

PROPIEDADES DE LOS MATERIALES

Tensile Propieties Torsional Propieties

	Material	Nominal Analysis	Minimum Tensite Streight psi x10°	Modulus of Elasticity E psi x 10°	Design Stress 1 % Minimum Tensite	Modulus in Torsion G psi x 10°	Maximum Temperature		2 Rockwell Hardness	Method of manufacture chief uses special properties
							°F	°C		
High carbon spring Wire	Music Wire ASTM A 228	C 70-1.00% Mn .20-60%	230 - 399	30	45	11.5	250	121	C41 - 60	Cold draw high and uniform tensile. High quality spring and wire forms.
	HARD Draw ASTM A 227	C 45-85% Mn .60-1.30%	CLI 147 - 283 CLII 171 - 324	30	40	11.5	250	121	C31 - 52	Cold draw. Average stress applications. Lower cost springs and wire forms.
	Oil Tempered ASTM A 230	C 65-1.00% Mn .20-1.30%	238 - 350	30	45	11.5	250	121	C41 - 60	Cold draw. Higher quality springs and wire forms.
	Oil Tempered ASTM A 229	C 55-85% Mn .60-1.20%	CLI 165 - 293 CLII 191 - 324	30	45	11.5	250	121	C42 - 55	Cold draw and heat treated before fabrications. Used shock load and moderately elevate temperature.
	Carbon Valve ASTM A 230	C .60-75% Mn .60-90%	215 - 240	30	45	11.5	250	121	C45 - 49	Cold draw and heat treated before fabrications. Good surface condition and uniform tensile.
Alloy steel Wire	Chrome Vanadium ASTM A 231	C 48-53% Cr .80-1.10% V 15-15 Min%	190 - 300	30	45	11.5	425	218.5	C41 - 55	Cold draw and heat treated before fabrications. Used shock load and moderately elevate temperature.
	Chrome Silicon ASTM A 401	C .15-.59% Cr .60-80% Si 1.20-1.60%	235 - 300	30	45	11.5	475	246	C48 - 55	Cold draw and heat treated before fabrications. Used shock load and moderately elevate temperature.
Stainless steel Wire	AISI 302/304 ASTM A 313	C .17-.19% Ni .8-10%	125 - 335	28	30 - 40	10	550	288	C35 - 45	Cold draw. General purpose corrosion and heat resistant. Magnetic in spring temper.
	AISI 316 ASTM A 313	Cr .16-.18 Ni .10-14% Al 2.-3.%	110 - 245	28	40	10	550	288	C35 - 45	Cold draw heat resistant and better corrosion resistance than 302. Magnetic in spring temper.
	17-7 PH ASTM A 313	Cr .16-.18% Ni 6.5-7.5% Al .75-1.5%	Cond. CH 253 - 335	29.5	45	11	650	343	C38 - 5T	Cold draw and precipitation hardened after fabrication. High strenght and general purpose corrosion resistance. Slightly magnetic ins spring temper.
Non-Ferrous Alloy Wire	Phosphor Bronze Gade A ASTM B 159	Cu 94-.96% Sn 4.-6.%	105 - 145	15	40	6.25	200	93.3	898 - 104	Cold draw. Good corrosion resistance and electrical conductivity.
	Beryllium Cooper ASTM B 197	Cu 98.% Be 2.%	150 - 230	18.5	45	7.0	400	204	C35 - 42	Cold draw and may be will hardened before fabrication. Good corrosion resistance and electrical conductivity. High physicals.
	Monel 400 AMS 7233	Ni 66.% Cu 31.5% C/Fe	145 - 180	26	40	9.5	450	232	C23 - 32	Cold draw. Good corrosion resistance at moderately elevated temperature.
	Monel K 500 QQ-N-286	Ni 65.0% Cu 29.5% C/Fe/Al/Ti	160 - 200	26	40	9.5	550	288	C23 - 35	Excellent corrosion resistance at moderately elevated temperature.
High Temperature Alloy Wire	A 286 Alloy	Ni 26.0% Cr 15% Fe 53%	160 - 200	29	35	10.4	950	510	C35 - 42	Cold draw and precipitation hardened after fabrication. Good corrosion resistance at elevated temperature.
	Inconel 600 QQ-W-390 3	Ni 76.% Cr 15.8 Fe 7.2%	170 - 230	31	40	11.0	700	371	C35 - 45	Cold draw. Good corrosion resistance at elevated temperature.
	Inconel 718	Ni 52.5% Cr 18.6 Fe 18.5%	210 - 250	29	40	11.2	1100	593	C45 - 50	Cold draw and precipitation hardened after fabrication. Good corrosion resistance at elevated temperature.
	Inconel x 750 AMS 5698, 5699	Ni 73.% Cr 15.% Fe 6.75%	No. IT 155 Min. Seg. T 190 - 230	31	40	12	750 - 1100	399 - 593	C34 - 39 C42 - 48	Cold draw and precipitation hardened after fabrication. Good corrosion resistance at elevated temperature

