



# 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

## Standards

- ★ SAE AS23053/15 Class 1 (Formerly AMS-DTL-23053/15 Class 1)
- ★ UL 224: VW-1, 125°C, 600V (File Number E319303)
- ★ Declared Dimensional Life (DDL) – 10 Years
- ★ ABS File No. 02-SE23285-X
- ★ RoHS & REACH Compliant

## Specification Values

Property		Test Method	Value	
Physical	Unaged	Tensile Strength	Min. 1200 psi	
		Elongation	Min. 200%	
	Aged	Tensile Strength	Min. 1000 psi	
		Elongation	Min. 100%	
	Fluid Resist.	Tensile Strength	24°C/24 hrs	Min. 750 psi
		Dielectric Strength	6 Fluids	Min. 200 Volts/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. 200 Volts/mil	
	Volume Resistivity	ASTM D876	Min. 10 <sup>13</sup> Ω · 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**  
Tubing and Identification Products

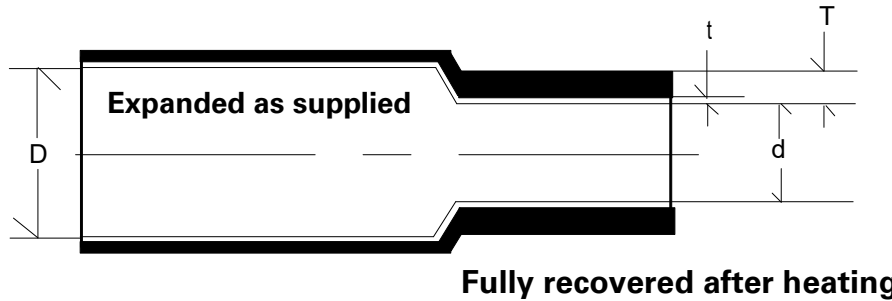


1302 Champion Circle, Carrollton, TX 75006  
Tel: (469) 568-0800  
Fax: (469) 568-0808



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## Product Dimensions

Minimum Shrink Temperature: 120 °C

Mil-Spec	Expanded		Recovered				
	As Supplied Internal Diameter* (Minimum) (D)		Adhesive Inner Wall (Minimum) (t)	Internal Diameter (Maximum) (d)		Total Wall Thickness (Minimum) (T)	
X = Color Code	In.	mm	In.	In.	mm	In.	mm
M23053/15 (class 1)							
101-X	0.750	19.1	0.0294	0.220	5.59	0.105	2.7
102-X	1.100	27.9	0.0348	0.375	9.53	0.120	3.1
103-X	1.500	38.1	0.0410	0.500	12.7	0.140	3.6
104-X	2.000	50.8	0.0375	0.750	19.1	0.155	3.44
105-X	3.000	76.2	0.0353	1.250	31.8	0.155	3.44
106-X	4.000	101.6	0.0455	1.750	44.5	0.155	3.44
107-X	0.300	7.6	0.0107	0.100	2.5	0.050	1.3
108-X	0.400	10.2	0.0134	0.150	3.8	0.060	1.5
109-X	1.300	33.0	0.0348	0.375	9.5	0.120	3.1
110-X	1.700	43.2	0.0410	0.500	12.7	0.155	3.4
111-X	2.700	68.6	0.0482	0.900	22.9	0.155	3.4
112-X	4.500	114.3	0.0442	1.750	44.5	0.170	4.3

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\*Per M23053/15 – As Supplied” ID is for uncoated product. An allowance of approximately 0.050 inch may be necessary depending on coating.

Available Colors – Black & Red



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