] <sup>W</sup>		
ASTM B9 18/B9 18/M-20  ASTM B9 18/B9 18/B-20  ASTM B9 18/B9 18/B-21  ASTM B9 18/B9 18/B-21  ASTM B9 18/B9 18/B-21  ASTM B9 18/B9 18/B9 18/B-20  ASTM B9 18/B9 18/B-21  ASTM B9 18/B9 18/B-21  ASTM B9 18/B9 18/B9 18/B-20  ASTM B9 18/B9 1					00E [400]K	44.40	
ASTM B9   8/B9   8M-20 325   163] 15-18 7-86-14 3-5-plus 90   8/B5   8/B							
### Page 1785   Page 1785					<del>250 [121]</del>	<del>3 5 plus</del>	
### Standards teh.avcatalog standards/sist/34b828el-1089-4066-b9ab-da22 or 250 [121] astm 3-5 plus by 1 8m-320 [160] 18-21  ### W510'				W'	<del>250 [121]</del> 250 [121]	<del>3–5 plus</del> 3–5 plus	
Western   West				<u>M-20</u> <u>w'</u>	250 [121] 250 [121] 325 [163] or 250 [121]	<del>3–5 plus</del> <u>3–5 plus</u> 15–18	T76 <sup>M</sup>
W510'   250   121    24   T651   250   121    4 plus   300   149    4   4   4   4   4   4   4   4   4				<u>M-20</u> <u>w'</u>	250 [121] 250 [121] 325 [163] 97 250 [121] 0r 250 [121]	3–5 plus 3–5 plus 15–18 3–5 plus 3–5 plus	<del>T76<sup>x</sup></del> <u>T76<sup>m</sup></u> <del>T62</del>
Or 210 [99]   5 plus   250 [121]   4 plus   300 [149]   4   4   4   4   4   4   4   4   4				<u>M-20</u> bd6-b9ab-da	250 [121] 250 [121] 325 [163] or 250 [121] 0r 250 [121] 320 [160]	3–5 plus 3–5 plus 15–18 3–5 plus 3–5 plus 18–21	776 <sup>M</sup>
250 [121]   4 plus   300 [149]   4   4   4   4   4   4   4   4   4				<u>W'</u> bd6-b9ab-da <del>W510<sup>H,U</sup></del>	250 [121] 250 [121] 325 [163] 67 250 [121] 07 250 [121] 320 [160] 250 [121]	3–5 plus 3–5 plus 15–18 3–5 plus 3–5 plus 18–21 24	T76 <sup>M</sup> T62 T6510
W510'   225 [107]   6-8 plus   T7351    W510'   225 [107]   6-8 plus   T7351    or 225 [107]   6-8 plus   335 [168] \(^{\text{M}}\)   14-18 plus   15-18     W510'   250 [121]   3-5 plus   17651    W510'   250 [121]   3-5 plus   17651    W510'   250 [121]   3-5 plus   17651    W511'   250 [121]   24   1651    W511'   250 [121]   4 plus   250 [121]     or 210 [99]   5 plus   17651    W511'   225 [107]   6-8 plus   17351    W511'   225 [107]   6-8 plus   17351    W511'   255 [107]   6-8 plus   17351    W511'   255 [107]   6-8 plus   17351    W511'   255 [121]   3-5 plus   17651    W511'   250 [121]   3-5 plus   17651				<u>W'</u> bd6-b9ab-da <del>W510<sup>H,U</sup></del>	250 [121] 250 [121] 325 [163] or 250 [121] 0r 250 [121] 320 [160] 250 [121] 250 [121]	3–5 plus 3–5 plus 15–18 3–5 plus 3–5 plus 18–21 24 24	776 <sup>M</sup>
W510'   225   107   6-8 plus   77351:				<u>W'</u> bd6-b9ab-da <del>W510<sup>H,U</sup></del>	250 [121] 250 [121] 325 [163] or 250 [121] 320 [160] 250 [121] 250 [121] or 210 [99]	3-5 plus 3-5 plus 15-18 3-5 plus 3-5 plus 3-5 plus 18-21 24 24 5 plus	T76 <sup>M</sup> T62 T6510
350 [177]   6-8   0				<u>W'</u> bd6-b9ab-da <del>W510<sup>H,U</sup></del> <u>W510'</u>	250 [121] 250 [121] 325 [163] or 250 [121] 320 [160] 250 [121] or 210 [99] 250 [121] or 210 [99] 250 [121] 300 [149]	3-5 plus 3-5 plus 15-18 3-5 plus 3-5 plus 18-21 24 24 5 plus 4 plus 4	T76 <sup>M</sup> T62 18 m-2 T6510 T6510
Or 225 [107] 6-8 plus   335 [168] \(^k\text{14-18 plus} \)   325 [163]   15-18   325 [163]   15-18   325 [163]   15-18   320 [160]   18-21   320 [160]   18-21   320 [160]   18-21   320 [121]   24   7651   325 [121]   24   7651   325 [121]   24   7651   325 [121]   24   7651   325 [121]   325 [121]   325 [121]   325 [121]   325 [121]   325 [121]   325 [121]   330 [149]   4   330 [149]   4   335 [168] \(^k\text{14-14} \)   335 [168] \(^k\text{14-18} \)   335				<u>W'</u> bd6-b9ab-da <del>W510<sup>H,U</sup></del> <u>W510'</u>	250 [121] 250 [121] 325 [163] or 250 [121] 320 [160] 250 [121] 250 [121] or 210 [99] 250 [121] 300 [149] 225 [107]	3-5 plus 3-5 plus 15-18 3-5 plus 3-5 plus 18-21 24 24 24 5 plus 4 plus 4 6-8 plus	T76 <sup>M</sup> T62 T6510 T6510 T73510
