



# DUNBAR – 4650WS

4:1 SHRINK RATIO, SEMI-RIGID, DUAL-WALL POLYOLEFIN TUBING  
(Extended Temperature Range)


## Applications

DUNBAR-4650WS is a fully flame retardant, semi-rigid, high shrink ratio, adhesive lined heat shrinkable polyolefin tube. Both jacket and adhesive lining (which flows when heated) are flame retardant. It is designed for insulation and encapsulation of wire splicing and used to seal and protect a wide variety of electrical applications including wire splices, breakouts, and connectors-to-cable transitions.

## Features

- ★ Shrink ratio: 75% or more in the radial direction, 10% or less in the axial direction
- ★ In stock for immediate shipments
- ★ Continuous operating temperature: -55 °C (-67 °F) to 150 °C (302 °F)
- ★ Fully Flame-Retardant: Jacket and Adhesive (except clear)
- ★ Excellent electrical properties
- ★ High resistance to abrasion, chemicals, and oils

## Standards

- ★  UL 224: VW-1, 600 V, 125 °C (File Number: E319314, except clear)
- ★ Declared Dimensional Life (DDL) – 10 Years
- ★ RoHS & REACH Compliant

## Specification Values

Property		Test Method	Value	
Physical	Unaged	Tensile Strength	Min. 2,000 psi	
		Elongation	Min. 200%	
	Aged	Tensile Strength	Min. 1,400 psi	
		Elongation	Min. 100%	
	Specific Gravity		ASTM D792	Max. 1.33
	Concentricity		ASTM D2671	Min. 60%
	Heat Shock		250 °C /4 hrs	No cracks, flowing, or dripping
	Cold Bend		ASTM D746	No cracking
Secant Modulus		ASTM D882	Max. 25,000 psi	
Electrical	Dielectric Strength		ASTM D2671 Min. 500 Volts/mil	
	Volume Resistivity		ASTM D876 Min. 10 <sup>14</sup> Ω · cm	
Chemical	Copper Corrosion		150 °C/16 hrs No corrosion	
	Fungus Resistance		ASTM G21 No growth	
	Flammability		ASTM D2671 Pass – Jacket & Adhesive	

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Tubing and Identification Products

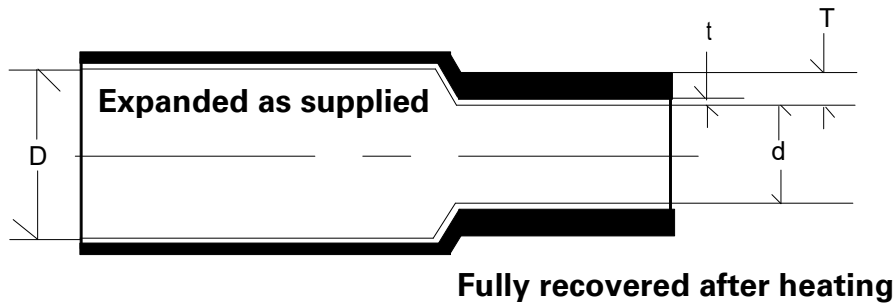


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## Product Dimensions

Minimum Shrink Temperature: 130 °C

Size	Printed	Expanded		Recovered					
		Internal Diameter (Minimum) (D)		Internal Diameter (Maximum) (d)		Total Wall Thickness (Nominal) (T)		Wall Thickness Adhesive Wall (Nominal) (t)	
		in	mm	in	mm	in	mm	in	mm
6 mm (No. 0)	FDW-0	0.236	6.3	0.050	1.27	0.047	1.20	0.022	0.56
8 mm (No. 1)	FDW-1	0.315	8.2	0.065	1.65	0.060	1.52	0.030	0.76
11 mm (No. 2)	FDW-2	0.433	11.3	0.090	2.29	0.075	1.91	0.040	1.02
12 mm (No. 3)	FDW-3	0.511	12.1	0.100	2.54	0.085	2.15	0.043	1.10
18 mm (No. 4)	FDW-4	0.708	18.1	0.175	4.45	0.095	2.41	0.054	1.30

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