Technical Data Sheet

BRADY B-7642 PERMASLEEVE® MARKER

TDS No. B-7642
Effective Date: 10/25/2016

Description:

GENERAL
Print Technology: Thermal transfer
Material Type: Heat shrinkable (2:1) polyolefin sleeves

APPLICATIONS
Wire identification and insulation purposes

RECOMMENDED RIBBONS
Brady R4300 Series
Brady R6400 Series
Brady R6600 Series
Brady R6000 Halogen Free Series

SPECIAL FEATURES
B-7642 PermaSleeve® Markers are supplied roll form in a flattened format on a carrier designed for use with computer driven printers. B-7642 is available in white and yellow. Other colors are available for specials.

B-7642 PermaSleeve® Markers meet the material and functional requirements of SAE-AMS-DTL-23053/5 (Class 1 and 3) for Insulation Sleeving.

REGULATORY/AGENCY APPROVALS
Brady B-7642 is compliant to 2005/618/EC MCV amendment to RoHS Directive 2002/95/EC.

Details:

B-7642 is available in following dimensions

Sizes Inches	Size mm	Minimum ID Supplied (mm)	Maximum ID Recovered (mm)	Recovered Wall Thickness (mm)
3/32	2.4	2.4	1.2	0.51 ± 0.07
1/8	3.2	3.2	1.6	0.51 ± 0.07
3/16	4.8	4.8	2.4	0.51 ± 0.07
1/4	6.4	6.4	3.2	0.64 ± 0.07
3/8	9.5	9.5	4.7	0.64 ± 0.07

1/2	12.7	12.7	6.4	0.64 ± 0.07
3/4	19.1	19.1	9.5	0.76 ± 0.07
1	25.4	25.4	12.7	0.89 ± 0.07
1 1/2	38.1	38.1	19.1	1.02 ± 0.07
2	50.8	50.8	25.4	1.14 ± 0.07

Shrink method: Any industrial grade heat gun may be used to shrink B-7642 PermaSleeve® Markers

PHYSICAL PROPERTIES	TEST METHODS	STANDARD REQUIREMENT	TYPICAL VALUE
Tensile Strength	ASTM D 638	10.3 Mpa min.	14MPa
Elongation at break	ASTM D 638	200% min.	410%
Longitudinal Change	SAE-AMS-DTL-23053	± 5%	0%
Specific Gravity	ASTM D 792	1.35 g/cm^3 max.	1.34 g/cm^3
Secant Modulus	ASTM D 882	173 MPa max.	65 MPa

ELECTRICAL PROPERTIES	TEST METHODS	STANDARD REQUIREMENT	TYPICAL VALUE
Dielectrical Strength	ASTM D 876	19.7 kV/mm min.	37 kV/mm
Volume Resistivity	ASTM D 876	10^{14} ohm.cm, min.	$3.1X10^{14}$ Ohm-cm
Dielectric voltage withstand (2.5kVx60s)	UL224	No breakdown	Pass

TEMPERATURE PROPERTIES	TEST METHODS	STANDARD REQUIREMENT	TYPICAL VALUE
Heat shock 4 hours at 225℃	SAE AMS-DTL-23053	No dripping, cracking of flowing	Pass
Elongation after Heat aging 168 hours 175℃	SAE AMS-DTL-23053	Min. Elongation 100%	420%
Low temperature Flexibility -55℃ for 4 hours	SAE AMS-DTL-23053	No cracking	Pass
Copper corrosion (175℃ x 16 hours)	SAE AMS-DTL-23053	No corrosion	Pass
Operation temperature	SAE AMS-DTL-23053	SAE AMS-STD-104	Pass

(175℃ x 24 hours)		Class 1	

CHEMICAL PROPERTIES	TEST METHODS	STANDARD REQUIREMENT	TYPICAL VALUE
Flammability	UL 224, VW-1	60s max.	Pass
Water absorption	ASTM D 570	0.5% max.	0.25%
Fluid resistance (after immersion 23°Cx24 hours)	SAE AMS-DTL-23053	6.9 Mpa tensile strength	Pass (7.25 to 16.50 MPA)
Fungus resistance	ASTM G 21	No growth	Pass

Performance properties were tested on B-7642 white and yellow sleeves printed with the R4300 Series, R6400 Series and R6600 Series thermal transfer ribbons. The results are the same for both colors and all ribbons unless noted. Sleeves were tested shrunk on appropriate sized wires.

