

Extruded, FEP insulated, high voltage wire and cable offers exceptional dielectric strength without the disadvantages common to equally rated silicone rubber insulated cables. As a result, cable assemblies or cable bundles are smaller in diameter, volume and in bend radius thus allowing the system designer to better utilize space within their system. Also, its molecular structure gives it excellent durability and resistance to dielectric/cooling fluid degradation.

FEP insulation, being a harder material than silicone rubber, is not prone to "pin-holing" and high voltage "punch-thru" when the cable surface is abraded or when strands break during in-field servicing. FEP is also more resistant to damage when making contact with sharp edges. Even so, sharp edges should always be avoided.

Although FEP is generally difficult to bond to, Teledyne Reynolds, has developed a Ready-to-Bond™ product line that is manufactured using proprietary abrading and surface preparation techniques that enable excellent silastic bonds. Teflon® tape wrapped cable, which is similar to FEP in dielectric strength and corona inception, is difficult to bond to because of its multiple spiral cross section, irregular surface and variations in diameter. Therefore, FEP cable should not only be considered for use in cable assemblies, but as high voltage hook-up wire within encapsulated high voltage power supplies, TWTs and transformers.

Teflon® is a registered trademark of Dupont

**PROPERTIES OF FEP FLUOROCARBON RESIN**

Physical, Thermal and Electrical Properties	Typical Values
Specific Gravity	2.14
Tensile Strength (PSI)	3500
Elongation (%)	.325
Flexural Modulus (PSI)	90,000
Thermal Conductivity (cal/sec-cm °F)	6x10 <sup>-4</sup>
Thermal Expansion (in/in/ °F)	7.5 x 10 <sup>-5</sup>
Continuous Use Temperature (°C)	204
Melt Temperature (°C)	255-265
Low Temperature Limit (°C)	-240
Hardness Durometer	D56
Water Absorption (%)	<01
Flame Resistance	Excellent
Dielectric Constant, 60-10 <sup>6</sup> Hz	2.1
Dissipation Factor, 60-10 <sup>6</sup> Hz	<.0007
Volume Resistivity (Ohm-cm)	<10 <sup>18</sup>
Surface Resistivity (Ohm/square)	<10 <sup>16</sup>
Resistance to:	Rating
Cold Flow or Cut Through	Fair
Ultraviolet Radiation	Excellent
Electro-Mechanical Stress Cracking	Excellent
Chemical-Mechanical Stress Cracking	Excellent

**Conductor Material:** Copper

**Conductor Finish:** Silver plated per test requirements of ASTM B298. Meets solderability per MIL-STD-202.

**Note:** Pre-conditioning of FEP cable after cutting to length is recommended because FEP cable will shrink when exposed to temperature cycling. Pre-conditioning should be conducted in an air circulating oven at 204°C (400°F) for one hour. No attempt should be made to condition wire or cable in bulk form or while spooled.

# FEP

## HIGH VOLTAGE WIRE

70,000 ft (21.3km)  
-55° to 125° C



### FEP WIRE ATTRIBUTES

Part Number	Operating Voltage (kVDC)	Conductor		Plating	Conductor Diameter	Diameter over Insulation
		AWG	Strands		in/mm	in/mm
178-9907	5	29	51/46	SPC	.013 / 0.35	.025 / 0.64
178-9912	5	28	19/40	SPC	.015 / 0.40	.040 / 1.02
178-9560	10	20	19/32	SPC	.039 / 1.01	.060 / 1.52
178-5626	12	16	19/29	SPC	.056 / 1.43	.080 / 2.00
178-5079	13.5	28	41/44	SPC	.014 / 0.36	.042 / 1.07
178-5790	18	28	19/40	SPC	.015 / 0.40	.040 / 1.02
178-8751	18	28	19/40	SPC	.015 / 0.40	.050 / 1.27
178-5792	18	26	19/38	SPC	.019 / 0.50	.045 / 1.14
178-7680	18	26	19/38	SPC	.019 / 0.50	.050 / 1.27
178-8072	18	24	19/36	SPC	.025 / 0.64	.050 / 1.27
178-8523	18	24	19/36	SPC	.025 / 0.64	.060 / 1.52
178-8073	18	22	19/34	SPC	.031 / 0.80	.055 / 1.40
178-8679	20	22	19/34	SPC	.031 / 0.80	.055 / 1.40
178-8883	21	20	19/32	SPC	.039 / 1.01	.090 / 2.29
178-7435	22	22	19/34	SPC	.031 / 0.80	.080 / 2.00
178-8316	22	20	19/32	SPC	.039 / 1.01	.080 / 2.00
178-8545	22	14	19/26	TPC	.070 / 1.80	.150 / 3.81
178-9490	25	26	19/38	SPC	.019 / 0.50	.080 / 2.00
178-9824	25	16	41/32	SPC	.059 / 1.50	.125 / 3.17
167-7628	30	20	19/32	SPC	.039 / 1.01	.100 / 2.54
167-9611	30	16	19/29	SPC	.056 / 1.43	.180 / 4.57

When ordering, use part number and specify length in feet.

