



# AWMS HEAT SHRINK MARKERS

The Advanced Wire Marking System (AWMS) produces heat shrink wire marker sleeves for the easy identification of electrical wire, cable, and mechanical tubing of all types. These wire marker sleeves are not only permanent, but they are also economical to generate in-house. Flat, seamless heat shrinkable tubing is attached to fanfold paper with a reusable, adhesive tape backing. This unique format provides an organized work-in-progress list and makes application a simple task for the installer.

The wire markers are manufactured from cross-linked polyolefin, a flame retardant material that is resistant to common fluids, lubricants, and solvents. Once printed on, the wire marker sleeves are ready for installation without any additional treatment.

When tested, the Advanced Wire Marking System heat shrink wire markers show mark permanence quality beyond the minimum requirements. "Mark permanence" is, generally speaking, the ability of a product to remain legible after exposure to either abrasion or aggressive fluids. The standard sleeve lengths are 1.5" and 2". We offer these sleeves that are cut into smaller pieces – .5", .67", .75", and 1" lengths – to fit your precise labeling needs.

## FEATURES

- Exceed the minimum mark permanence requirements for SAE AS81531 (formerly MIL-M-81531)
- Conform to UL224, as well as AMS-DTL 23053/5, Class 1 & 3 for material and functional requirements
- Convenient lay-flat format
- Will tolerate exposure to temperatures as high as 275°F/135°C
- Available in 2:1 and 3:1 shrink ratio
- Most sizes available in white and yellow



# AWMS HEAT SHRINK MARKERS

## Ordering Info

### 2:1 Heat Shrinkable Sleeves

Part Number	Application Size Range	Wire Size Nominal (AWG)	Pieces per box (A Box)	Pieces per box (B Box)
AWMS 1/8 x ** - W	.075 - .115	14 - 20	2200	1100
AWMS 3/16 x ** - W	.100 - .175	10 - 16	2200	1100
AWMS 1/4 x ** - W	.130 - .215	8 - 12	1100	550
AWMS 3/8 x ** - W	.195 - .350	3 - 8	1100	550
AWMS 1/2 x ** - W	.260 - .450	1 - 6	1100	550
AWMS 3/4 x ** - W	.425 - .675	4/0 - 1	N/A	300
AWMS 1 x ** - W	.600 - .900	4/0 - 400 mcm	N/A	300

### 3:1 Heat Shrinkable Sleeves

Part Number	Application Size Range	Wire Size Nominal (AWG)	Pieces per box (A Box)	Pieces per box (B Box)
(3X) AWMS 1/8 x ** - W	.045 - .110	16 - 22	2200	1100
(3X) AWMS 3/16 x ** - W	.065 - .160	12 - 18	2200	1100
(3X) AWMS 1/4 x ** - W	.085 - .210	10 - 16	1100	550
(3X) AWMS 3/8 x ** - W	.130 - .340	4 - 12	1100	550
(3X) AWMS 1/2 x ** - W	.176 - .435	8 - 1	1100	550
(3X) AWMS 3/4 x ** - W	.260 - .675	6 - 4/0	N/A	300

**NOTE:** Wire size ranges are typical and are based on THHN wire. Different classes of wire may have different diameters than those used. The buyer should confirm that wire diameters are within the actual use range of the product selected for purchase.

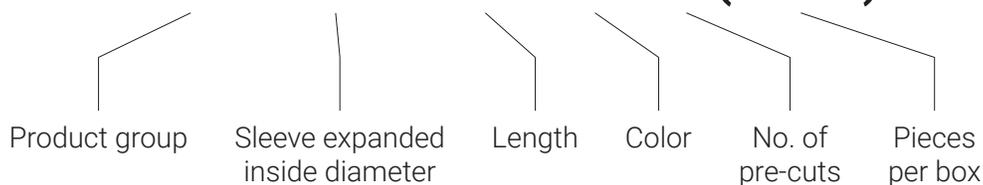
White and yellow are standard colors.

Sleeves can be purchased pre-cut into multiple segments.

