

An Alternative for RF Filtering and EMI Suppression

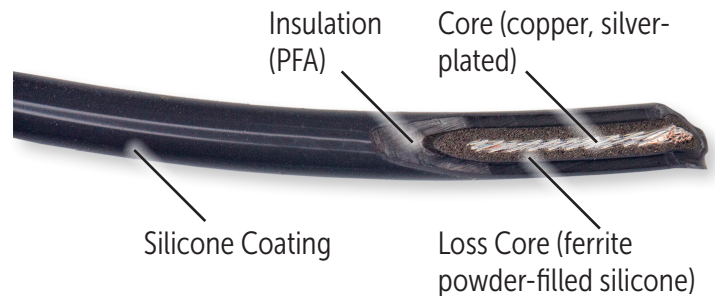
Quiet Line™ Wire



Overview

Teledyne's Quiet Line™ product is continuously extruded high voltage cable with a high inductance core coated directly over the center conductor. This high inductance "loss core" dissipates high frequency signals, making it a great choice for filtering out unwanted radio frequencies and suppressing external EMI.

High frequency signals that travel across the center conductor are attenuated proportionally to the cable length used. Attenuation per unit length also increases roughly linearly as frequency increases.

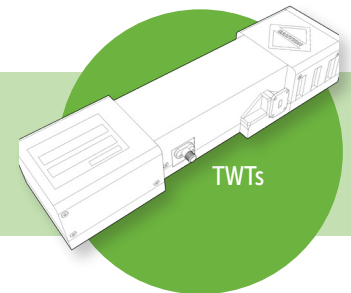
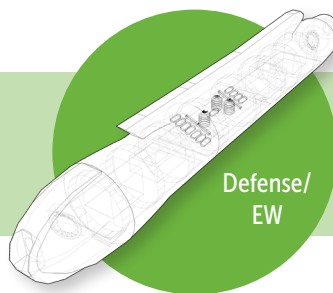
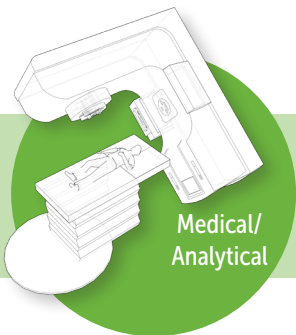


Highlights

- Ideal where size, weight and power (SWaP) are important – replaces lumped element low pass filters, saving space and weight
- Flexible routing
- Typical applications use 1-2ft to remove microwave interference
- Compatible with Teledyne Reynolds high voltage connectors

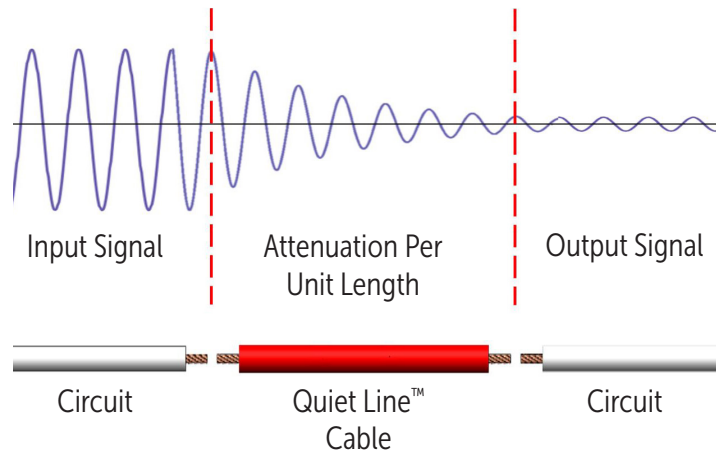
Applications

- TWT's
- Electronic Warfare & Electronic Countermeasures
- SATCOM
- Radiotherapy
- Radars
- RFI/EMI Reduction

