Technical Data Sheet

BRADY B-312 POWER SYSTEMS GRADE PERMASLEEVE MARKER

TDS No. B-312
Effective Date: 9/11/2026

Description:

GENERAL
Print Technology: Thermal transfer
Material Type: Irradiated polyolefin heat shrink tubing (3:1 shrink ratio)

APPLICATIONS
Wire identification and insulation purposes

RECOMMENDED RIBBONS
Brady Series R4300 for thermal transfer printing general purpose ribbon.
Brady Series R6600 for thermal transfer printing best smear and chemical resistance.

REGULATORY/AGENCY APPROVALS
UL: B-312 is a UL Recognized Component to UL224 Extruded Insulated Tubing. See UL file E333786 for specific details.

For information on the Weee-RoHS compliance status for a Brady Product go to one of the following websites:
In Canada: www.bradycanada.ca/weee-rohs
In Europe: www.bradyeurope.com/rohs
In Japan: www.brady.co.jp/products/labelsuse/rohs
All other regions: www.bradyid.com/weee-rohs

SPECIAL FEATURES
The operating temperature range is -55°C (-67°F) to +125°C (+257°F).

A minimum recovery temperature of 155°C (311°F) is recommended for B-312 PermaSleeve® markers.

B-312 is available in white.

Details:

MARKER SIZE		RANGE OF WIRE DIAMETER (in)	RANGE OF WIRE DIAMETER (mm)
1/8"	PG-125, 3PG-125	0.046 - 0.110	1.17 - 2.79
3/16"	PG-187, 3PG-187	0.062 - 0.150	1.57 - 3.81
1/4"	PG-250, 3PG-250	0.094 - 0.215	2.39 - 5.46
3/8"	PG-375, 3PG-375	0.125 - 0.320	3.18 - 8.13

Shrink Method: Any industrial grade heat gun may be used to shrink B-312 PermaSleeve Power Systems Grade Sleeve.

B-312 white was tested/printed with R4300 and R6600 Series thermal transfer ribbons. Results are the same with all processes and ribbons unless stated otherwise.

PERFORMANCE PROPERTIES	TEST METHODS	AVERAGE RESULTS
High Service Temperatures	5 minutes at 500°F (260°C)	Slight tube darkening and yellowing
	24 hours at 350°F (180°C)	Slight tube darkening and yellowing
	1000 hours at 267°F (130°C)	Slight tube darkening and yellowing No visible change to printing in above conditions (R4300 or R6600)
Low Service Temperature	1000 hours at 94°F (70°C)	No visible effect

Weatherability	ASTM G155 Cycle 1 1000 hours in Xenon Arc Weatherometer	Slight tube yellowing
UV Light Resistance	ASTM G155 Cycle 1 dry 1000 hours	Slight tube yellowing No visible change to printing
Humidity Resistance	1000 hours at 100°F/95% R.H.	No visible effect
Salt Fog	1000 hours in 5% Salt Fog Chamber per ASTM B117	Slight tube yellowing No visible change to printing
Dielectric Strength	ASTM D2671 (after unrestricted shrink)	500 volts/mil minimum
Flammability	ASTM D2671, Procedure B	Self-extinguishing within 60 seconds
Print Adherence per SAE-AS81531 (Sec 3.4.2)	Samples tested after unrestricted shrink at 200°C for 3 minutes 20 eraser rubs with hard hand pressure	R4300: Slight print fade, print legible R6600: No visible effect
Solvent Resistance	MIL-STD-202 method 215K with Change 1, 3 cycles of 3-minute immersions in specified fluids followed by toothbrush rub after each immersion B342 white printed with R4300 and R6600, tested after unrestricted shrink at 200°C for 3 minutes	No visible effect

B-312 white was thermal transfer printed using the Brady Series R4300 ribbon and shrunk on appropriate size wires. Test conducted at room temperature after 24-hour dwell. Testing consisted of 5 cycles of 10-minute immersions in the specified chemical reagent followed by 30-minute recovery periods. Samples rubbed with cotton swab after final immersion.

