

TABLE 4 Mechanical Test Requirements After Age Hardening Heat Treatment^A

Type	Condition	Suggested Hardening and/or Aging Treatment ^{B,C,D}		Applicable Thickness, in. & Test Direction ^E		Tensile Strength, min		Yield Strength, min ^F		Elongation in 2 in. [50 mm] or 4D, min %	Reduction of area, min, %		Hardness ^G		Impact Charpy-V, min	
		Temp, °F [°C]	Time, h	Quench ^H		ksi	[MPa]	ksi	[MPa]				Rockwell C, min	Brinell, min	ft-lbf	J
630	H900	900 [480]	1.0	air cool	Up to 3 in. incl [75 mm] (L)	190	[1310]	170	[1170]	10	40	388	40	388	...	...
					Over 3 in. [75 mm] to 8 in. incl [200 mm] (T)						35					
	H925	925 [495]	4.0	air cool	Up to 3 in. incl [75 mm] (L)	170	[1170]	155	[1070]	10	44	375	38	375	5	6.8
					Over 3 in. [75 mm] to 8 in. incl [200 mm] (T)						38					
631	H1025	1025 [550]	4.0	air cool	Up to 8 in. incl [200 mm] (T)	155	[1070]	145	[1000]	12	45	331	35	331	15	20
	H1075	1075 [580]				145	[1000]	125	[860]	13	45	311	32	311	20	27
	H1100	1100 [595]				140	[965]	115	[795]	14	45	302	31	302	25	34
	H1150	1150 [620]				135	[930]	105	[725]	16	50	277	28	277	30	41
	H1150M	1400 [760] for 2 h, air cool plus 1150 [620] for 4 h, air cool				115	[795]	75	[520]	18	55	255	24	255	55	75
	H1150D	1150 [620] for 4 h, air cool plus 1150 [620] for 4 h, air cool				125	[860]	105	[725]	16	50	255	24	255	30	41
	RH950	1750 °F [955 °C] for not less than 10 min, but not more than 1 h, cool rapidly to room temperature. Cool within 24 h to minus 100 ± 10 °F [75 °C], hold not less than 8 h. Warm in air to room temperature. Heat to 950 °F [510 °C], hold 1 h, air cool.			Up to 4 in. incl. [100 mm] (L)	185	[1280]	150	[1030]	6	10	388	41	388	...	...
	TH1050	Alternative treatment: 1400 °F [760 °C] hold 90 min, cool to 55 ± 5 °F [15 ± 3 °C] within 1 h. Hold not less than 30 min, heat to 1050 °F [565 °C] hold for 90 min, air cool.			Up to 6 in. incl [150 mm] (L)	170	[1170]	140	[965]	6	25	352	38	352	...	...
	RH950	Same as Type 631			Up to 4 in. incl [100 mm] (L)	200	[1380]	175	[1210]	7	25	415	...	415	...	...
	TH1050	Same as Type 631			Up to 6 in. incl [150 mm] (L)	180	[1240]	160	[1100]	8	25	375	...	375	...	...
634 ^I	H1000	1750 [955] for not less than 10 min, but not more than 1 h. Water quench. Cool to not higher than minus 100 °F [75 °C]. Hold for not less than 3 h. Temper at 1000 °F [540 °C], holding for not less than 3 h.			Up to 12 in. incl [300 mm] (L)	170	[1170]	155	[1070]	12	25	341	37	341	...	...
	H950	950 [510]	0.5	air cool	Up to 12 in. incl [300 mm] (T)	190	[1310]	170	[1170]	8	25	363	39	363	...	...
XM-12	H1000	1000 [540]	0.5	air cool	Up to 12 in. incl [300 mm] (L)	180	[1240]	160	[1100]	8	30	352	37	352	...	...
	H1050	1050 [565]	0.5	air cool	Up to 12 in. incl [300 mm] (T)	170	[1170]	150	[1035]	10	40	331	35	331	...	...
	H900	900 [480]	1.0	air cool	Up to 12 in. incl [300 mm] (L)	190	[1310]	170	[1170]	10	35	388	40	388	...	...
H925	925 [495]	4.0	air cool	Up to 12 in. incl [300 mm] (T)	170	[1170]	155	[1070]	10	38	375	38	375	5	6.8	
				Up to 12 in. incl [300 mm] (L)						7	20			...	...
	H1025	1025 [550]	4.0	air cool	Up to 12 in. incl [300 mm] (T)	155	[1070]	145	[1000]	12	45	331	35	331	15	20
					Up to 12 in. incl [300 mm] (L)											