

## Thermal Transfer Printable Heat Shrink Tube (C5)

### PRODUCT SPECIFICATIONS:

#### Description:

Print Technology	Thermal Transfer
Material	Single Wall Polyolefin (3:1 shrink ratio)
Standard Colors	White, Yellow
Shrink temperature	Min. 70 °C
Full recovery temperature	Above 110 °C
Print operating temperature*1	5°C to 35°C
Service temperature	-55°C to 135°C
Storage Condition	From -10°C to 40°C and from 30% to 80% Relative Humidity

\*1: Print on tube under this condition.

#### Details

Model No.	TC or BR*	Recommend wire diameter (mm)	Supplied(mm) (Before shrinking)		Recovered(mm) (After shrinking)		Length of tube	Labels per roll
		(inch)	Inside diameter	Wall thickness	Inside diameter	Wall thickness		
		(AWG)						
203YLBWPX 203YLBYPX	TC	1.11 – 2.90mm 0.044" – 0.114" AWG 16-22	3.8+/-0.4	0.2+/-0.05	1.1 or less	0.44 or more	2.5(m) or more	1 roll (cont.)
(New) B203YLBWPX (New) B203YLBYPX	BR	1.11 – 2.90mm 0.044" – 0.114" AWG 16-22	3.8+/-0.4	0.2+/-0.05	1.1 or less	0.44 or more	15(m) or more	1 roll (cont.)
(New) BL203YLBWX25PX	BR	1.11 – 2.90mm 0.044" – 0.114" AWG 16-22	3.8+/-0.4	0.2+/-0.05	1.1 or less	0.44 or more	26.0+/-0.6 (mm)	500 (pcs)
BL203STBWX25PX BL203STBYX25PX	BR	1.4mm - 3.1mm 0.056" - 0.122" AWG 14-22	4.0+/-0.4	0.20+/-0.05	1.1+/-0.3	0.5 +/- 0.1	26.0+/-0.6 (mm)	500 (pcs)
205YLBWPX	TC	1.9mm - 4.9mm 0.075" – 0.193" AWG 10-18	5.7+/-0.3	0.2+/-0.06	1.9 or less	0.55+/-0.12	2.5(m) or more	1 roll (cont.)
(New) 208YLBWPX (New) 208YLBYPX	TC	2.4 – 6.6 0.095 – 0.260	7.5+/-0.4	0.22+/-0.05	2.4 or less	0.44 or more	More than 2.5(m)	1 roll (cont.)

		AWG 6-18						
(New) B208YLBWPX (New) B208YLBYPX	BR	2.4 – 6.6	7.5+/-0.4	0.22+/-0.05	2.4 or less	0.44 or more	More than 15(m)	1 roll (cont.)
		0.095 – 0.260						
		AWG 6-18						
BL208STBWX35PX BL208STBYX35PX	BR	2.4mm - 6.0mm	7.00+/-0.5	0.22+/-0.05	2.1+/-0.3	0.55+/-0.1	36.0+/-0.6 (mm)	400 (pcs)
		0.095" - 0.236"						
		AWG 6-18						

\*: TC stands for Tape Cartridge. BR for Bulk Roll for LW-Z5000/5010 series.

Recovered Wall Thickness is a reference.

## APPLICATIONS

Wire and cable identification

Color identification for wire and cable

## REGULATORY/ AGENCY APPROVALS

### UL/cUL:

Epson Heat Shrink Tube is compliant to UL224. Rating temp.: 125°C / Rating voltage: 600V / VW-1



You may refer to details on [www.ul.com](http://www.ul.com) under catalog No. Y-C5 on file No. E510889.

### RoHS:

Epson Heat Shrink Tube is compliant to RoHS Standards to Directive (2011/65/ EU Annex II) with amendment (EU)2015/863.

### REACH

Epson Heat Shrink Tube is compliant to Regulation (EC) No 1907/2006 - Registration, Evaluation, Authorization and Restriction of Chemicals (REACH).

### SAE:

Epson Heat Shrink Tube meets SAE AS81531 for Marking of Electrical Insulating Materials.

Epson Heat Shrink Tube meet the material and physical property requirements of SAE-AMS-DTL-23053/5\* Class1 for Insulation Sleeving. \*Does Not meet SAE-AS23053.