CHEMICAL REAGENT	SUBJECTIVE OBSERVATION OF VISUAL CHANGE	
	TUBING AND PRINTING WITHOUT SWAB RUB	PRINTING WITH SWAB RUB
Methyl Ethyl Ketone	No visible effect	Moderate print fade, print legible
Isopropyl Alcohol	No visible effect	Slight print fade, print legible
JP-8 Jet Fuel	No visible effect	Severe print fade, print illegible
Kerosene	No visible effect	Moderate print fade, print legible
Mil 5606 Oil	Tubing stained red, no visible effect on printing	Severe print fade, print legible
Mil 7808 Oil	No visible effect	Slight print fade, print legible
Speedi Kut Cutting Oil 332	No visible effect	Moderate print fade, print legible
Gasoline	No visible effect	Severe print fade, print illegible
Rust Veto® 377	Tubing stained orange, no visible effect on printing	Severe print fade, print legible
Skydrol® 500B-4	No visible effect	Moderate print fade, print legible
Propylene Glycol	No visible effect	No visible effect
Super Agitene®	No visible effect	Severe print fade, print legible
BIOACT® EC-7R™ Terpene Cleaner	No visible effect	Severe print fade, print illegible
Deionized Water	No visible effect	No visible effect
3% Alconox® Detergent	No visible effect	No visible effect
5% Salt Water Solution	No visible effect	No visible effect

B-312 white was thermal transfer printed using the Brady Series R6600 ribbon and shrunk on appropriate size wires. Test conducted at room temperature after 24-hour dwell. Testing consisted of 5 cycles of 10-minute immersions in the specified chemical reagent followed by 30-minute recovery periods. Samples rubbed with cotton swab after final immersion.

CHEMICAL REAGENT	SUBJECTIVE OBSERVATION OF VISUAL CHANGE	
	TUBING AND PRINTING WITHOUT SWAB RUB	PRINTING WITH SWAB RUB
Methyl Ethyl Ketone	No visible effect	No visible effect
Isopropyl Alcohol	No visible effect	No visible effect
JP-8 Jet Fuel	No visible effect	No visible effect
Kerosene	No visible effect	No visible effect

Mil 5606 Oil	Tubing stained red on edges, no visible effect on printing	No visible effect
Mil 7808 Oil	No visible effect	No visible effect
Speedi Kut Cutting Oil 332	No visible effect	No visible effect
Gasoline	No visible effect	Slight print fade, print legible
Rust Veto® 377	Tubing stained orange, no visible effect on printing	No visible effect
Skydrol® 500B-4	No visible effect	No visible effect
Propylene Glycol	No visible effect	No visible effect
Super Agitene®	No visible effect	No visible effect
BIOACT® EC-7R™ Terpene Cleaner	No visible effect	Slight print fade, print legible
Deionized Water	No visible effect	No visible effect
3% Alconox® Detergent	No visible effect	No visible effect
5% Salt Water Solution	No visible effect	No visible effect

Shelf Life:
Shelf life is five years from the date of receipt for this product as long as this product is stored in its original packaging in an environment at 32-95 degrees °F (035 degrees °C) per SAE AS23053/5. It remains the responsibility of the user to assess the risk of using this product. We encourage customers to develop testing protocols that will qualify a product's fitness for use in their actual applications.

Trademarks:
ASTM: American Society for Testing and Materials (U.S.A.)
Alconox® is a registered trademark of Alconox Co.
All S.I. Units (metric) are mathematically derived from the U.S.
Conventional BIOACT® is a registered trademark of Petroferm, Inc.
EC-7R™ is a trademark of Petroferm Inc.
PermaSleeve® is a registered trademark of Brady Worldwide, Inc.
Rust Veto® is a registered trademark of the E.F. Houghton & Co.
SAE: Society of Automotive Engineers (U.S.A.)
Skydrol® is a registered trademark of the Monsanto Company Super
Agitene® is a registered trademark of Graymills Corporation
UL: Underwriters Laboratories Inc. (U.S.A.)

Note: All values shown are averages and should not be used for specification purposes.
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