\*\* = 1.5 or 2.0 inch length

### Part Numbering System

## AWMS 1/8 x 1.5 - W - 1 (2200)



# AWMS HEAT SHRINK MARKERS

**2:1 Mil Specs**

**IMPACT® B2**

AMS-DTL-23053/5, Cl. 1 & 3

UL & CSA

## FLEXIBLE POLYOLEFIN 2 : 1 Shrink

MILITARY SPECIFICATION and UL / CSA

### TYPICAL FEATURES

- IMPACT B2 is a very flexible, flame-retarded, radiation-crosslinked heat shrinkable polyolefin tubing which meets all of the material and functional requirements of Military Specification AMS-DTL- 23053/5, Class 1 and Class 3.
- Shrink temperature is 90°C.
- Operating temperature range is -55°C to +135°C and up to 200°C for short time durations.
- B2 is recommended for use in general purpose applications such as wire marking, color coding, and electrical insulation of light wire harness assemblies. For higher expansion ratio versions see B2(3X), B2(4X), and B2(4XC) data sheets.

### STANDARD SIZES

SIZE	INSIDE DIAMETER AS SUPPLIED (MIN)		INSIDE DIAMETER AFTER RECOVERY (MAX)		WALL THICKNESS AFTER RECOVERY (NOM)	
	INCH	(MM)	INCH	(MM)	INCH	(MM)
3/64	.046	1.2	.023	0.6	.016	0.40
1/16	.063	1.6	.031	0.8	.017	0.43
3/32	.093	2.4	.046	1.2	.020	0.51
1/8	.125	3.2	.062	1.6	.020	0.51
3/16	.187	4.8	.093	2.4	.020	0.51
1/4	.250	6.4	.125	3.2	.025	0.64
3/8	.375	9.5	.187	4.8	.025	0.64
1/2	.500	12.7	.250	6.4	.025	0.64
5/8*	.625	15.9	.313	7.9	.027	0.69
3/4	.750	19.1	.375	9.5	.030	0.76
1	1.000	25.4	.500	12.7	.035	0.89
1 1/4*	1.250	31.8	.625	15.9	.038	0.97
1 1/2	1.500	38.1	.750	19.1	.040	1.02
2	2.000	50.8	1.000	25.4	.045	1.14
3	3.000	76.2	1.500	38.1	.050	1.27
4	4.000	101.6	2.000	50.8	.055	1.40

**Standard Colors:** Black, White, Red, Yellow, Blue, Green, Violet, Gray, Orange (Other colors subject to factory approval and quote)

**Standard Package:** Spooled (S) or 4 foot lengths (4')

**How to Order:** (Type of material) (Size) (Color) (Packaging)

**Example:** B2 1/4 Black 4'

\* non - MIL spec sizes

# AWMS HEAT SHRINK MARKERS

**2:1 Mil Specs**

## B2 SPECIFICATION VALUES

PROPERTY (UNITS)	TEST METHOD	REQUIREMENT
<b>Physical:</b> Tensile strength (psi) Elongation (%) Specific gravity Low temperature flex (-55° C) Heat shock (250° C, 4 hrs.) Heat resistance (175° C, 168 hrs.) Elongation (%) Secant modulus (psi) Longitudinal change (%)	ASTM D638 ASTM D638 ASTM D792 AMS-DTL-23053 AMS-DTL-23053  ASTM D638 ASTM D882 AMS-DTL-23053	1500 min. 200 min. 1.35 max. no cracking no cracking  100 min. 2.5 X 10 <sup>4</sup> max. ±5
<b>Electrical:</b> Dielectric strength (volts/mil) Volume resistivity (ohm-cm)	ASTM D876 ASTM D876	500 min. 1.0 X 10 <sup>14</sup> min.
<b>Chemical:</b> Corrosion (175° C, 16 hrs.) Water absorption (%) Fluid resistance (23° C, 24 hrs.) Tensile strength (psi) Flammability Shrink temperature, nominal	AMS-DTL-23053 ASTM D570  AMS-DTL-23053 UL 224 VW-1	no corrosion 0.5 max.  1000 min. pass 90° C

