

## PVDF Heat-Shrink Tubing

# FITCOTUBE® FT190

Semi-rigid, abrasion resistant, flame-resistant high temperature-PVDF-heat shrink tubing with reliable insulation and excellent mechanical protection of wires and components in high temperature environment. Protection of soldering and crimp connections. High chemical stability.

<b>Operating temperature:</b>	- 55°C to + 190°C, short time up to + 300°C
<b>Shrink temperature:</b>	+ 175° C
<b>Shrink ratio:</b>	2 : 1
<b>Standard colors:</b>	Clear
<b>Specification:</b>	UL 224 150°C 600V VW-1 (File No. E191539), CSA Class 9032-01 (File No. 233954)



Description	Inner diameter (mm)		Wall thickness (mm)
	as supplied (min.)	after shrinkage (max.)	after shrinkage (nom.)
FT190-120	1.20	0.60	0.25
FT190-160	1.60	0.80	0.25
FT190-240	2.40	1.20	0.27
FT190-320	3.20	1.60	0.27
FT190-480	4.80	2.40	0.27
FT190-640	6.40	3.20	0.33
FT190-950	9.50	4.80	0.33
FT190-1270	12.70	6.40	0.33
FT190-1910	19.10	9.50	0.43
FT190-2540	25.40	12.70	0.48

\*Other sizes on request

**Processing note:** Care for clean and accurate cutting edge. Start shrinkage on the end.  
Pre-heat metal body.

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**Packaging:** On spools, cut lengths or printed tubing on request.

Properties	Test Method	Requirements	Typical Value
<b>Mechanical</b>			
Tensile strength	ASTM D 412	min. 34.5 MPa	≥ 40 MPa
Ultimate elongation	ASTM D 412	min. 150 %	≥ 350 %
Longitudinal change	SAE-AMS-DTL-23053	± 10 %	- 7 %
Specific Gravity	ASTM D 792	Max. 1.8	1.76
Secant Modulus	ASTM D 882	Min. 828 MPa	≥ 840 Mpa
<b>Thermal</b>			
Low temperature flexibility (4h x - 55°C)	SAE-AMS-DTL-23053	No cracking	Pass
Permanent temperature 190°C	IEC 216	No flowing or dripping	Pass
Elongation after long-term ageing (168h x 250°C)	ASTM D 638	Min. 50 %	≥ 200 %
Short term ageing (4h x 300°C)	SAE-AMS-DTL-23053	no cracking, flowing or dripping	Pass
Flammability	UL 224/CSA	VW-1	Pass / self-extinguishing
<b>Electrical</b>			
Dielectric Strength (> ½ inch)	SAE-AMS-DTL-23053	Min. 23.6 kV/mm	≥ 30 kV/mm
Dielectric Strength (≤ ½ inch)	SAE-AMS-DTL-23053	Min. 31.5 kV/mm	≥ 35 kV/mm
Volume Resistivity	ASTM D 876	Min. 10 <sup>13</sup> Ω/cm	≥ 10 <sup>15</sup> Ω/cm
Dielectric Voltage Withstand (60s x 2.5 kV)	SAE-AMS-DTL-23053	No breakdown	Pass
<b>Chemical</b>			
Copper Corrosion (16h x 160°C)	SAE-AMS-DTL-23053	No corrosion	Pass
Water Absorption	ASTM D 570	Max. 0.5 %	≤ 0.2 %
Fluid Resistance	SAE-AMS-DTL-23053	-	-
Dielectric Strength (24h x 23°C)	-	19.7 kV/mm	Pass
Fungus Resistance	SAE-AMS-DTL-23053	ASTM G 21	Pass