

Typical Properties of Common Spring Materials

COMON NAME SPECIFICATION	E	G	ρ	Electrical Conductivity	Sizes Normally Available(in.)		Fatigue Applications	Relative Strength	Max Service Temp °F
	10 ⁶ PSI	10 ⁶ PSI	lb/in ³	% IACS	Min.	Max.			
HIGH-CARBON STEEL WIRES									
Music ASTM A228	30	11.5	0.284	7	0.004	0.250	Excellent	High	250
Hard-Drawn ASTM A227	30	11.5	0.284	7	0.028	0.625	Poor	Medium	250
Oil-Tempered ASTM A229	30	11.5	0.284	7	0.020	0.625	Poor	Medium	300
Valve-Spring ASTM A230	30	11.5	0.284	7	0.050	0.250	Excellent	High	300
ALLOY-STEEL WIRES									
Chrome-vanadium AISI 6150, ASTM A232	30	11.5	0.284	7	0.032	0.438	Excellent	High	425
Chrome-silicon AISI 9254, ASTM A401	30	11.5	0.284	5	0.035	0.375	Fair	High	475
Silicon-maganese AISI 9260	30	11.5	0.284	4.5	0.025	0.375	Fair	High	45
STAINLESS-STEEL WIRES									
Martensitic AISI 410, 420	28	11	0.280	2.5	0.003	0.500	Poor	Low	500
Austenitic AISI 302, ASTM A313	28	10	0.286	2	0.005	0.375	Good	Medium	600
Precipitation-hardening 17-7 PH	29.5	11	0.286	2	0.030	0.500	Good	High	700
Nickel-chrome A286	28	10.4	0.290	2	0.016	0.200	---	Low	950
COPPER-BASE ALLOY WIRES									
Phosphor-bronze ASTM B159	15	6.3	0.320	18	0.004	0.500	Good	Medium	200
Silicon-bronze ASTM B99 (Type A)	15	5.6	0.308	7	0.004	0.500	Fair	Low	200
Silicon-bronze ASTM B99 (Type B)	17	6.4	0.316	12	0.004	0.500	Fair	Low	200
Beryllium-copper ASTM B197	18.5	7	0.297	21	0.003	0.500	Excellent	High	400
NICKEL-BASE ALLOYS WIRE AND STRIP									
Inconel 600	31	11	0.307	1.5	0.004	0.500	Fair	Low	700
Inconel X750	31.5	11.5	0.298	1	0.004	0.563	Fair	Low	1100
Ni Span C 902	27	9.7	0.294	1.5	0.004	0.500	Fair	Medium	200
HIGH-CARBON STEEL STRIP									
AISI 1050	30	11.5	0.284	7	0.010	0.125	Poor	Low	200
AISI 1065	30	11.5	0.284	7	0.003	0.125	Fair	Medium	200
AISI 1075	30	11.5	0.284	7	0.003	0.125	Good	High	250
AISI 1095	30	11.5	0.284	7	0.003	0.125	Excellent	High	250
STAINLESS STEEL STRIP									
Austenitic AISI 301, 302, ASTM A177	28	10	0.286	2	0.003	0.063	Good	Medium	600
Precipitation-hardening 17-7 PH	29.5	11	0.286	2	0.003	0.125	Good	High	700
COPPER-BASE ALLOY STRIP									
Phosphor-bronze ASTM B103	15	6.3	0.320	18	0.003	0.188	Good	Medium	200
Beryllium-copper ASTM B194	18.5	7	0.297	21	0.003	0.375	Excellent	High	400

Note-E and G can vary with cold work, heat treatment, operating stress