335 [168]   14 - 18 plus   34 - 18 plus   35 plus   36 plus   37 plu				<u>W'</u> bd6-b9ab-da <del>W510<sup>H,U</sup></del> <u>W510'</u>	250 [121] 250 [121] 325 [163] or 250 [121] 320 [160] 250 [121] 320 [160] 250 [121] or 210 [99] 250 [121] 300 [149] 225 [107]	3-5 plus 3-5 plus 15-18 3-5 plus 3-5 plus 18-21 24 24 5 plus 4 plus 4 6-8 plus 6-8 plus	T76 <sup>M</sup> T62 T6510 T6510 T73510
W510 <sup>H,U</sup>   250 [121]   3-5 plus   T76516     W510 <sup>f</sup>   250 [121]   3-5 plus   T76516     W511 <sup>H,U</sup>   250 [121]   3-5 plus   T76516     W511 <sup>f,U</sup>   250 [121]   3-5 plus     W511 <sup>f,U</sup>   250 [121]   24   T6516     W511 <sup>f,U</sup>   250 [121]   24   T6516     W511 <sup>f,U</sup>   250 [121]   4 plus     250 [121]   4 plus     300 [149]   4     W511 <sup>f,U</sup>   225 [107]   6-8 plus   T73516     W511 <sup>f,U</sup>   225 [107]   6-8 plus   T73516     W511 <sup>f,U</sup>   250 [121]   3-5 plus   T76516     W511 <sup>f,U,U</sup>   250 [121]   3-5 plus   T76516     W511 <sup>f,U,U,U,U,U,U,U,U,U,U,U,U,U,U,U,U,U,U,U</sup>				<u>W'</u> bd6-b9ab-da <del>W510<sup>H,U</sup></del> <u>W510'</u>	250 [121] 250 [121] 325 [163] or 250 [121] 320 [160] 250 [121] 320 [160] 250 [121] or 210 [99] 250 [121] 300 [149] 225 [107] 225 [107] 350 [177]	3-5 plus 3-5 plus 15-18 3-5 plus 3-5 plus 18-21 24 24 5 plus 4 plus 4 6-8 plus 6-8 plus 6-8	T76 <sup>M</sup> T62 T6510 T6510 T73510
W510'   250 [121]   3-5 plus   T7651    325 [163]   15-18   or 250 [121]   3-5 plus   320 [160]   18-21     24   T651    250 [121]   4 plus   300 [149]   4     4     4     4     4     4     4     4     4     4     4     4     4     4     4     4     4         4				<u>W'</u> bd6-b9ab-da <del>W510<sup>H,U</sup></del> <u>W510'</u>	250 [121] 250 [121] 325 [163] 97 250 [121] 320 [160] 250 [121] 320 [160] 250 [121] 07 210 [99] 250 [121] 300 [149] 225 [107] 225 [107] 350 [177] 07 225 [107] 335 [168]	3-5 plus 3-5 plus 15-18 3-5 plus 3-5 plus 3-5 plus 18-21 24 24 5 plus 4 plus 4 plus 6-8 plus 6-8 plus 6-8 plus	T76 <sup>M</sup> T62 18 m-2 T6510
325 [163]   15-18   or 250 [121]   3-5 plus   320 [160]   18-21     325 [121]   24   T6511     250 [121]   24   T6511     250 [121]   24   T6511     250 [121]   24   T6511     250 [121]   4 plus   300 [149]   4     4     4     4     4     4     4     4     4     4     4     4     4     4     4     4     4     4       4       4         4				<u>W'</u> bd6-b9ab-da <del>W510'</del> <u>W510'</u> <del>W510'</del>	250 [124] 250 [121] 325 [163] 67 250 [121] 320 [160] 250 [121] 320 [160] 250 [121] 07 210 [99] 250 [121] 300 [149] 225 [107] 225 [107] 350 [177] 07 225 [107] 335 [168] 335 [168] 335 [168]	3-5 plus 3-5 plus 15-18 3-5 plus 3-5 plus 3-5 plus 18-21 24 24 5 plus 4 plus 4 6-8 plus 6-8 plus 6-8 plus 14-18 plus	T76 <sup>h</sup> T62  T6510  T6510  T73510
or 250 [121] 3–5 plus 320 [160] 18–21  W511 <sup>H,U</sup> 250 [121] 24 T6511  W511 <sup>f</sup> 250 [121] 24 T6511  Or 210 [99] 5 plus 250 [121] 4 plus 300 [149] 4  W511 <sup>f</sup> 225 [107] 6–8 plus T73511  W511 <sup>f</sup> 225 [107] 6–8 plus 350 [177] 6–8  or 225 [107] 6–8 plus 335 [168] <sup>W</sup> 14–18 335 [168] <sup>W</sup> 14–18  W511 <sup>H,U</sup> 250 [121] 3–5 plus T76511  W511 <sup>f</sup> 250 [121] 3–5 plus T76511				<u>W'</u> bd6-b9ab-da <u>W510<sup>H,U</sup></u> <u>W510'</u> <u>W510'</u>	250 [124] 250 [121] 325 [163] 67 250 [121] 320 [160] 250 [121] 320 [160] 250 [121] 07 210 [99] 250 [121] 300 [149] 225 [107] 225 [107] 350 [177] 07 225 [107] 335 [168] <sup>W</sup> 335 [168] <sup>K</sup> 250 [121]	3-5 plus 3-5 plus 15-18 3-5 plus 3-5 plus 3-5 plus 3-5 plus 18-21 24 24 5 plus 4 plus 4 6-8 plus 6-8 plus 6-8 plus 14-18 plus 14-18 plus 3-5 plus	T76 <sup>h</sup> T62 T6510 T6510 T73510 T76510