PERFORMANCE PROPERTIES	TEST METHODS	TYPICAL RESULTS
High Service Temperature	5 minutes at 240℃	Slight discoloration
	24 hours at 160℃	Slight discoloration (white sleeves) No visible effect (yellow sleeves)
	1000 hours at 120℃	Slight discoloration (white sleeves) No visible effect (yellow sleeves)
Low Service Temperature	1000 hours at -40℃	No visible effect
UV Light Resistance	1000 hours in UV Lightchamber	No visible effect
	1000 hours in Q-Sun Xenon Test Chamber	Slight discoloration (white sleeves) Very slight fade (yellow sleeves)
Weatherability	1000 hours in QUV weatherometer	No visible effect
	1000 hours in Xenon Arc Weatherometer	Slight discoloration (white sleeves) Slight to moderate fade (yellow sleeves)
Humidity resistance	1000 hours at 37℃/95% Relative Humidity	No visible effect
Print Adherence per SAE-AS81531 (sec 3.4.2)	SAE-AS81531 (Sec 4.6.2) Samples tested after unrestricted shrink at 200℃ for 3 minutes	Print is still easily legible on sleeves printed with all ribbons
	20 eraser rubs with hard hand pressure	
Solvent Resistance per SAE-AS81531 (3.4.3) Solution A Solution C	Samples tested after unrestricted shrink at 200℃ for 3 minutes	Print is still easily legible on sleeves printed with all ribbons in all three test fluids
	MIL-STD-202, Method 215K	

Solution D	3 cycles of 3 minute immersions in specified fluids followed by toothbrush rub after each immersion	

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 polypropylene glycol monomethyl ether, 1 part monoethanolamine at 70°C

PERFORMANCE PROPERTIES	TEST METHOD
CHEMICAL RESISTANCE	SEE BELOW

Sleeves were printed with R4300 Series, R6400 Series and R6600 Series thermal transfer ribbons and allowed to dwell 24 hours prior to shrinking on appropriate sized wires and testing. Testing was conducted at room temperature and consisted of 5 cycles of 10 minute immersions in the specified chemicals followed by 30 minute recovery periods. After the final immersion, the samples were removed from the test fluid and the printed image rubbed 10 times with a cotton swab saturated with the test fluid. The rating scale below shows the effect to the quality of print for each sample.

Unless otherwise noted, there was no visible effect to the printed image prior to rubbing for the above ribbons.

CHEMICAL REAGENT	APPEARANCE WITHOUT RUB	APPEARANCE OF PRINT AFTER RUB		
		R4300	R6400	R6600
Isopropyl Alcohol	1	1-2	1	2
JP-8 Jet Fuel	1	3-4	1	3
Diesel (gasoil)	1	3	1	1
Mil 5606 Oil	1	2-3	1	2
De-ionized Water	1	1	1	1
MEK	1	2-3	1	3
Gasoline	1	3-4	1	3-4
Motor oil 15W20	1	2-3	1	1
Skydrol® 500B-4	1	2-3	1	2
10% Salt water solution	1	1	1	1
Acetone	1	3	2	1
Toluene	1	5	4	2
Mineral Spirits	1	5	2	1
Brake fluid - DOT 4	1	3	1-2	1

Rating Scale:

1=no visible effect
2=slight fading or print removal
3=moderate fading or print removal (print still legible)
4=severe fading or print removal (print illegible or just barely legible)
5=complete print removal
NP=print removed prior to rub

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 *below 27 (80) and 60% RH*. We encourage customers to develop functional testing protocols that will qualify a product's fitness for use, in their actual applications.

Trademarks:
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PermaSleeve® is a registered trademark of Brady Worldwide, Inc.
S.I.: International System of Units
SAE: Society of Automotive Engineers (U.S.A.)
Skydrol® is a registered trademark of the Monsanto Company
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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