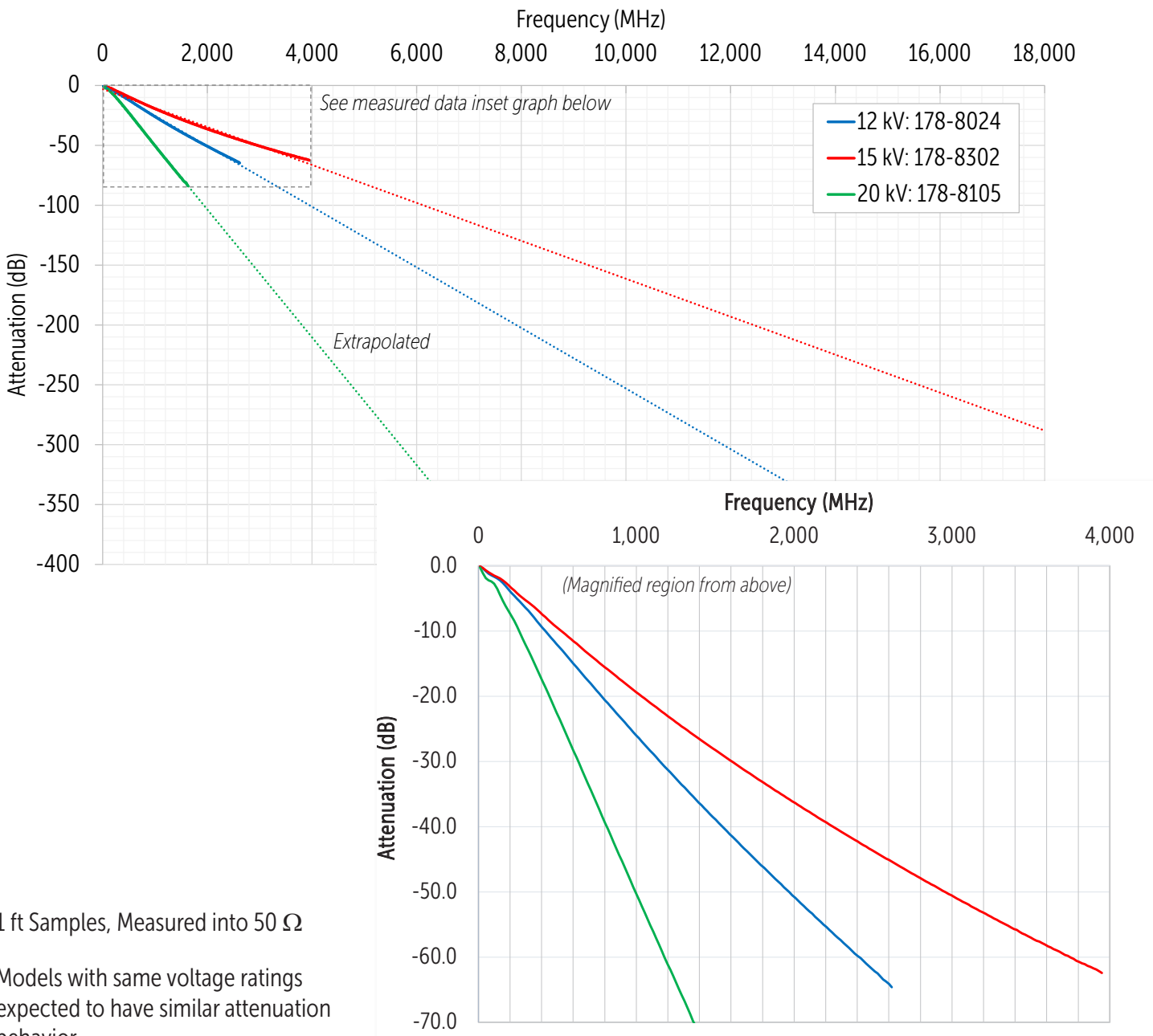


How it Works

The stranded center conductor is surrounded with a "lossy" insulation material comprised of ferrite-powder filled silicone. This cable functions much like an inductive low-pass filter, where magnetic losses are dissipated and EMI absorbed. The ferrite in the insulation increases the cable's inductance by concentrating the magnetic field. The increase in inductance, in turn, increases reactance which filters out high frequency noise. The cable's attenuation characteristics increase with frequency and are directly proportional to cable length.



Example Attenuation Performance



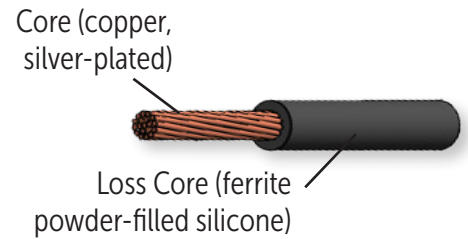
1 ft Samples, Measured into 50 Ω

Models with same voltage ratings expected to have similar attenuation behavior.

Wire Types

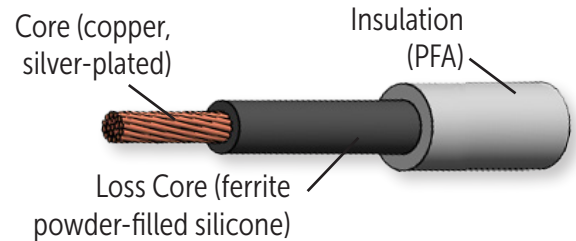
Loss Core

For customers planning direct encapsulation or to apply their own insulated coating. For high voltage see Type 1.



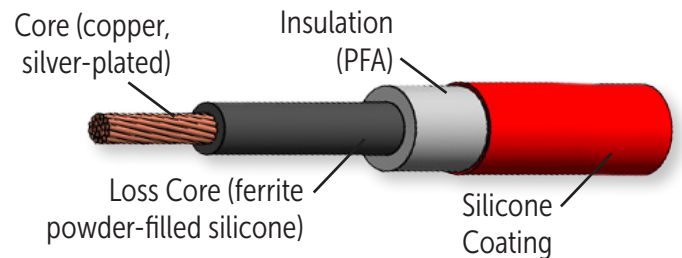
PFA Extruded (Type 1)

Smallest, most flexible.



