

TYPE 17 CHROME - 7 NICKEL WIRE

Type 17 chrome - 7 nickel stainless steel wire (AISI 631) has the corrosion resistance of Type 302 plus superior strength and heat resistance. This grade of stainless wire possesses high elastic qualities similar to music wire while maintaining the corrosion resistant qualities of the standard Type 302 stainless. The alloy is an excellent material for all kinds of springs where long life is required under severe service conditions, providing excellent fatigue properties, ductility, high yield strength, Modulus of elasticity, and strength-to-weight ratio.

17 chrome - 7 nickel offers the advantage of being easily formed in Condition C and then hardened to high strength levels by simple heat treatment. 17-7 is hardenable due to the addition of aluminum to the chemistry of the alloy.

Gibbs 17 chrome - 7 nickel stainless wire is furnished in the cold drawn Condition C and should be treated at 900°F. for one hour after forming into springs to achieve the maximum tensile properties of Condition CH900 (cold drawn and age hardened). Sizes are available within the range of .017" - .625" conforming to ASTM A313 and AMS 5678.

Chemical Composition					
Per AMS5678					
Carbon	0.090 % max	Chromium	16 - 18 %	Molybdenum	0.750 % max
Manganese	1.00% max	Nickel	6.50 - 7.75 %	Copper	0.500 % max
Silicon	1.00 % max	Aluminum	0.75 - 1.50 %	Phosphorus	0.040 % max
				Sulfur	0.030 % max

Tensile Strength Table (AMS-5678 spec)				
Nominal Diameter Inch.	As cold drawn Condition C Tensile Strength		Precipitation Hardened Condition CH900 Tensile Strength	
	Min PSI	Max PSI	Min PSI	Max PSI
.015 to .020	275,000	305,000	335,000	365,000
Over .020 to .025	270,000	300,000	330,000	360,000
Over .025 to .029	265,000	295,000	325,000	355,000
Over .029 to .041	260,000	290,000	320,000	350,000
Over .041 to .051	255,000	285,000	310,000	340,000
Over .051 to .061	250,000	280,000	305,000	335,000
Over .061 to .071	242,000	272,000	297,000	327,000
Over .071 to .086	240,000	270,000	292,000	322,000
Over .086 to .090	230,000	260,000	282,000	312,000
Over .090 to .100	227,000	257,000	279,000	309,000
Over .100 to .106	223,000	253,000	274,000	304,000
Over .106 to .130	221,000	251,000	272,000	302,000
Over .130 to .138	215,000	245,000	260,000	290,000
Over .138 to .146	213,000	243,000	258,000	288,000
Over .146 to .162	211,000	241,000	256,000	286,000
Over .162 to .180	209,000	239,000	254,000	284,000
Over .180 to .207	207,000	237,000	252,000	282,000
Over .207 to .225	203,000	233,000	248,000	278,000
Over .225 to .306	198,000	228,000	242,000	272,000
Over .306 to .440	192,000	222,000	235,000	265,000
Over .440 to .625	187,000	217,000	230,000	260,000

The above charts are intended to provide general background information. You should also review the appropriate material specification. Please contact Gibbs if you have any questions.