

HAYNES[®] 25 alloy

Cold-Worked Properties

HAYNES 25 alloy has excellent strength and hardness characteristics in the cold-worked condition.

These high property levels are also evident at elevated temperature, making 25 alloy quite suitable for applications such as ball bearings and bearing races. A modest additional increase in hardness and strength can be achieved through aging of the cold-worked material.

Typical Tensile Properties, Cold-Worked Sheet*

Cold Reduction	Test Temperature		0.2% Offset Yield Strength		Ultimate Tensile Strength		Elongation
	°F	°C	ksi	MPa	ksi	MPa	
10	70	20	105	725	155	1070	41
	100	540	78	540	114	785	48
	1200	650	80	550	115	795	37
	1400	760	67	460	87	600	8
	1600	870	47	325	62	425	13
	1800	980	27	185	39	270	15
	15	70	20	124	855	166	1145
1000		540	107	740	134	925	29
1200		650	111	765	129	890	15
1400		760	86	595	104	715	5
1600		870	52	360	70	485	9
1800		980	30	205	40	275	5
20	70	20	141	970	183	1260	19
	1000	540	133	915	156	1075	18
	1200	650	120	825	137	945	2
	1400	760	96	660	107	740	3
	1800	980	30	205	41	285	4

*Limited data for cold-rolled 0.050-inch (1.3 mm) thick sheet

Typical Tensile Properties, Cold-Worked and Aged Sheet*

Condition	Test Temperature		0.2% Offset Yield Strength		Ultimate Tensile Strength		Elongation
	°F	°C	ksi	MPa	ksi	MPa	
15% CW + Age A	70	20	136	940	168	1160	31
	1200	650	104	715	128	885	23
	70	20	152	1050	181	1250	17
	1000	540	129	890	151	1040	19

20% CW + Age A	1200	650	128	885	144	995	8
	1400	760	97	670	108	745	2
	1600	870	59	405	74	510	6
	1800	980	33	230	43	295	5
20% CW + Age B	70	20	162	1115	191	1315	16
	600	315	132	910	165	1140	28
	1000	540	124	855	149	1025	23
	1200	650	119	820	140	965	13
	1400	760	92	635	116	800	7
	1600	870	50	345	71	490	9
	1800	980	31	215	42	290	12

*Limited data for cold-rolled 0.050-inch (1.3 mm) thick sheet

Age A = 700°F (370°C)/1 hour

Age B = 1100°F (595°C)/2 hours

Typical Hardness at 70°F (20°C), Cold-Worked and Aged Sheet*

Cold-Work	HRC, After Indicated Level of Cold Work and Subsequent Aging Treatment		
	-	900°F (480°C)	1100°F (595°C)
%	None	5 h	5 h
None	24	25	25
5	31	33	31
10	37	39	39
15	40	44	43
20	44	44	47

*Limited data for cold-rolled 0.070-inch (1.8 mm) thick sheet

HRC = Hardness Rockwell "C".

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