320 [160] 18–21  W511 <sup>H,U</sup> 250 [121] 24 T6511  0r 210 [99] 5 plus  250 [121] 4 plus  250 [121] 4 plus  300 [149] 4  W511 <sup>H,U</sup> 225 [107] 6–8 plus T73511  W511 <sup>I</sup> 225 [107] 6–8 plus  0r 225 [107] 6–8 plus  335 [168] <sup>W</sup> 14–18  335 [168] <sup>W</sup> 14–18  335 [168] <sup>W</sup> 14–18  W511 <sup>H,U</sup> 250 [121] 3–5 plus T76511  W511 <sup>I</sup> 250 [121] 3–5 plus T76511				<u>W'</u> bd6-b9ab-da <u>W510<sup>H,U</sup></u> <u>W510'</u> <u>W510'</u>	250 [124] 250 [121] 325 [163] 97 250 [121] 320 [160] 250 [121] 320 [160] 250 [121] 07 210 [99] 250 [121] 300 [149] 225 [107] 350 [177] 07 225 [107] 335 [168] <sup>W</sup> 335 [168] <sup>W</sup> 250 [121]	3-5 plus 3-5 plus 15-18 3-5 plus 15-18 3-5 plus 18-21 24 24 5 plus 4 plus 4 6-8 plus 6-8 plus 6-8 plus 6-8 plus 14-18 plus 3-5 plus 3-5 plus	T76 <sup>M</sup> T62 T6510 T6510 T73510 T76510
W511'   250   121   24   T651   121   121   121   121   121   121   121   121   121   121   122   121   121   122   121   121   122   121   122   121   122   121   122   121   122   121   122   121   122   121   122   121   122   121   122   121   122   121   123   124   12				<u>W'</u> bd6-b9ab-da <u>W510<sup>H,U</sup></u> <u>W510'</u> <u>W510'</u>	250 [121] 250 [121] 325 [163] 97 250 [121] 320 [160] 250 [121] 320 [160] 250 [121] 07 210 [99] 250 [121] 300 [149] 225 [107] 225 [107] 350 [177] 07 225 [107] 335 [168] <sup>K</sup> 250 [121] 255 [121] 325 [168] <sup>K</sup> 250 [121] 325 [163]	3-5 plus 3-5 plus 15-18 3-5 plus 15-18 3-5 plus 18-21 24 24 5 plus 4 plus 4 6-8 plus 6-8 plus 6-8 plus 14-18 plus 14-18 plus 3-5 plus 3-5 plus 15-18	T76 <sup>h</sup> T62 T6510 T6510 T73510 T76510
or 210 [99] 5 plus 250 [121] 4 plus 300 [149] 4  W511 <sup>H,U</sup> 225 [107] 6-8 plus T73511  W511 <sup>I</sup> 225 [107] 6-8 plus T7351  or 225 [107] 6-8 plus 335 [168] <sup>W</sup> 14-18 335 [168] <sup>K</sup> 14-18  W511 <sup>I</sup> 250 [121] 3-5 plus T76511  W511 <sup>I</sup> 250 [121] 3-5 plus T76511				<u>W'</u> bd6-b9ab-da <u>W510<sup>H,U</sup></u> <u>W510'</u> <u>W510'</u> <u>W510'</u>	250 [121] 250 [121] 325 [163] 325 [163] 326 [121] 320 [160] 250 [121] 320 [160] 250 [121] 07 210 [99] 250 [121] 300 [149] 225 [107] 350 [177] 07 225 [107] 335 [168] <sup>M</sup> 335 [168] <sup>M</sup> 250 [121] 325 [121] 325 [163] 07 250 [121] 320 [160]	3-5 plus 3-5 plus 15-18 3-5 plus 15-18 3-5 plus 18-21 24 24 5 plus 4 plus 4 plus 4 6-8 plus 6-8 plus 6-8 plus 14-18 plus 14-18 plus 3-5 plus 15-18 3-5 plus 18-21	T76 <sup>h</sup> T62 T6510 T6510 T73510 T76510 T76510
$\begin{array}{cccccccccccccccccccccccccccccccccccc$				<u>W'</u> bd6-b9ab-da <del>W510''</del> <del>W510''</del> <del>W510''</del> <del>W510''</del> <del>W510''</del> <del>W510''</del> <del>W510''</del>	250 [124] 250 [121] 325 [163] 67 250 [121] 320 [160] 250 [121] 320 [160] 250 [121] 07 210 [99] 250 [121] 300 [149] 225 [107] 225 [107] 350 [177] 07 225 [107] 335 [168] <sup>K</sup> 250 [121] 325 [163] 07 250 [121] 320 [160] 250 [121]	3-5 plus 3-5 plus 15-18 3-5 plus 3-5 plus 3-5 plus 18-21 24 24 5 plus 4 plus 4 6-8 plus 6-8 plus 6-8 plus 14-18 plus 14-18 plus 3-5 plus 15-18 3-5 plus 18-21 24	T76 <sup>h</sup> T62 T6510 T73510 T76510 T76510 T76510
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$				<u>W'</u> bd6-b9ab-da <del>W510''</del> <del>W510''</del> <del>W510''</del> <del>W510''</del> <del>W510''</del> <del>W510''</del> <del>W510''</del>	250 [124] 250 [121] 325 [163] or 250 [121] 320 [160] 250 [121] 320 [160] 250 [121] or 210 [99] 250 [121] 300 [149] 225 [107] 350 [177] or 225 [107] 355 [168] <sup>W</sup> 335 [168] <sup>W</sup> 250 [121] 325 [163] or 250 [121] 320 [160] 250 [121]	3-5 plus 3-5 plus 15-18 3-5 plus 15-18 3-5 plus 3-5 plus 18-21 24 24 5 plus 4 plus 4 6-8 plus 6-8 plus 6-8 plus 6-8 plus 14-18 plus 14-18 plus 3-5 plus 15-18 3-5 plus 18-21 24 24	T76 <sup>h</sup> T62 T6510 T73510 T76510 T76510 T76510
