

DFT® Wire

DFT wire is a metal-to-metal composite developed to combine the desired physical and mechanical attributes of two or more materials into a single wire or ribbon system. As a result of extreme compressive forces imparted during the processing of the dissimilar materials, the mechanical bond formed between surfaces has been found to be metallurgically sound. This feature has given rise to a number of novel applications of DFT wire, cable or ribbon.

One of the more common uses of DFT wire is found in the medical device industry where designers have integrated the strength and biocompatibility of implant grade alloys with desired properties of other materials. The composite typically uses the outer sheath to impart strength while the core material is designed to provide conductivity, radiopacity, resiliency or MRI enhancement.

DFT wire enables the unique ability to match dissimilar materials to provide a variety of properties in a single wire system. This technology can be utilized by the engineer to resolve technical issues cost effectively.

Fig. 1 Typical Tensile Values for MP-DFT Wire with a Silver Core (% Ag)

% C W	(PSI)			
	25% Ag	28% Ag	33% Ag	41% Ag
0%	158,200	148,800	149,600	124,100
20%	201,300	191,200	192,600	162,800
37%	225,600	216,500	213,800	165,800
50%	237,300	227,300	224,700	192,400
61%	246,000	236,000	232,400	200,000
69%	256,700	244,000	239,300	206,400
75%	261,200	248,100	242,300	209,500
80%	267,800	254,500	249,300	214,900
84%	276,000	264,000	261,600	217,000
87%	278,200	264,300	262,300	225,000
90%	277,300	264,300	258,400	223,300
92%	281,900	266,900	254,700	232,200

Size

Fort Wayne Metals has the capability to create these DFT wire materials in sizes from .050" to .001" or smaller depending on the constituents.

Values and Compositions

A typical MP35N®/Silver DFT wire material (MP-DFT-Ag) may have a variety of tensile values depending upon the amount of cold work and core percentages of the individual wires (See Fig. 1). In addition, the table in Fig. 2 is presented to compare the electrical resistivity of various core percentages to that of solid MP35N wire, a common pacemaker lead material.

MP35N, 316LVM and Conichrome® tubing is kept in stock for the outer sheath. Core wire options, in wire form, are more abundant in general inventory.

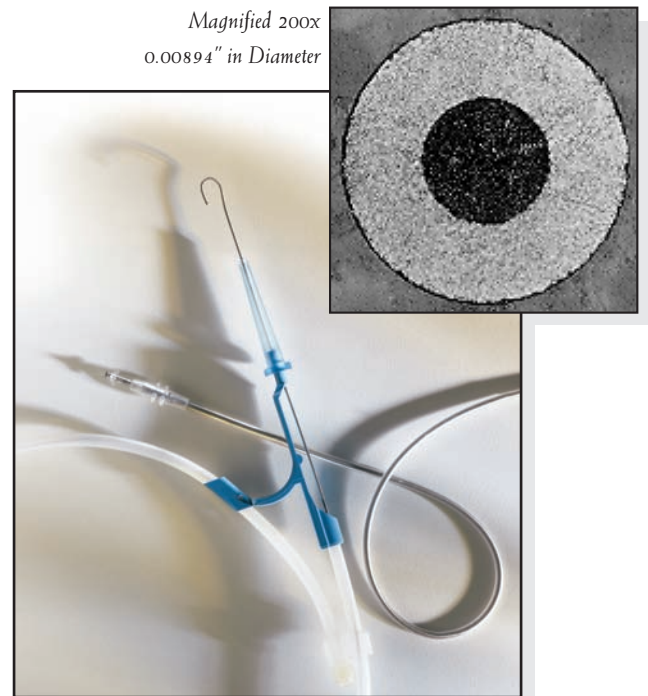


Fig. 2 Theoretical Total Resistance Per Foot for MP-DFT Wire with a Silver Core

Size	(OHM's Per Ft.)				
	25% Ag	28% Ag	33% Ag	41% Ag	Solid MP35N Wire
0.006	1.0132	0.9104	0.7788	0.6324	17.26
0.004	2.2797	2.0489	1.7521	1.4228	38.84
0.002	9.1126	8.1911	7.0064	5.6914	155.34
0.001	36.5347	32.7598	28.7598	22.7663	621.38