BRADY
WHEN PERFORMANCE MATTERS MOST™

Technical Data Sheet

BRADY B-341 PERMASLEEVE MARKER

TDS No. B-341
Effective Date: 02/21/2000

Description:
B-341 PermaSleeve™ Markers are heat shrinkable (2:1 shrink ratio), flexible polyolefin sleeves used for wire identification and insulation purposes.

B-341 PermaSleeve™ Markers are supplied roll form in a flattened format on a carrier designed for use with both dot matrix and transfer thermal printers. B-341 is available in white and yellow colors.

The Brady R5000 Series high performance ribbon is recommended for best dot matrix print performance. The Brady R4300 Series ribbon is recommended for best thermal transfer print performance.

B-341 PermaSleeve™ Markers meet the requirements of MIL-DTL-23053/5C (class 1) for Insulation Sleeving, MIL-M-81531 for Marking of Electrical Insulating Materials when printed with R5000 and R4300 ribbons, and UL 224 (Table 30.8).

Details:

MARKER SIZE		RANGE OF WIRE DIAMETER (in)	RANGE OF WIRE DIAMETER (mm)
3/32"	PS-094	0.047 - 0.080	1.19 - 2.03
1/8"	PS-125	0.062 - 0.110	1.57 - 2.79
3/16"	PS-187	0.094 - 0.150	2.39 - 3.81
1/4"	PS-250	0.125 - 0.215	3.18 - 5.46
3/8"	PS-375	0.188 - 0.320	4.78 - 8.13
1/2"	PS-500	0.250 - 0.450	6.35 - 11.43
1"	PS-1000	0.450 - 0.950	11.43 - 24.13

Shrink Method: Any industrial grade heat gun may be used to shrink B-341 PermaSleeve™ Markers.

PHYSICAL PROPERTIES	TEST METHODS	AVERAGE RESULTS
High Service Temperatures	5 minutes at 500°F (260°C) 24 hours at 350°F (180°C) 1000 hours at 267°F (130°C)	Slight tubing discoloration, no visible effect to printing
Low Service Temperature	1000 hours at -40°F (-40°C)	No visible effect
Weatherability	ASTM G155, Cycle 1 1000 hours in Xenon Arc Weatherometer	Slight discoloration (white), moderate tubing fade (yellow), very slight print fade
UV Light Resistance	1000 hours in UV Sunlighter ™ 100	Slight discoloration (white), slight tubing fade (yellow), very slight print fade
Humidity Resistance	1000 hours at 100°F/95% R.H.	No visible effect
Salt Fog	1000 hours at 5% Salt Spray	No visible effect
Dielectric Strength	ASTM D 2671 (after unrestricted shrink)	500 volts/mil minimum
Flammability	Fed. STD-228, Method 5221 (Tubing shrunk on metal rod)	Self-extinguishing within 60 seconds
Marking Permanence MIL-M-81531 20 erasure rubs MIL-STD-202, Method 215J Solution A Solution C Solution D	Samples tested heat shrunk 20 eraser rubs with hard hand pressure 3 cycles of 3 minute immersions in specified fluids followed by toothbrush rub after each immersion.	Print still easily legible Print still easily legible in all three test fluids

B-341 white and yellow samples tested printed with R5000 Series dot matrix ribbon and R4300 thermal transfer ribbon. Results the same with both ribbons unless stated otherwise.

Solution A: 1 part isopropyl alcohol, 3 parts mineral spirits
Solution B: deleted from MIL-STD-202, method 215J
Solution C: BIOACT® EC-7R™ terpene defluxer
Solution D: 42 parts water, 1 part propylene glycol monomethyl ether, 1 part monoethanolamine at 70°C

PERFORMANCE PROPERTY	TEST METHOD
Chemical Resistance	See Below

B-341 white samples dot matrix printed using Brady R5000 Series 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
1,1,1-Trichloroethane	No visible effect	Severe print fade, barely legible
Isopropyl Alcohol	No visible effect	Slight print fade
JP-8 Jet Fuel	No visible effect	Slight print fade
Mil 5606 Oil	Topcoat slightly stained red	Slight print fade
Mil 7808 Oil	No visible effect	Slight print fade
Speedi Kut Cutting Oil 332	No visible effect	Slight print fade
Gasoline	No visible effect	Moderate print fade, print legible
Rust Veto® 377	Tubing stained orange, no visible effect on printing	Moderate print fade, print legible
Skydrol® 500B-4	No visible effect	Moderate print fade, print legible
Super Agitene®	No visible effect	Moderate print fade, print legible
BIOACT® EC-7R™ Terpene Cleaner	No visible effect	Moderate print fade, print legible
Deionized Water	No visible effect	No visible effect
3% Alconox® Detergent	No visible effect	No visible effect
5% Salt (NaCl) Solution	No visible effect	No visible effect
Kerosene	No visible effect	Slight print fade
Propylene Glycol	No visible effect	Slight print fade

PERFORMANCE PROPERTY	TEST METHOD
Chemical Resistance	See Below

B-341 white samples were thermal transfer printed using R4300 Series 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	Slight print fade
1,1,1-Trichloroethane	No visible effect	Moderate print fade, print legible
Isopropyl Alcohol	No visible effect	Slight print fade
JP-8 Jet Fuel	No visible effect	Slight print fade
Mil 5606 Oil	Tubing stained red, no visible effect on printing	Moderate print fade, print legible
Mil 7808 Oil	No visible effect	Slight print fade
Speedi Kut Cutting Oil 332	No visible effect	Slight print fade
Gasoline	No visible effect	Moderate print fade, barely legible
Rust Veto® 377	Tubing stained orange, no visible effect on printing	Moderate print fade, print legible
Skydrol® 500B-4	No visible effect	Moderate print fade, print legible
Super Agitene®	No visible effect	Moderate print fade, print legible
BIOACT® EC-7R™ Terpene Cleaner	No visible effect	Moderate print fade, print legible
Deionized Water	No visible effect	No visible effect
3% Alconox® Detergent	No visible effect	No visible effect
5% Salt (NaCl) Solution	No visible effect	No visible effect
Propylene Glycol	No visible effect	Slight print fade
Kerosene	No visible effect	Moderate print fade, print legible

Product testing, customer feedback, and history of similar products, support a customerperformance expectation of at least***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 65-95 degrees F (18-35 degrees C) per MIL-DTL-23053/5C*. We are confident that our product will perform well beyond this time frame. However, it remains the responsibility of the user to assess the risk of using such product. We encourage customers to develop functional testing protocols that will qualify a product's fitness for use, in their actual applications.

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

Note: All values shown are averages and should not be used for specification purposes.
Test data and test results contained in this document are for general information only and shall not be relied upon by Brady customers for designs and specifications, or be relied on as meeting specified performance criteria. Customers desiring to develop specifications or performance criteria for specific product applications should contact Brady for further information.

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