The standard color is Natural. Other colors are available on special order. Contact factory for color options and availability, or please specify color requested when ordering.

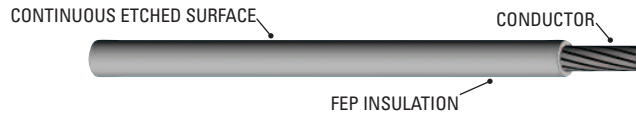
**Note:** Pre-conditioning of FEP wire or cable is recommended because FEP insulation will shrink when exposed to temperature cycling.

Pre-conditioning should be conducted in an air circulating oven at 204°C (400°F) for one hour. Pre-conditioning should only be performed on cut lengths prior to stripping and any termination procedure. No attempt should be made to condition wire or cable in bulk form or while spooled.

Product numbers and specs subject to change without notice. Products listed represent only a small selection of Teledyne Reynolds' products. Please visit [www.teledynereynolds.com](http://www.teledynereynolds.com) for the most up to date product information. Contact Teledyne Reynolds' Engineering to discuss custom designs.

# READY-TO-BOND™ ETCHED FEP HIGH VOLTAGE WIRE

70,000 ft (21.3km)  
-55° to 125° C



## ETCHED FEP WIRE ATTRIBUTES

Etched Part Number	Operating Voltage (kVDC)	Conductor		Plating	Conductor Diameter	Diameter over Insulation
		AWG	Strands		in/mm	in/mm
178-9908	5	29	51/46	SPC	.013 / 0.35	.025 / 0.64
178-9913	5	28	19/40	SPC	.015 / 0.40	.040 / 1.02
178-9559	10	20	19/32	SPC	.039 / 1.01	.060 / 1.52
700357	12	16	19/29	SPC	.056 / 1.43	.080 / 2.00
700358	13.5	28	41/44	SPC	.014 / 0.36	.042 / 1.07
178-5791	18	28	19/40	SPC	.015 / 0.40	.040 / 1.02
700359	18	28	19/40	SPC	.015 / 0.40	.050 / 1.27
178-5793	18	26	19/38	SPC	.019 / 0.50	.045 / 1.14
178-9556	18	26	19/38	SPC	.019 / 0.50	.050 / 1.27
178-8111	18	24	19/36	SPC	.025 / 0.64	.050 / 1.27
178-8524	18	24	19/36	SPC	.025 / 0.64	.060 / 1.52
700360	18	22	19/34	SPC	.031 / 0.80	.055 / 1.40
178-9122	20	22	19/34	SPC	.031 / 0.80	.055 / 1.40
178-8914	21	20	19/32	SPC	.039 / 1.01	.090 / 2.29
178-9035	22	22	19/34	SPC	.031 / 0.80	.080 / 2.00
178-9123	22	20	19/32	SPC	.039 / 1.01	.080 / 2.00
700361	22	14	19/26	TPC	.070 / 1.80	.150 / 3.81
178-9473	25	26	19/38	SPC	.019 / 0.50	.080 / 2.00
700362	25	16	41/32	SPC	.059 / 1.50	.125 / 3.17
178-8780	30	20	19/32	SPC	.039 / 1.01	.100 / 2.54
178-9119	30	16	19/29	SPC	.056 / 1.43	.180 / 4.57

When ordering, use part number and specify length in feet.

The standard color is Natural. Other colors are available on special order. Contact factory for color options and availability, or please specify color requested when ordering.

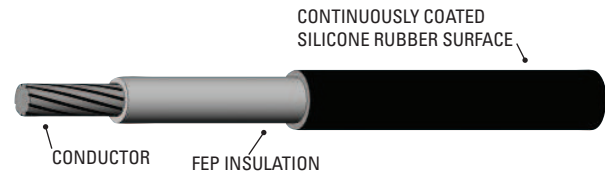
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# READY-TO-BOND™ SILICONE COATED FEP HIGH VOLTAGE WIRE

70,000 ft (21.3km)  
-55° to 125° C

Ready-to-Bond™ silicone coated FEP wire is processed with a uniform silicone rubber coating applied to a prepared surface in the form of a thin wall. This continuous coating provides potting characteristics similar to silicone rubber wire and allows the user to achieve a superior dielectric bond when using silicone rubber potting materials or adhesives. Primer should be applied to the cable as required by the bonding or potting material manufacturer.