## PROPERTIES

Properties	Test method	Average result
UV resistance	1.24kW/m <sup>2</sup> irradiance, B.P.T 63 °C and 50% RH	Slight discoloration, Printed text can be identified

Short High service temperature	Putting on stainless rod	
	260 °C (5 minutes)	Slight discoloration, Printed text can be identified
	180 °C (24 hours)	Slight discoloration, Printed text can be identified
High service temperature	Putting on stainless rod at 40°C/ 80% RH, 90°C for 700 hours	No visible effect
Low Service Temperature	Putting on stainless rod at -40°C for 700 hours	No visible effect
Abrasion Resistance	1. 40 cycles on 500gf pressure by Japanese 10 Yen coin	No visible effect
	2. 50 cycles on 2kgf pressure by plastic eraser.	No visible effect
	3. 100 cycles on 500gf pressure by cotton swab containing ethanol	Printed text disappears

Property	Specification requirement	Test method	Typical value
Longitudinal change	≤10%	ASTM D2671	≤5%
Tensile strength	≥10.3MPa	ASTM D638	≥12MPa
Elongation at break	≥200%	ASTM D638	≥400%
Elongation at break after aging	≥100%	ASTM D638 (175°C/168 hrs)	≥400%
Heat shock	No cracking	ASTM D2671 (225°C/4 hrs)	No cracking
Low temperature flexibility	No cracking	ASTM D2671 (-55°C/4 hrs)	No cracking
Dielectric voltage withstands	AC2500V/60S No breakdown	ASTM D2671	No breakdown
Dielectric strength	≥19.7kV/mm	ASTM D2671	≥25kV/mm
Volume resistivity	≥10 <sup>14</sup> Ω·cm	ASTM D876	≥10 <sup>14</sup> Ω·cm
Copper corrosion	No corrosion	ASTM D2671	No corrosion
Print performance	Print legible after 50 rubs Print legible after 30 strokes	SAE AS81531 MIL-STD-202	Pass
Fluid resistance	Print legible	SAE AS81531 (23°C/24 hrs)	Pass
Flammability	Self-extinguishing within 1 minute after fire source removed	UL224	Pass

## CHEMICAL/ SOLVENT RESISTANCE

Print HST, and shrink on glass rod of  $\Phi 3\text{mm} \times 100\text{mm}$ . Then sink it into each chemical / solvent in a test tube for 10 minutes. After taking away from a test tube, leave for 30 minutes. Repeat this cycle for 5 times. Finally, rub prints on HST with cotton swab.

Note: Did not rub when HST was dropped from a rod due to deformation of HST.

Chemical reagents	Results	
	Tube and printing without swab rub	Printing with swab rub
Trichloroethane	No effect	No effect
Sodium Hypochlorite	No Effect	No Effect
Ammonia (10%)	Tube slight fade on 4 <sup>th</sup> turn, print legible	No Effect
Sulfuric Acid (10%)	No Effect	No Effect
Hydrogen Chloride (30%)	Tube slight fade on 5 <sup>th</sup> turn, print legible	No Effect
Salt Water (5%)	No Effect	No Effect
Acetic Acid	No Effect	No Effect
Sodium Hydroxide (50%)	No Effect	Swab slight get black, print legible
Terpene Cleaner	Tube deform on 2 <sup>nd</sup> turn, but returned to its normal form after 30 min. On 5 <sup>th</sup> time, dropped off. Print legible	(Cannot rub)
Fomula409 (Cleaner)	No Effect	No Effect
MIL-H-5606 Oil	No Effect	Swab slight get black, print legible
Mil 7808 Oil	No Effect	No Effect
Brake Cleaner	No Effect	No Effect
Fluid type rust preventive	Tube slight deform to wavy on 4 <sup>th</sup> turn, print legible	No Effect
Brake Fluid DOT4	No Effect	No Effect
Engine Oil	No Effect	No Effect
Cleaning Solvent	No Effect	No Effect
Acetone	No Effect	No Effect
Isopropyl Alcohol	No Effect	No Effect
Ethanol	No Effect	No Effect
Gasoline	No Effect	No Effect
Jet fuel (JP-8)	No Effect	Swab slight get black, print legible
Toluene	Tube slight deform to wavy on 4 <sup>th</sup> turn, print legible	No Effect
Hexane	No Effect	No Effect
Heptane	No Effect	No Effect

Water	No Effect	No Effect
Mineral Spirit	No Effect	No Effect
Methanol	No Effect	No Effect
Ethyl Methyl Ketone	No Effect	No Effect
Ethyl Acetate	No Effect	No Effect

Note:

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