



## DUNBAR-PHWT-FR

**3:1 SHRINK RATIO, FLEXIBLE, SEMI-RIGID, HEAVY WALL, FLAME-RETARDANT, ADHESIVE-LINED POLYOLEFIN TUBING**

### Applications

DUNBAR-PHWT-FR is designed to provide reliable performance as well as excellent mechanical and environmental protection. DUNBAR-PHWT-FR is designed for sealing and insulation of cable splices, electrical connections, terminations and jacket repairs. Ideally suited for shipboard, submersible, direct-buried installations, or wherever tougher mechanical protection is required in an electrical insulation system.

### Features

- ★ Shrink ratio: 67% or more in the radial direction, 10% or less in the axial direction
- ★ In stock for immediate shipments
- ★ Operating temperature range: -55°C (-67°F) to 125°C (230°F)
- ★ Flammability: UL VW-1, CSA OFT (except clear)
- ★ High Carbon Black composition to resist UV radiation
- ★ Exceptional flexibility prior to recovery

### Standard

- ★ AMS-DTL-23053/15 Class 1 (Formerly MIL-DTL-23053/15 Class 1)
- ★ UL 224 (File Number E319303)
- ★ DNV File No. E-7977, E-7978
- ★ ABS File No. 02-SE23285-X
- ★ RoHS Compliant

### Specification Values

Properties		Test Methods	Values	
Physical	Unaged	Tensile strength	ASTM D638	Min. 1200 psi
		Elongation		Min. 200%
	Aged	Tensile strength	ASTM D638	Min. 1000 psi
		Elongation		Min. 100%
	Fluid Resist.	Tensile strength	24°C/24 hrs	Min. 750 psi
		Dielectric strength	6 Fluids	Min. 200Volts/mil
	Low temperature flex		-55°Cx4hrs	No cracks
Heat shock		225°Cx4hrs	No cracks, flowing, or dripping	
Secant Modulus		ASTM D882	Max. 25,000 psi	
Electrical	Dielectric strength		ASTM D2671	Min. 200V / mil
	Volume resistivity		ASTM D876	Min. $1 \times 10^{13} \Omega$ - cm
Chemical	Copper corrosion		121°C/16hrs	No corrosion
	Fungus resistance		ASTM G21	No growth
	Water Absorption		ASTM D570	Max. 0.5
	Flammability		ASTM D2671	Pass

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**Dunbar Products, LLC**  
Your Stocking Partner for Quality Components

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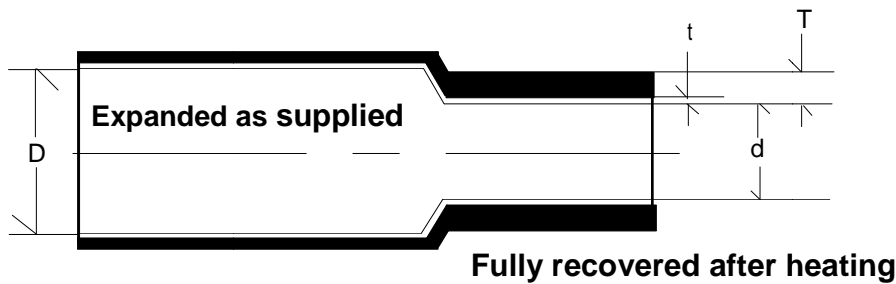
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Available Colors



Black

Red



### Product Dimensions

Minimum Shrink Temperature: 120°C

Mil Spec	Expanded			Recovered			
	As Supplied ID* (min.) (D)		Adhesive Inner Wall (t)	Internal Diameter (max.) (d)		Wall Thickness (nominal) (T)	
X = Color Code	In.	mm	In.	In.	mm	In.	mm
101-X	.750	19.1	.0294	.220	5.59	.105	2.7
102-X	1.100	27.9	.0348	.375	9.53	.120	3.1
103-X	1.500	38.1	.0410	.500	12.7	.140	3.6
104-X	2.000	50.8	.0375	.750	19.1	.155	3.44
105-X	3.000	76.2	.0353	1.250	31.8	.155	3.44
106-X	4.000	101.6	.0455	1.750	44.5	.155	3.44
107-X	.300	7.6	.0107	.100	2.5	.050	1.3
108-X	.400	10.2	.0134	.150	3.8	.060	1.5
109-X	1.300	33.0	.0348	.375	9.5	.120	3.1
110-X	1.700	43.2	.0410	.500	12.7	.155	3.4
111-X	2.700	68.6	.0482	.900	22.9	.155	3.4
112-X	4.500	114.3	.0442	1.750	44.5	.170	4.3

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\* Per M23053/15 – “As Supplied” ID is for uncoated product. An allowance may be necessary depending on coating.



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