## SILICONE COATED FEP WIRE ATTRIBUTES

Part Number	Operating Voltage (kVDC)	Conductor		Plating	Conductor Diameter	Diameter over Silicone Coating
		AWG	Strands		in/mm	in/mm
178-9334	12	26	19/38	SPC	.019 / 0.50	.055 / 1.40
178-5627	12	16	19/29	SPC	.056 / 1.43	.095 / 2.41
178-5186	13	28	41/44	SPC	.014 / 0.37	.048 / 1.22
178-8074	18	26	19/38	SPC	.019 / 0.50	.060 / 1.52
178-8066	18	24	19/36	SPC	.025 / 0.64	.060 / 1.52
178-8067	18	22	19/34	SPC	.031 / 0.80	.065 / 1.65
178-9277	18	22	19/34	SPC	.031 / 0.80	.070 / 1.78
178-9036	21	22	19/34	SPC	.031 / 0.80	.090 / 2.29
178-8884	22	20	19/32	SPC	.039 / 1.01	.100 / 2.54
178-8315	22	20	19/32	SPC	.039 / 1.01	.090 / 2.29
178-8781	30	20	19/32	SPC	.039 / 1.01	.110 / 2.79

When ordering, use part number and specify length in feet.

The standard color is Natural. Other colors are available on special order. Contact factory for color options and availability, or please specify color requested when ordering.

**Note:** Pre-conditioning of FEP wire or cable is recommended because FEP insulation will shrink when exposed to temperature cycling. Pre-conditioning should be conducted in an air circulating oven at 204°C (400°F) for one hour. Pre-conditioning should only be performed on cut lengths prior to stripping and any termination procedure. No attempt should be made to condition wire or cable in bulk form or while spooled.

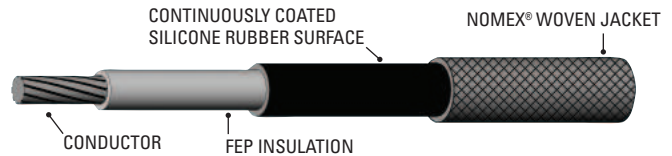
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# READY-TO-BOND™ SILICONE COATED FEP WIRE

70,000 ft (21.3km)  
-55° to 125° C

with Nomex® Woven Protective Jacket

Ready-to-Bond™ silicone coated FEP is processed with a silicone rubber coating applied to a prepared surface in the form of a thin wall. This continuous coating provides potting characteristics similar to silicone rubber wire and allows the user to achieve a superior dielectric bond when using silicone rubber potting or adhesives. Primer should be applied to the cable as required by the bonding or potting material manufacturer.



The addition of a Nomex® woven jacket over the silicone coated surface of the FEP insulation provides excellent abrasion resistance.

## SILICONE COATED FEP WIRE WITH NOMEX® JACKET ATTRIBUTES

Part Number	Operating Voltage (kVDC)	Conductor		Plating	Conductor Diameter	Diameter over Insulation	Diameter over Silicone Coating	Diameter over Nomex™ Jacket
		AWG	Strands					
178-5597	12	16	19/29	SPC	.056 / 1.43	.080 / 2.03	.095 / 2.41	.120 / 3.05
178-5789	18	24	19/36	SPC	.025 / 0.64	.050 / 1.27	.060 / 1.52	.085 / 2.16
178-5724	20	22	19/34	SPC	.031 / 0.80	.060 / 1.52	.070 / 1.78	.095 / 2.41
178-8881	25	20	19/32	SPC	.039 / 1.01	.080 / 2.03	.090 / 2.29	.115 / 2.92
178-9554	30	20	19/32	SPC	.039 / 1.01	.100 / 2.54	.110 / 2.79	.135 / 3.43

When ordering, use part number and specify length in feet.

The standard color is Natural. Other colors are available on special order. Contact factory for color options and availability, or please specify color requested when ordering.

### Notes

To prevent fraying of the Nomex® jacket, apply a small band of epoxy resin about 1 inch from the end of the Nomex® jacket. Allow to cure and trim back the Nomex® to the leading edge of the cured epoxy. Alternative methods are shrink sleeving or silicone rubber sleeving in place of the epoxy resin.

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