$\frac{W511^{H,U}}{W511^I} \qquad \frac{225}{[107]} \qquad \frac{6-8}{6-8}  \mathrm{plus} \qquad \frac{773511}{350} \\ \frac{W511^I}{350} \qquad \frac{225}{[107]} \qquad \frac{6-8}{6-8}  \mathrm{plus} \qquad \frac{77351}{350} \\ \mathrm{or} \ 225[\ 107] \qquad 6-8  \mathrm{plus} \qquad \frac{335}{[168]^W} \qquad \frac{14-18}{4-18} \\ \frac{335}{35} \frac{[168]^K}{[121]} \qquad \frac{14-18}{3-5}  \mathrm{plus} \qquad \frac{776511}{10} \\ \frac{W511^{H,U}}{100} \qquad \frac{250}{[121]} \qquad \frac{1}{3-5}  \mathrm{plus} \qquad \frac{776511}{100} \\ \frac{W511^I}{100} \qquad \frac{1}{3} = \frac{1}{3}  \mathrm{plus} \qquad \frac{1}{3}$				<u>W'</u> bd6-b9ab-da <del>W510''</del> <del>W510''</del> <del>W510''</del> <del>W510''</del> <del>W510''</del> <del>W510''</del> <del>W510''</del>	250 [124] 250 [121] 325 [163] 97 250 [121] 320 [160] 250 [121] 320 [160] 250 [121] 07 210 [99] 250 [121] 300 [149] 225 [107] 350 [177] 07 225 [107] 355 [168] <sup>W</sup> 335 [168] <sup>W</sup> 250 [121] 325 [163] 07 250 [121] 320 [160] 250 [121] 320 [160] 250 [121] 07 210 [99]	3-5 plus 3-5 plus 15-18 3-5 plus 18-21 24 24 5 plus 4 plus 6-8 plus 6-8 plus 6-8 plus 6-8 plus 14-18 plus 14-18 plus 3-5 plus 15-18 3-5 plus 18-21 24 24 5 plus	T76 <sup>h</sup> T62 T6510 T73510 T76510 T76510 T76510
350 [177] 6-8 or 225[ 107] 6-8 plus 335 [168] <sup>W</sup> 14-18 335 [168] <sup>K</sup> 14-18 W511 <sup>H,U</sup> 250 [121] 3-5 plus T76511 W511 <sup>I</sup> 250 [121] 3-5 plus T7651				<u>W'</u> bd6-b9ab-da <del>W510''</del> <del>W510''</del> <del>W510''</del> <del>W510''</del> <del>W510''</del> <del>W510''</del> <del>W510''</del>	250 [121] 250 [121] 325 [163] 97 250 [121] 325 [163] 97 250 [121] 320 [160] 250 [121] 250 [121] 250 [121] 300 [149] 225 [107] 350 [177] 07 225 [107] 335 [168] <sup>K</sup> 250 [121] 250 [121] 325 [163] 07 250 [121] 320 [160] 250 [121] 320 [160] 250 [121] 07 210 [99] 250 [121]	3-5 plus 3-5 plus 15-18 3-5 plus 18-21 24 24 5 plus 4 plus 4 6-8 plus 6-8 plus 6-8 plus 14-18 plus 3-5 plus 15-18 3-5 plus 15-18 3-5 plus 18-21 24 24 5 plus 4 plus 4 plus 4 plus 4 plus 6-8 plus 6-9 plu	T76 <sup>h</sup> T62 T6510 T73510 T76510 T76510 T76510
or 225[ 107] 6–8 plus  335 [168] <sup>W</sup> 14–18  335 [168] <sup>K</sup> 14–18  W511 <sup>H,U</sup> 250 [121] 3–5 plus T76511  W511 <sup>f</sup> 250 [121] 3–5 plus T7651				W' M-20 bd6-b9ab-da W510 <sup>H,U</sup> W510' W510 <sup>H,U</sup> W510' W511 <sup>H,U</sup> W511'	250 [124] 250 [124] 250 [121] 325 [163] 67 250 [121] 320 [160] 250 [121] 320 [160] 250 [121] 300 [149] 225 [107] 350 [177] 07 225 [107] 335 [168] <sup>K</sup> 250 [121] 325 [163] 07 250 [121] 320 [160] 250 [121] 320 [160] 250 [121] 320 [160] 250 [121] 320 [160] 250 [121] 300 [149] 250 [121] 300 [149] 255 [107]	3-5 plus 3-5 plus 15-18 3-5 plus 15-18 3-5 plus 18-21 24 24 5 plus 4 plus 6-8 plus 6-8 plus 6-8 plus 14-18 plus 3-5 plus 15-18 3-5 plus 15-18 3-5 plus 18-21 24 24 5 plus 4 plus 4 plus 3-5 plus 4 plus 4 plus 4 plus 6-8 plus 15-18 3-5 plus 15-18 3-5 plus 15-18 3-5 plus 18-21 24 24 5 plus 4 plus 4 plus 4 plus 4 plus	T76 <sup>h</sup> T62 T6510 T73510 T76510 T76510 T76511 T76511 T73511
335 [168] <sup>W</sup> 14-18       335 [168] <sup>K</sup> 14-18       W511 <sup>H,U</sup> 250 [121]     3-5 plus     T76511       W511 <sup>I</sup> 250 [121]     3-5 plus     T7651				W' M-20 bd6-b9ab-da W510 <sup>H,U</sup> W510' W510 <sup>H,U</sup> W510' W511 <sup>H,U</sup> W511'	250 [124] 250 [124] 250 [121] 325 [163] or 250 [121] 320 [160] 250 [121] or 210 [99] 250 [121] 300 [149] 225 [107] 350 [177] or 225 [107] 335 [168] 250 [121] 325 [107] 250 [121] 325 [107] 250 [121] 325 [107] 325 [163] or 250 [121] 325 [163] or 250 [121] 320 [160] 250 [121] 250 [121] 250 [121] 250 [121] 250 [121] 300 [149] 225 [107]	3-5 plus 3-5 plus 15-18 3-5 plus 15-18 3-5 plus 18-21 24 24 5 plus 4 plus 6-8 plus 6-8 plus 6-8 plus 14-18 plus 14-18 plus 14-18 plus 15-18 3-5 plus	T76 <sup>h</sup> T62 T6510 T73510 T76510 T76510 T76511 T76511 T73511
