

OIL TEMPERED CHROMIUM-VANADIUM WIRE COMMERCIAL QUALITY

Chromium-vanadium is the most popular alloy steel for springs that are required to withstand a large number of operating cycles. It is medium carbon steel with chromium and vanadium added to increase its hardness and tensile strength. Springs can be used at extremely high stresses in applications where they will also be subject to extreme shock and impact loading. Recommendation for heat treatment: Immediately after coiling, the springs should be stress relieved at about 400°C (750°F) for 30 minutes. After shot peening, the springs should be stress relieved at about 250°C (480°F) for 30 minutes. Gibbs Interwire oil tempered commercial quality chromium-vanadium meets ASTM-A-231 specification.

Chemical Composition Per ASTM-A-231			Nominal Diameter	Tolerance (inch)
Carbon	.48 - .53%		Over .125 to .375 included	+ / - .002
Manganese	.70 - .90%		Over .375 to .500 included	+ / - .003
Phosphorus	.04%			
Sulfur	.04%			
Silicon	.15 - .35%			
Chromium	.80 - 1.1%			
Vanadium	.15% min			

TENSILE STRENGTH TABLE (ASTM-A-228)

Diameter Inch	Tensile Min PSI	Tensile Max PSI	Diameter Inch	Tensile Min PSI	Tensile Max PSI
.135	235,000	255,000	.500	190,000	210,000
.162	225,000	245,000			
.192	220,000	240,000			
.244	210,000	230,000			
.283	205,000	225,000			
.312	203,000	223,000			
.375	200,000	220,000			
.438	195,000	215,000			

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

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