B-321 - Technical Data Sheet

BRADY B-321:
BRADYSLEEVE MARKER

TDS No. B-321

Effective Date: 06-Jun-2008

Description:

GENERAL

Print Technology: Dot matrix and thermal transfer

Material Type: Heat shrinkable, high density polyolefin film

Finish: Sleeves suplied in various configurations including pin-feed roll.

APPLICATIONS

B-321 BradySleeve™ Markers are used to identify electrical wires and cables used in the manufacturing and construction industries, or in maintenance activities where specifications or environments require the use of sleeves.

The special print receptive topcoating on the sleeves absorbs printing inks and provides permanent legibility, even under severe conditions.

RECOMMENDED RIBBONS

Brady R5000 Series and R2000 Series for dot matrix printing

Brady R6200 Series for thermal transfer printing

REGULATORY/AGENCY APPROVALS

Brady B-321 is RoHS complaint to 2005/618/EC MCV amendment to RoHS Directive 2002/95/EC.

Note- Past B-321 in the market is RoHS compliant using Exemption 10a for DecaBDE in Polymeric Materials (10/13/2005). Materials labeled with RoHS compliant statement on product packaging is PBDE free and is RoHS compliant without Exemption 10a for DecaBDE.

Details:

MARKER SIZE		RANGE OF WIRE DIAMETER (in)	RANGE OF WIRE DIAMETER (mm)
0.250"	HCPS-2508	0.035-0.075	0.89-1.90
0.333"	HCPS-3336	0.075-0.130	1.90-3.30
0.375"	HCPS-3758	0.130-0.160	3.30-4.06
0.500"	HCPS-5008	0.160-0.235	4.06-5.97
0.625"	HCPS-6258	0.235-0.290	5.97-7.36
0.667"	HCPS-6676	0.290-0.335	7.36-8.51
0.750"	HCPS-7508	0.335-0.390	8.51-9.91
0.833"	HCPS-8336	0.390-0.440	9.91-11.17
1.00"	HCPS-1008	0.375-0.540	9.53-13.72
0.350"	PPS-350	0.085-0.140	2.16-3.56
0.500"	PPS-500	0.160-0.235	4.06-5.97
0.750"	PPS-750	0.335-0.390	8.51-9.91
1.00"	PPS-100	0.375-0.540	9.53-13.72
0.350"	PTS-350	0.085-0.140	2.16-3.56
0.500"	PTS-500	0.160-0.235	4.06-5.97
0.750"	PTS-750	0.335-0.390	8.51-9.91
1.00"	PTS-1000	0.375-0.540	9.53-13.72

Shrink Method: Any industrial grade heat gun may be used to shrink B-321 BradySleeve™ markers.

PERFORMANCE PROPERTIES	TEST METHOD	TYPICAL RESULTS
Total Sleeve Thickness	ASTM D 1000	0.0170 inch (0.43 mm)
Sleeve Wall Thickness (unshrunk)	ASTM D 1000	0.0065 inch (0.16 mm)
Tensile and Elongation of Sleeve Film	ASTM D 882 Machine direction, 20 in/min crosshead speed	26 lb/inch (525 N/100 mm), 650% elongation
High Service Temperatures	5 minutes at 392°F (200°C) 24 minutes at 320°F (160°C) 1000 hours at 248°F (120°C)	Slight discoloration of sleeves but still easily functional, no visible effect to printing.
Low Service Temperature	1000 hours at -40°F (-40°C)	No visible effect
Humidity Resistance	1000 hours at 100°F/95% R.H.	No visible effect

UV Light Resistance	ASTM G155, Cycle 1 without water spray 1000 hours in Xenon Arc Chamber	Yellow discoloration of topcoat. Print still legible.
Weatherability	ASTM G155, Cycle 1 1000 hours in Xenon Arc Weatherometer	Slight yellow discoloration of topcoat. Print still legible.
Salt Fog Resistance	1000 hours at 5% Salt Spray	No visible effect
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 3 test fluids

Samples tested printed with R2000 and R5000 Series dot matrix ribbon and R6200 thermal transfer ribbon. Results the same with all 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

Samples dot-matrix printed using Brady R2000 Series ribbons 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	Print removed
Toluene	No visible effect	Print removed
Isopropyl Alcohol	No visible effect	No visible effect

JP-8 Jet Fuel	No visible effect	No visible effect
Kerosene	No visible effect	Slight print fade
Mil 5606 Oil	Topcoat slightly stained red	No visible effect
Mil 7808 Oil	Topcoat slightly stained brown	No visible effect
Speedi Kut Cutting Oil 332	No visible effect	No visible effect
Gasoline	No visible effect	Slight print fade
Rust Veto® 377	Topcoat slightly stained orange	No visible effect
Skydrol® 500B-4	No visible effect	Slight print fade
Super Agitene®	No visible effect	No visible effect
BIOACT® EC-7R™ Terpene Cleaner	No visible effect	No visible effect
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	No visible effect

Samples dot-matrix printed using Brady R5000 Series ribbons 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	Print removed
Toluene	No visible effect	Print removed
Isopropyl Alcohol	No visible effect	No visible effect
JP-8 Jet Fuel	No visible effect	No visible effect
Kerosene	No visible effect	slight print fade
Mil 5606 Oil	Topcoat slightly stained red	No visible effect
Mil 7808 Oil	Topcoat slightly stained brown	No visible effect
Speedi Kut Cutting Oil 332	No visible effect	No visible effect
Gasoline	No visible effect	Slight print fade
Rust Veto® 377	Topcoat slightly stained orange	No visible effect
Skydrol® 500B-4	No visible effect	Moderate print fade

Super Agitene®	No visible effect	Slight print fade
BIOACT® EC-7R™ Terpene Cleaner	No visible effect	Slight print fade
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	No visible effect

Samples thermal transfer printed using Brady R6200 Series ribbons 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</ font>	**PRINTING WITH SWAB RUB**
Methyl Ethyl Ketone	No visible effect	Print removed
Toluene	No visible effect	Print removed
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	Topcoat slightly stained red	Slight print fade
Mil 7808 Oil	Topcoat slightly stained brown	No visible effect
Speedi Kut Cutting Oil 332	No visible effect	Slight print fade
Gasoline	No visible effect	Slight print fade
Rust Veto® 377	Topcoat slightly stained orange	Slight print fade
Skydrol® 500B-4	No visible effect	Print removed
Super Agitene®	No visible effect	Slight print fade
BIOACT® EC-7R™ Terpene Cleaner	No visible effect	Slight print fade
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	No visible effect

Product testing, customer feedback, and history of similar products, support a customerperformance expectation of at least***two years from the date of receipt*** for this product as long as this product is stored in its original packaging in an

environment *below 104 degrees F and 40-50% RH* . 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:
Alconox® is a registered trademark of Alconox Co.
BIOACT® is a registered trademark of Petroferm, Inc.
BradySleeve™ is a trademark of Brady Worldwide, Inc.
EC-7R™ is a trademark of Petroferm Inc.
Rust Veto® is a registered trademark of the E.F. Houghton & Co.
Skydrol® is a registered trademark of the Monsanto 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.

Product compliance information is based upon information provided by suppliers of the raw materials used by Brady to manufacture this product or based on results of testing using recognized analytical methods performed by a third party, independent laboratory. As such, Brady makes no independent representations or warranties, express or implied, and assumes no liability in connection with the use of this 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.