$rac{335 \left[168 ight]^{K}}{250 \left[121 ight]} rac{14-18}{3-5  ext{ plus}} rac{776511}{17651}$ W511 $^{I}$ 250 [121] 3-5 plus T7651				W' M-20 bd6-b9ab-da W510 <sup>H,U</sup> W510' W510 <sup>H,U</sup> W510' W511 <sup>H,U</sup> W511'	250 [124] 250 [124] 250 [121] 325 [163] or 250 [121] 320 [160] 250 [121] or 210 [99] 250 [121] 300 [149] 225 [107] 350 [177] or 225 [107] 335 [168] <sup>W</sup> 335 [168] <sup>W</sup> 250 [121] 325 [163] or 250 [121] 325 [163] or 250 [121] 320 [160] 250 [121] 320 [160] 250 [121] 320 [160] 250 [121] 300 [149] 250 [121] 300 [149] 255 [107] 300 [149] 225 [107] 350 [177]	3-5 plus 3-5 plus 15-18 3-5 plus 18-21 24 24 5 plus 4 plus 6-8 plus 6-8 plus 6-8 plus 14-18 plus 14-18 plus 15-18 3-5 plus 18-21 24 24 5 plus 4 plus 4 plus 6-8 plus 6-8 plus 6-8 plus 6-8 plus 6-8 plus	T76 <sup>h</sup> T62 T6510 T73510 T76510 T76510 T76511 T73511 T73511
W511 <sup>H,U</sup> 250 [121]     3 - 5 plus     T76511       W511 <sup>I</sup> 250 [121]     3 - 5 plus     T7651				W' M-20 bd6-b9ab-da W510 <sup>H,U</sup> W510' W510 <sup>H,U</sup> W510' W511 <sup>H,U</sup> W511'	250 [124] 250 [124] 250 [121] 325 [163] 97 250 [121] 320 [160] 250 [121] 320 [160] 250 [121] or 210 [99] 250 [121] 300 [149] 225 [107] 350 [177] or 225 [107] 335 [168] <sup>K</sup> 250 [121] 325 [163] or 250 [121] 320 [160] 250 [121] 320 [160] 250 [121] 320 [160] 250 [121] 320 [160] 250 [121] 320 [160] 250 [121] 320 [160] 250 [121] 320 [160] 250 [121] 320 [160] 250 [121] 300 [149] 225 [107] 350 [177] or 225 [107]	3-5 plus 3-5 plus 15-18 3-5 plus 18-21 24 24 5 plus 4 plus 6-8 plus 6-8 plus 14-18 plus 14-18 plus 3-5 plus 15-18 3-5 plus 15-18 3-5 plus 15-18 3-5 plus 4 plus 4 plus 6-8 plus 6-8 plus 6-8 plus 6-8 plus 6-8 plus	T76 <sup>h</sup> T62 T6510 T73510 T76510 T76510 T76511 T73511 T73511
				W' M-20 bd6-b9ab-da W510 <sup>H,U</sup> W510' W510 <sup>H,U</sup> W510' W511 <sup>H,U</sup> W511'	250 [124] 250 [121] 325 [163] 97 250 [121] 320 [160] 250 [121] 320 [160] 250 [121] or 210 [99] 250 [121] 300 [149] 225 [107] 350 [177] or 225 [107] 335 [168] <sup>K</sup> 250 [121] 325 [163] or 250 [121] 325 [163] or 250 [121] 325 [163] or 250 [121] 320 [160] 250 [121] 320 [160] 250 [121] 320 [160] 250 [121] 320 [160] 250 [121] 320 [160] 250 [121] 320 [160] 250 [121] 300 [149] 225 [107] 350 [177] or 225 [107] 335 [177]	3-5 plus 3-5 plus 15-18 3-5 plus 18-21 24 24 5 plus 4 plus 4 6-8 plus 6-8 plus 14-18 plus 3-5 plus 15-18 3-5 plus 15-18 3-5 plus 15-18 3-5 plus 15-18 3-5 plus 18-21 24 5 plus 4 plus 6-8 plus 6-8 plus 6-8 plus 18-21 24 5 plus 4 plus 6 plus	T76 <sup>h</sup> T62 T6510 T73510 T76510 T76510 T76511 T73511 T73511
325 [163] 15–18				W' M-20 bd6-b9ab-da  W510 <sup>H,U</sup> W510'  W510 <sup>H,U</sup> W510'  W510 <sup>H,U</sup> W511'  W511 <sup>H,U</sup> W511'	250 [124] 250 [121] 325 [163] 67 250 [121] 320 [160] 250 [121] 320 [160] 250 [121] 320 [160] 250 [121] 300 [149] 225 [107] 350 [177] 07 225 [107] 335 [168] <sup>K</sup> 250 [121] 320 [160] 250 [121] 325 [163] 07 250 [121] 320 [160] 250 [121] 320 [160] 250 [121] 07 210 [99] 250 [121] 07 210 [99] 250 [121] 300 [149] 225 [107] 335 [168] <sup>M</sup> 335 [168] <sup>M</sup> 250 [121] 07 210 [99] 250 [121] 300 [149] 225 [107] 335 [168] <sup>M</sup> 335 [168] <sup>M</sup> 250 [127] 225 [107] 335 [168] <sup>M</sup> 335 [168] <sup>M</sup> 335 [168] <sup>M</sup> 250 [121]	3-5 plus 3-5 plus 15-18 3-5 plus 15-18 3-5 plus 3-5 plus 3-5 plus 3-5 plus 4 plus 4 plus 6-8 plus 6-8 plus 6-8 plus 14-18 plus 3-5 plus 15-18 3-5 plus 15-18 3-5 plus 15-18 3-5 plus 15-18 4 plus 4 plus 6-8 plus 6-8 plus 6-8 plus 14-14-14 5 plus 6-8 plus	T76 <sup>M</sup> T62 T6510 T6510 T73510 T76510 T76511 T73511 T73511 T76511 T76511

