

Heat Treatment of Tool Steels

Material (AISI)	Stainless Bag	Pre-Heat Temp.(F)	Pre-Heat Time/inch	Harden Temp.(F)	Harden Time/Inch	Quench Method	Temper Temp.(F)	Temper Time/inch	Quench Method	Hardness Low	Rc High	Second Temper	Distortion Inch/Inch
			1 Hr min		1 Inch Min								
S-7	YES	1250	1 hr	1725	45 Min	Air	600	2 hr	Air	54	56	YES	+0.001"
A-2	YES	1300	1 hr	1735	45 Min	Air	500	1 hr	Air	56	60	YES	+0.001"
A6	YES	1225	1 hr	1575	45 Min	AIR	350	1 hr	AIR	58	62	NO	+0.001"
A-10 G.A.	YES	1250	1 hr	1475	45 Min	Air	400	1 hr	Air	56	62	YES	+0.001"
4140	YES	1200	1 hr	1550	45 Min	175° Oil	750	1 hr	175° Oil	40	45	NO	+0.001"
4340	YES	1200	1 hr	1475	1 Hr	175° Oil	900	1 hr	175° Oil	40	45	NO	+0.001"
O-1	YES	1250	1 hr	1475	1 Hr	Oil	400	1 hr	Air	58	62	NO	+0.001"
D2	YES	1350	1 hr	1860	30 Min	Air	500	2 hr	Air	57	59	NO	+0.001"
CVM 200	NO	Anneal if time permits		900	6	Air	N/A	N/A	N/A	40	48	NO	-0.0006"
CVM 250	NO	Anneal if time permits		900	6	Air	N/A	N/A	N/A	48	52	NO	-0.0009"
CVM 300	NO	Anneal if time permits		900	6	Air	N/A	N/A	N/A	50	55	NO	-0.001"
CVM 350	NO	Anneal if time permits		940	4	Air	N/A	N/A	N/A	55	60	NO	-0.001"

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See Separate Sheet For 17-4 PH

See Separate Sheet For Anneal

NOTE: 5911

2. SECOND TEMPER TEMPERATURE IS 50 F BELOW FIRST TEMPER TEMPERATURE

Anneal

Material (AISI)	Notes	Stainless Bag	Anneal Temp.(F)	Anneal Time/inch	Cooling
				1 Hr min	
S-7		Yes	1535	1 Hr	Cool in oven overnight
4140		Yes	1575	1 Hr	Cool in oven overnight
4340		Yes	1550	1 Hr	Cool in oven overnight
A2		Yes	1550	1 Hr	Cool in oven overnight
A-10 (GA)		Yes	1450	1 Hr	Cool in oven overnight
1018 (A36)		Optional	1150	1 Hr	Cool in oven overnight
304 SS	Relieve Peak Stress Only	Optional	850	4	Cool in oven overnight
17-4 PH	Send Out - Do not do in house	N/A	N/A	N/A	N/A
CVM (All)	Perform if time permits	Yes	1500	1	Air
	Revision	H	10/2/1998		

17-4 PH

Condition	Hardening Temp	Hardening Time/Inch	Cooling	Hardening Temp	Hardening Time/Inch	Cooling	HARDNESS Low	Rc High
H 900	900	1	Air				40	47
H 925	925	4	Air				38	45
H 950	950	4	Air				37	44
H 1025	1025	4	Air				35	42
H 1075	1075	4	Air				32	39
H 1100	1100	4	Air				31	38
H 1150	1150	4	Air				28	37
H 1150+1150	1150	4	Air	1150	4	Air	26	33
H 1150-M	1400	2	Air	1150	4	Air	24	30
Full Anneal	Send out!							
Revision	B	3/24/1998						