**Specification references:** AMS-DTL-23053/5, Class 1 and Class 3.  
 UL 224 125° C, 600 V, VW-1 File E48762 YDPU2  
 CSA C22.2 No. 198.1-98



# AWMS HEAT SHRINK MARKERS

**3:1 Mil Specs**

## IMPACT® B2 (3X)

UL/CSA

**FLEXIBLE POLYOLEFIN THIN WALL  
3 : 1 Shrink Ratio**

**UL/ CSA RECOGNIZED 125° C 600V (VW-1)**

TYPICAL FEATURES	
<p>1) IMPACT® B2(3X) is a very flexible, flame-retarded, heat-shrinkable polyolefin tubing. B2(3X) is overexpanded to have a recovery ratio of 3 to 1, as opposed to the normal 2 to 1 recovery. B2(3X) is recognized by UL under Subject 224 as 125 C 600V with a VW-1 rating.</p> <p>2) IMPACT® B2(3X) meets the material and functional properties of AMS-DTL-23053/5, Classes 1 &amp; 3, with exception to dimensions.</p> <p>3) B2(3X) has a low recovery temperature of 90°C.</p>	<p>4) B2(3X) has an operating temperature range of 55°C to +135°C with up to 200°C for short duration.</p> <p>5) B2(3X) is recommended for use in general purpose applications for protection of components in light wire harness assemblies. It can be used where oversized sub-components prevent the use of a standard heat shrinkable tubing. It can also provide the user with better economies, as one size tubing can often replace 2 standard 2:1 expanded tubing sizes, thereby reducing inventories.</p>

STANDARD SIZES						
NOMINAL SIZE (MM)	INSIDE DIAMETER AS SUPPLIED (MIN)		INSIDE DIAMETER AFTER RECOVERY (MAX)		WALL THICKNESS AFTER RECOVERY (NOM)	
	INCH	(MM)	INCH	(MM)	INCH	(MM)
	1.5/0.5	.060	1.5	.020	0.5	.020
3/1	.120	3.0	.040	1.0	.024	.60
6/2	.240	6.0	.080	2.0	.028	.70
9/3	.360	9.0	.120	3.0	.031	.80
12/4	.480	12.0	.160	4.0	.033	.85
18/6	.720	18.0	.240	6.0	.039	1.0
24/8	.945	24.0	.315	8.0	.048	1.2
40/13	1.575	40.0	.515	13.0	.050	1.25
50/17	2.000	50.0	.670	17.0	.059	1.50
75/25	3.000	75.0	1.000	25.0	.065	1.65

# AWMS HEAT SHRINK MARKERS

**3:1 Mil Specs**

## B2 (3X) SPECIFICATION VALUES

PROPERTY (UNITS)	TEST METHOD	REQUIREMENT
<b>Physical:</b> Tensile strength (psi) Elongation (%) Specific gravity Low temperature flex (-55 <sup>0</sup> C) Heat shock Heat resistance (175 <sup>0</sup> C, 168 hrs.) Elongation (%) Secant modulus (psi) Longitudinal change (%)	ASTM D638 ASTM D638 ASTM D792 AMS-DTL-23053 AMS-DTL-23053  ASTM D638 ASTM D882 AMS-DTL-23053	1500 min. 200 min. 1.35 max. no cracking no cracking  100 min. 2.5 x 10 <sup>4</sup> max. +5, -15
<b>Electrical:</b> Dielectric strength (volts/mil) Volume resistivity (ohm-cm)	ASTM D876 ASTM D876	500 min. 1.0 X 10 <sup>14</sup> min.
<b>Chemical:</b> Corrosion Water absorption (%) Fluid resistance (23 <sup>0</sup> C, 24 hrs.) Tensile strength (psi) Flammability Shrink temperature, nominal	AMS-DTL-23053 ASTM D 570  AMS-DTL-23053 UL 224 VW-1	no corrosion 0.5 max.  1000 min. pass 90 <sup>0</sup> C

**Specification reference:** UL 224 125<sup>0</sup>C, 600V, VW-1  
 File E48762 YDPU2, Cat. No. B2(3X) or 826 suffix (3X)  
 CSA C22.2 No. 198.1-98



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