		Solution Heat Treatment			recipitation at Treatment <sup>B</sup>	
Product	Metal Temperature, <u>±10°F [±6°C]±10 °F [±6 °C]</u> <sup>C,D,V</sup>	Quench Temperature, °F [°C] <sup>E</sup>	Temper	Metal Temperature, $\pm 10^{\circ}F [\pm 6^{\circ}C]\pm 10^{\circ}F$ $[\pm 6^{\circ}C]^{V}$	Time at Temperature, h	Temper
				or 225 [107]	3–5 plus	
	<del>870 [466]<sup>V, Y</sup></del>		₩ <u>u</u>	320 [160] <del>250 [121]</del>	18–21 <del>23–25</del>	<del>T62</del>
	870 [466] <sup>U</sup>		<u>W'</u>	250 [121] <sup>U</sup>	23–25 <sup>U</sup>	T62 <sup>U</sup>
Prawn tube	<del>870 [466]</del>	<del>110 [43] max</del>	₩ <u>n</u>	<del>250 [121]</del>	<del>24</del>	<del>T6</del>
Prawn tube and pipe	870 [466]	110 [43] max	$\frac{\mathbf{W}^{\prime}}{\mathbf{W}^{\prime}}$	250 [121]	24	<u>T6</u> <del>T73</del> ×
			W′	<del>225 [107]</del> 225 [107]	<del>6–8 plus</del> 6–8 plus	T73 <sup>M</sup>
			**	350 [177]	6–8	170
				or 225 [107]	6-8 plus	
				<del>335 [168]<i>W</i></del>	<del>14-18</del>	
			₩ <u>n</u>	335 [168] <sup>K</sup>	<u>14–18</u> <del>23–25</del>	T00
	870 [466] <sup><i>U</i></sup>		<u>W</u> ′	<del>250 [121]</del> 250 [121] <sup>U</sup>	23–25 23–25 <sup>0</sup>	<del>T62</del> T62 <sup>∪</sup>
·	860-900 [460-482]		₩ <u>υ</u>	250 [121]	·	
Die forgings	860–900 [460–482]	140–160 [60–71]	W'	250 [121]	24	
		<del></del>	$\overline{\Psi_{\overline{U}}}$	<del>225 [107]</del>	6-8 plus	<u>T6</u> <del>T73</del> ×
			<u>W'</u>	225 [107]	6-8 plus	<u>T73<sup>M</sup></u>
			₩51 <sup>/,</sup>	350 [177] <del>225 [107]</del>	8–10 <del>6–8 plus</del>	<del>T7351<sup>1,)</sup></del>
			W51 <sup>7</sup>	225 [107] 225 [107]	6–8 plus	T7351 <sup>M</sup>
			<u>*****</u>	350 [177]	6–8	17001
			₩52 <sup>1,U</sup>	<del>225 [107]</del>	6-8 plus	T7352 <sup>1,)</sup>
			W52 <sup>1</sup>	225 [107]	6-8 plus	T7352 <sup>M</sup>
			AL CMO	350 [177]	6–8	<del>174</del>
			\\/'	<del>225 [107]</del> 225 [107]	<del>6-8 plus</del> 6-8 plus	<del>174</del> T74
				350 [177]	6–8	17-4
	870 [466] <sup>V,Y</sup>		₩ <u>u</u>	<del>250 [121]</del>	<del>23-25</del>	<del>T62</del>
	870 [466] <sup>U</sup>		W <sup>'</sup>	250 [121] <sup>U</sup>	23–25 <sup>U</sup>	$T62^{U}$

