

Biomedical Coatings

Fort Wayne Metals has the ability to provide a variety of coated wire and cable configurations comprising a biocompatible sheath, lubricious barrier, or other medical grade material of your choice. It is common for Fort Wayne Metals to work with bioconductors that require an isolated electrical signal. In these instances, selection of the appropriate dielectric material is critical. Our engineering team can assist with the selection and design of any coating configuration. Electrical insulation is just one of many reasons why coatings are applied for wire based medical applications. Other considerations may include: chemical isolation, lubricity, or surface preparation. Fort Wayne Metals is always open to exploring new coatings for a variety of medical applications.

Fluoropolymers:

Ethylene-Tetrafluoroethylene (ETFE), Perfluoroalkoxyethylene-Tetrafluoroethylene (PFA) and Fluorinated Ethylene Propylene (FEP) are all copolymers of Tetrafluoroethylene (TFE). Each material combines the chemical inertness of Polytetrafluoroethylene (PTFE) with another polymer to provide melt forming capability and strength. All three fluoropolymers are utilized in a variety of medical device applications due to their excellent dielectric strength, chemical resistance and mechanical toughness.

ETFE possesses the greatest strength and abrasion resistance of the TFE copolymers. ETFE has a continuous service temperature range of 150°C.

PFA is most similar in terms of chemical and physical behavior to PTFE. PFA has the added benefit of a higher service temperature (260°C) over FEP.

FEP is similar in chemical and physical behavior to PFA. It possesses a lower service temperature (200°C) and is slightly less susceptible to water absorption than most other fluoropolymers.

Alternate coatings will be considered upon request.

Typical properties of extruded thermoplastics

Name	Density [g/cc]	Typical Tensile Strength [Mpa / psi]	Coefficient of Friction	Dielectric Strength [kV/mm V/mil]	CTE @ 20°C [µm/m-°C]	Water Absorption [%]	Max. Service Temperature in Air [°C]
ETFE	1.70	41 / 6000	0.23	64 / 1600	130	.006	150
PFA	2.15	28 / 4000	0.21	62 / 1575	140	.050	260
FEP	2.15	25 / 3600	0.25	62 / 1575	140	.005	200
PTFE*	2.20	24 / 3500	0.10	58 / 1470	100	.004	270

These properties are for reference only and can vary significantly dependent on processing conditions and material grade.

*PTFE is not a melt-processable thermoplastic.



Colorants:

Fort Wayne Metals can offer a wide variety of color concentrates. Standard colors include blue, white, red, green, yellow, orange and black. Additional colors available upon request.

Coating Capabilities:

Round Wire Sizes: .002" to .020"

Strands & Cable Sizes: .003" to .060"

Wall Thickness: Typically range from .005" to less than .0005"

Coating Substrates: Coatings can be applied to round wire and strands and cables in any alloy or material system we offer.

Configurations: Round Wire, Strands and Cables, and Shaped Wires

Features:	Thin Wall
Biocompatible	Custom Packaging
Pin Hole Free	Medical Focus
Excellent Dielectric Strength	Tight Tolerances

Lead-Times:

Our in-house coating capabilities allow us to offer a more stream-lined manufacturing approach for wire and cable needs. Fort Wayne Metals can now offer a fully integrated manufacturing option for our wire and cable customers, thus eliminating inefficiencies associated with transferring material to multiple manufacturing sites.