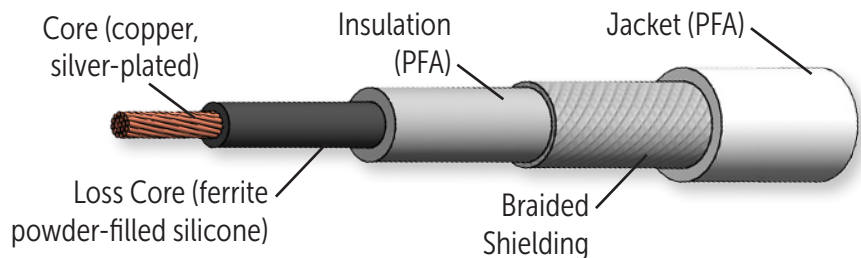
Silicone Coated (Type 2)

Popular for the adhesion characteristics when potting/bonding with silicone.



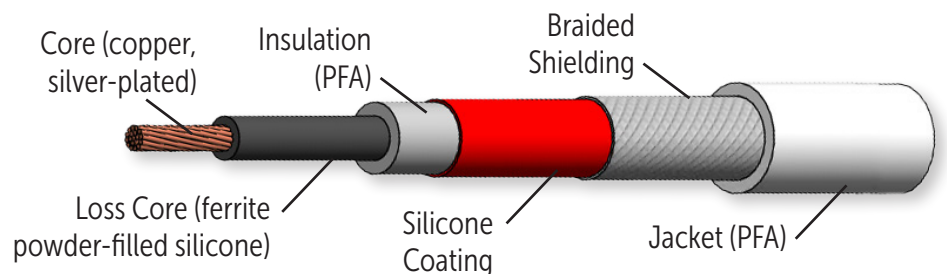
Shielded, Jacketed (Type 3)

Most basic shielded option.






Shielded, Jacketed (Type 4)

Improved adhesion characteristics for potting/bonding when terminating.



Specifications and Ordering Summary

| Voltage Rating | 12.0 kVDC | 15.0 kVDC | 20.0 kVDC |
|--|--|--|--|
| AWG (Stranding) | 22 (19/34) | 24 (19/36) | 22 (19/34) |
| Approx. Attenuation/Foot, 0.48 GHz | -11.5 dB | -9.0 dB | -21.5 dB |
| Approx. Attenuation/Foot, 2.4 GHz | -59.9 dB | -42.3 dB | >60 dB |
| Operating Temperature Range | -55 to 125 °C | | |
| Operating Altitude, max | 70,000 feet (21 km) | | |
| Voltage Stress Testing (room temperature) | 100% test at 140% of rated voltage | | |
| Loss Core (RF suppression only - for high voltage see Type 1)  | P/N 178-7973 | P/N 178-8300 | P/N 178-8026 |
| Overall Diameter - Inches (mm) | 0.054 (1.4) | 0.038 (0.97) | 0.095 (2.4) |
| PFA Extruded (Type 1)  | P/N 178-8051 <i>Standard Color: Natural</i> | P/N 178-8301 <i>Standard Color: Natural</i> | P/N 178-8104 <i>Standard Color: Natural</i> |
| Overall Diameter - Inches (mm) | 0.087 (2.2) | 0.073 (1.9) | 0.14 (3.6) |
| Silicone Coated (Type 2)  | P/N 178-8024-1 <i>Standard Color: Red Silicone Coating, Natural Insulation</i> | P/N 178-8302 <i>Standard Color: Red Silicone Coating, Natural Insulation</i> | P/N 178-8105-1 <i>Standard Color: Red Silicone Coating, Natural Insulation</i> |
| Coating Diameter - Inches (mm) | 0.008 (0.20) | 0.007 (0.18) | 0.01 (0.25) |
| Overall Diameter - Inches (mm) | 0.095 (2.4) | 0.08 (2.0) | 0.15 (3.8) |
| Shielded, Jacketed (Type 3)  | P/N 178-8069 <i>Standard Color: White Jacket with Natural Insulation</i> | | |
| Overall Diameter - Inches (mm) | 0.135 (3.4) | | |
| Shielded, Jacketed (Type 4)  | P/N 178-8064 <i>Standard Color: Red Silicone Coating, White Jacket</i> | | P/N 178-8106 <i>Standard Color: Red Silicone Coating, White Jacket</i> |
| Overall Diameter - Inches (mm) | 0.145 (3.7) | | 0.195 (5.0) |

Additional colors available upon request. Please contact factory.
 Attenuation values measured with 1 foot sample, terminated in 50 Ω.
 'Natural' color is also known as clear. Loss Core material is black.

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