#### ASTM B918/B918M-20

https://standards.iteh.ai/catalog/standards/sist/34b828e1-1089-4bd6-b9ab-da2230dcb06b/astm-b918-b918m-20

		7075 Alloy <sup>A</sup> (Continued)	)			
Hand forgings	860-900 [460-482]	140-160 [60-71]	₩ <u>U</u>	<del>250 [121]</del>	24	<del>T6</del>
Hand forgings*	860-900 [460-482]	140–160 [60–71]	W <sup>'</sup>	250 [121]	24	T6
	<del></del>	<del></del>	$\overline{\Psi_{arphi}}$	<del>225 [107]</del>	6 8 plus	<del>T73</del> ×
			<u>W'</u>	225 [107]	6–8 plus	T73 <sup>M</sup>
*Continued on next page	9.		<del>_</del>			350 <b>BI-717</b>
	_	7075 Alloy <sup>A</sup> (Continued)	)			
			₩51 <sup>/,U</sup>	<del>225 [107]</del>	6-8 plus	<del>T7351<sup>7,X</sup></del>
Hand forgings			W51 <sup>'</sup>	225 [107]	6-8 plus	T7351 <sup>M</sup>
(Continued)				350 [177]	6–8	
			₩52 <sup>1,U</sup>	<del>225 [107]</del>	6-8 plus	<del>T7352<sup>I,X</sup></del>
			W52 <sup>1</sup>	225 [107]	6-8 plus	T7352 <sup>M</sup>
				350 [177]	6–8	
			$W_{\overline{U}}$	<del>225 [107]</del>	6-8 plus	<del>T74</del>
			<u>W'</u>	225 [107]	6-8 plus	<u>T74</u>
				350 [177]	6–8	
	<del>870 [466]<sup>V, Y</sup></del>		₩52 <sup>1,U</sup>	<del>250 [121]</del>	<del>23-25</del>	<del>T652/</del>
	870 [466] <sup>U</sup>		W52 <sup>1</sup>	250 [121] <sup>U</sup>	23–25 <sup>U</sup>	T652 <sup>U</sup>
			$\overline{\Psi^{U}}$	<del>250 [121]</del>	23-25	<del>T62</del>
			₩ <u>'</u>	250 [121] <sup>U</sup>	23–25 <sup>U</sup>	$T62^{\upsilon}$
				<del>225 [107]</del>	6-7 plus	<del>T732</del>
			<u>W'</u>	225 [107] <sup>U</sup>	6–7 plus <sup>∪</sup>	T732 <sup>U</sup>
				350 [177] <u></u>	8–10 <u></u>	
			$W_{\mathcal{U}}$	<del>225 [107]</del>	6-7 plus	<del>T7362</del>
			<u>W'</u>	225 [107] <sup>U</sup>	6–7 plus $^{U}$	T7362 <sup>U</sup>
				325 [163] <u></u>	16–18 <u></u>	
Rolled rings	860-900 [460-482]	<del>110 [43] max</del>	₩₽	<del>250 [121]</del>	<del>24</del>	 <del>T6</del>
Rolled rings	860-900 [460-482]	110 [43] max	W <sup>'</sup>	250 [121]	24	T6
	870 [466] <sup>V. Y</sup>	<del></del>	₩ <del>52</del> ′. <i>∪</i>	<del>250 [121]</del>	24 24	<del>T652</del> /



