



**THE DATASHEET OF
HX-500-2-BK**





BRADY B-7642 PERMASLEEVE® MARKER

TDS No. B-7642
Effective Date: 4/14/2023

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.

A minimum recovery temperature of 85°C (185°F) is recommended for B-7642 PermaSleeve® markers.

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°C | SAE AMS-DTL-23053 | No dripping, cracking of flowing | Pass |
| Elongation after Heat aging 168 hours 175°C | SAE AMS-DTL-23053 | Min. Elongation 100% | 420% |
| Low temperature Flexibility -55°C for 4 hours | SAE AMS-DTL-23053 | No cracking | Pass |
| Copper corrosion (175°C x 16 hours) | SAE AMS-DTL-23053 | No corrosion | Pass |

| | | | |
|---|-------------------|----------------------------|------|
| Operation temperature (175°C x 24 hours) | SAE AMS-DTL-23053 | SAE AMS-STD-104 Class 1 | Pass |
|---|-------------------|----------------------------|------|

| 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°C 24 hours at 160°C 1000 hours at 120°C | Slight discoloration Slight discoloration (white sleeves) No visible effect (yellow sleeves) Slight discoloration (white sleeves) No visible effect (yellow sleeves) |
| Low Service Temperature | 1000 hours at -40°C | No visible effect |
| UV Light Resistance | 1000 hours in UV Lightchamber 1000 hours in Q-Sun Xenon Test Chamber | No visible effect Slight discoloration (white sleeves) Very slight fade (yellow sleeves) |
| Weatherability | 1000 hours in QUV weatherometer 1000 hours in Xenon Arc Weatherometer | No visible effect Slight discoloration (white sleeves) Slight to moderate fade (yellow sleeves) |
| Humidity resistance | 1000 hours at 37°C/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°C for 3 minutes 20 eraser rubs with hard hand pressure | Print is still easily legible on sleeves printed with all ribbons |
| Solvent Resistance per SAE-AS81531 (3.4.3) Solution A | Samples tested after unrestricted shrink at 200°C for 3 minutes | Print is still easily legible on sleeves printed with all ribbons in all three test fluids |

| | | |
|--------------------------|---|--|
| Solution C Solution D | MIL-STD-202, Method 215K 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°C (80°F) and 60% RH*. 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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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.

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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