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## Technical Data Sheet

TDS No. B-342

Effective Date: 02/21/2000

### BRADY B-342 PERMASLEEVE MARKER

#### Description:

B-342 PermaSleeve™ Markers are heat shrinkable (3:1 shrink ratio), flexible polyolefin sleeves used for wire identification and insulation purposes.

B-342 PermaSleeve™ Markers are supplied roll form in a flattened format on a carrier designed for use with both dot matrix and thermal transfer printers. B-342 is available in white, yellow, black and other colors.

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

The Brady R4502S silver ribbon is recommended for **thermal** transfer printing of black markers.

B-342 PermaSleeve™ Markers meet the material and physical property requirements of MIL-DTL-23053/5C (class 1) for Insulation Sleeving, and MIL-M-81531 for Marking of Electrical Insulating Materials when printed with R5000 dot matrix and R4300 and R4502S (for black sleeves only) **thermal** transfer ribbons.

#### Details:

MARKER SIZE		RANGE OF WIRE DIAMETER (in)	RANGE OF WIRE DIAMETER (mm)
3/32"	3PS-094	0.023 - 0.080	0.58 - 2.03
1/8"	3PS-125	0.046 - 0.110	1.17 - 2.79
3/16"	3PS-187	0.062 - 0.150	1.57 - 3.81
1/4"	3PS-250	0.094 - 0.215	2.39 - 5.46
3/8"	3PS-375	0.125 - 0.320	3.18 - 8.13
1/2"	3PS-500	0.187 - 0.450	4.75 - 11.43

Shrink Method: Any industrial grade heat gun may be used to shrink B-342 PermaSleeve™ Markers.

B-342 white and yellow samples tested printed with R5000 Series dot matrix and R4300 Series **thermal** transfer ribbons. B-342 black samples tested printed with R4502S silver **thermal** transfer ribbon. Results the same with all ribbons unless stated otherwise.

PERFORMANCE 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 G 26 1000 hours in Xenon Arc Weatherometer	Slight discoloration (white), moderate tubing fade (yellow), very slight print fade, no visible effect to black marker
UV Light Resistance	1000 hours in UV Sunlighter™ 100	Slight discoloration (white), slight tubing fade (yellow), very slight print fade, no visible effect to black marker
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

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	CHEMICAL RESISTANCE
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B-342 white samples were 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
Kerosene	No visible effect	Slight print fade
Mil 5606 Oil	Tubing stained red, no visible effect on printing	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	Severe print fade, barely legible
Propylene Glycol	No visible effect	Slight print fade
Super Agitene®	No visible effect	Moderate print fade, print legible
BIOACT® EC-7R™ Terpene Cleaner	No visible effect	Severe print fade, barely 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

B-342 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	Severe print fade, barely legible
Isopropyl Alcohol	No visible effect	Slight print fade
JP-8 Jet Fuel	No visible effect	Moderate print fade, print legible
Kerosene	No visible effect	Moderate print fade, print legible
Mil 5606 Oil	Tubing stained red, no visible effect on printing	Moderate print fade, print legible
Mil 7808 Oil	No visible effect	Moderate print fade, print legible
Speedi Kut Cutting Oil 332	No visible effect	No visible effect
Gasoline	No visible effect	Severe 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
Propylene Glycol	No visible effect	Slight print fade
Super Agitene®	No visible effect	Slight print fade
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 Water Solution	No visible effect	No visible effect

B-342 black samples were **thermal** transfer printed using R4502S silver 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
1,1,1-Trichloroethane	No visible effect	Moderate print fade
Isopropyl Alcohol	No visible effect	No visible effect
JP-8 Jet Fuel	No visible effect	Moderate print fade, print legible
Kerosene	No visible effect	Moderate print fade, print legible
Mil 5606 Oil	No visible effect	No visible effect
Mil 7808 Oil	No visible effect	No visible effect
Speedi Kut Cutting Oil 332	No visible effect	Slight print fade
Gasoline	No visible effect	Severe print fade, barely legible
Rust Veto® 377	No visible effect	Moderate 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	Moderate print fade, print legible
BIOACT® EC-7R™ Terpene Cleaner	No visible effect	Severe print fade, barely 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

Product testing, customer feedback, and history of similar products, support a customer performance 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 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.

**Trademarks and References:** 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.)

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.

#### WARRANTY

Brady products are sold with the understanding that the buyers will test them in actual use and determine for themselves their adaptability to their intended uses. Brady warrants to the buyers that its products are free from defects in material and workmanship, but limits its obligation under this warranty to replacement of the product shown to Brady's satisfaction to have been defective at the time Brady sold it. This warranty does not extend to any persons obtaining the product from the buyers. **This warranty is in lieu of any other warranty, express or implied, including, but not limited to, any implied warranty of merchantability or fitness for a particular purpose, and of any other obligations or liability on Brady's part. Under no circumstances will Brady be liable for any loss, damage, expense, or consequential damages of any kind arising in connection with the use, or inability to use, Brady's products.**

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