		TABLE I COMMI	ueu			
		Solution Heat Treatment			recipitation at Treatment <sup>B</sup>	
Product	Metal Temperature, -±10°F [±6°C]±10 °F [±6 °C] <sup>C,D,V</sup>	Quench Temperature, °F [°C] <sup>E</sup>	Temper	Metal Temperature, ±10°F [±6°C]±10 °F [±6 °C] <sup>V</sup>	Time at Temperature, h	Temper
	870 [466] <sup>U</sup>		W52 <sup>1</sup>	250 [121] <sup>U</sup>	24 <sup>U</sup>	T652 <sup>U</sup>
		7116 Alloy <sup>A</sup>				
Extruded rod, bar,	<u>L</u>	<del></del>	$W_{\overline{U}}$	<del>215 [102]</del>	5 plus	<del>T5</del>
Extruded rod, bar,	<u>L</u>	<u></u>	<u>W'</u>	215 [102]	5 plus	<u>T5</u>
profiles, and tube	<del></del>	<del></del>	_	<del>330 [166]</del>	<del></del>	_
profiles, tube, and pipe				330 [166]	5	
		7129 Alloy <sup>A</sup>				
Extruded rod, bar,	<u></u>	<del></del>	₩ <u>∪</u>	<del>215 [102]</del>	<del>5 plus</del>	<del>T5</del>
Extruded rod, bar,	<u>L</u>	<u> </u>	<u>W'</u>	<u>215 [102]</u>	5 plus	<u>T5</u>
profiles, and tube				<del>320 [160]</del>	<del>5</del>	
profiles, tube, and pipe				320 [160]	<u>5</u>	
	900 [482] <sup>/</sup>	<del>110 [43] max</del>	₩ <u>″</u>	<del>215 [102]</del>	<del>5 plus</del>	<del>T6</del>
	900 [482] <sup>L</sup>	110 [43] max	<u>w'</u>	<u>215 [102]</u>	5 plus	<u>T6</u>
				320 [160]	5	
	000 040 1474 4001	7175 Alloy <sup>A</sup>	14//	00= (10=1		
Extruded rod, bar,	880 910 [471 488]	<del></del>	₩ <u>″</u>	<del>225 [107]</del>	6-8 plus	<del>T74</del>
Extruded rod, bar,	880-910 [471-488]	<u></u>	<u>W'</u>	225 [107]	6–8 plus	<u>T74</u>
profiles, and tube				<del>350 [177]</del>	<del>6-8</del>	
profiles, tube, and pipe				350 [177]	<u>6–8</u>	
Die and band farsings	880-910 [471-488]	100 [00]	₩ <u>~</u>	005 [107]	C 0 mlug	<del>174</del>
Die and hand forgings	880–910 [471–488]	<del>180 [82]</del>		<del>225 [107]</del>	6 8 plus	
Die and hand forgings	880-910 [471-488]	140 [60–71]	<u>W'</u>	225 [107]	6–8 plus 6–8	<u>T74</u>
			₩52 <sup>1.U</sup>	350 [177]		<del>T7452/</del>
				<del>225 [107]</del> 225 [107]	6 8 plus	
			<u>W52</u> <sup>1</sup>	350 [177]	6–8 plus 6–8	T7452
			₩ <u>u</u>	250 [177] 250 [151]	24	<del>T6</del>
		<del>ten Stanc</del>	W/	250 [151]	24	T6
		7475 Alloy <sup>A</sup>	- VV	230 [131]		10
Sheet	880-970 [471-521]	140-160 [60-71]	₩ <u>"</u>	<del>250 [121]</del>	3 plus	<del>T61</del>
Sheet	880–970 [471–521]	140–160 [60–71]	OS ween	250 [121]	3 plus	T61
<u> </u>	000 070 [171 021]	110 100 [00 11]		320 [160]	3	101
			$W_{\mathcal{O}}$	250 [121]	3 plus	<del>T761</del>
			TEV WEV	250 [121]	3 plus	T761
				325 [163]	8–10	1101
Alclad Sheet	<del>880-970 [471-521]<sup>AB</sup></del>	<del>140-160 [60-71]</del>	₩ <u>∪</u>	<del>280 [138]</del>	3	<del>T6</del>
Alclad Sheet	880–970 [471–521] <sup>S</sup>	A \$140–160 [60–71]	$8M-20 \underline{w'}$	280 [138]	<u>3</u>	<u>T6</u>
	-,,,,	: /2 /1 020 1 1000	41 16 1 0 1 1	2220110617	1 010 1 0	10 20
Plate S://Standards			4bd6-b\₩₩)-da	200[.2.]	stm-b 24 8-b9	181 <del>16</del> 20
Plate	880-970 [471-521]	140-160 [60-71]	<u>W'</u>	250 [121]	<u>24</u>	<u>T6</u>
			₩ <del>51<sup>G,U</sup></del>	<del>240 [116]</del>	<del>24</del>	<del>T651<sup>G</sup></del>
			W51 <sup>1</sup>	240 [116]	<u>24</u>	T651
			₩ <del>51<sup>G,U</sup></del>	<del>250 [121]</del>	6 8 plus	T7351 <sup>G,X</sup>
			<u>W51</u>	250 [121]	6-8 plus	T7351 <sup>™</sup>
				325 [163]	24–30	_
			₩51 <sup>G,U</sup>	<del>250 [121]</del>	4-8 plus	T7651 <sup>G,X</sup>
			<u>W51</u>	250 [121]	4-8 plus	T7651 <sup>M</sup>
				310 [154]	26–32	
Rod	880 970 [471 521]	<del>140 160 [60 71]</del>	₩ <u>′</u>	<del>250 [121]</del>	<del>3 plus</del>	<del>T62</del>
Rod	880-970 [471-521]	140-160 [60-71]	<u>W'</u>	250 [121]	3 plus	<u>T62</u>
				325 [163]	3	

<sup>&</sup>lt;sup>A</sup> For specific aerospace applications, refer to SAE-AMS heat-treating and material specifications.<sup>4</sup>

<sup>&</sup>lt;sup>B</sup> Typical or nominal time at temperature. Actual practice may vary depending on material requirements.

<sup>&</sup>lt;sup>C</sup> Recommended soaking times to achieve specified metal temperature appear in <u>Table 8-Table 3.</u>

D Where a temperature range exceeding 20°F [12°C] 20 °F [12 °C] is shown, a temperature within that range shall be selected and adhered to within the ±10°F [±6°C] within the ±10 °F [±6 °C] limits. For solution heat treatment of those 6xxx alloys for which the table specifies a range of 30°F [17°C] degrees or more, a range

of 30°F [17°C] 30 °F [17 °C] may be used. Limits thus derived must lie totally within the range specified.

E Unless otherwise indicated, when material is quenched by total immersion in water, the water should be at room temperature not exceeding 100°F [43°C] at the start of quenching and suitably cooled to remain below #10°F [43°C] 110 °F [43 °C] during the quenching cycle.

Cold-worked in the solution heat-treated condition, prior to precipitation heat treatment to obtain specified mechanical properties.

G Stress-relieved by cold stretching to a permanent set of 11/2 to 3 % in the solution heat-treated condition.

<sup>&</sup>quot;Stress-relieved by cold stretching to a permanent set of 1 to 3 % in the solution heat-treated condition for wire, rod, bar, profiles, and extruded tube, and 3 % for drawn tubular products.

<sup>&</sup>lt;sup>1</sup> Stress relieved by cold compressing 1 to 3 % after solution heat treatment.

<sup>&</sup>lt;sup>J</sup> Approximately 6 % cold-worked in the solution heat-treated condition.

K Approximately 7 % cold-worked in the solution heat-treated condition.

With suitable control of extruding temperature and quench rate, product may be quenched upon emerging from an extrusion press instead of being furnace heat treated.

F For Alclad sheet the maximum temperature is 1000°F [538°C]. 1000 °F [538 °C].

<sup>&</sup>lt;sup>G</sup> "Tread Plate" is a generic term and includes thicknesses below 0.250 in. [6.35 mm].