WHEN PERFORMANCE MATTERS MOST™

**Technical Data Sheet**

# BRADY B-735 MATTE WHITE LASER MARKABLE STATIC DISSIPATIVE POLYIMIDE LABEL STOCK

TDS No B-735
Effective Date: 09/13/2019

**Description:**
**GENERAL**
**Print Technology:** Laser Markable
**Material Type:** Polyimide
**Finish:** Matte
**Adhesive:** Static Dissipative Permanent Acrylic

## APPLICATIONS

B-735 is designed to meet the requirements for pre-process labeling of printed circuit boards and electronic components when marked with standard IR lasers. The product can be used for auto-dispensing applications and can meet small font requirements when used with a high resolution laser marking system.

## RECOMMENDED LASER SPECIFICATIONS

IR Laser systems operating at 20 W or greater are recommended for this product when operating at near to mid IR regions. Typical systems are classified as Class IV lasers and include $CO_2$ lasers operating between 9.6 and 10.6µm. These systems will all produce strong contrasting marks when using appropriate power and writing speeds.

## REGULATORY/AGENCY APPROVAL

**UL:** Brady B-735 is UL Recognized to UL969 Labeling and Marking Standard when marked with an IR laser. See UL file MH17154 for specific details. UL information can be accessed on-line at UL.com in the UL Product iQ area.

For information on the Weee-RoHS compliance status for a Brady Product go to one of the following websites:
In Canada: www.bradycanada.ca/weee-rohs
In Europe: www.bradyeurope.com/rohs
In Japan: www.brady.co.jp/products/labelsuse/rohs
All other regions: www.bradyid.com/weee-rohs

## SPECIAL FEATURES

B-735 is constructed with a static dissipative adhesive. This product has adhesive surface resistivity values in the recommended range for dissipative ESD packaging materials as defined by ANSI/ESD S541-2008 (between $10^4$ and $10^{11}$ ohms).

B-735 meets the requirements of MIL-STD-202G, Method 215K.

B-735 is designed to withstand multiple cycles of harsh condition washes for printed circuit boards.

**Details:**

| PHYSICAL PROPERTIES | TEST METHODS | TYPICAL RESULTS |
|---|---|---|
| Thickness | ASTM D1000<br>-Substrate<br>-Adhesive<br>-Total (excluding liner) | <br>0.0041 inch (0.104 mm)<br>0.0015 inch (0.038 mm)<br>0.0056 inch (0.142 mm) |

| | | |
|---|---|---|
| Adhesion to:<br>-Stainless Steel<br><br><br>-Epoxy PC Board | ASTM D1000<br>20 minute dwell<br>24 hour dwell<br><br>20 minute dwell<br>24 hour dwell | <br>49 oz/in (54 N/100 mm)<br>54 oz/in (59 N/100 mm)<br><br>39 oz/in (43 N/100mm)<br>56 oz/in (61 N/100mm) |
| Tack | ASTM D 2979 Polyken™ Probe Tack<br>1 second dwell | 43 oz (1232 g) |
| Drop Shear | PSTC-7<br>1/2" x 1" | > 100 hours |
| Dielectric Strength | ASTM D1000 | 11,200 volts |
| Adhesive Surface Resistivity | EOS/ESD STM11.11 | 2.4 x $10^8$ ohms/sq |

Performance properties were tested on B-735 samples that were laser marked using a 20 W $CO_2$ laser marking system. Laser marked B-735 samples were laminated to aluminum and allowed to dwell 24 hours before exposure to the indicated environmental conditions.

| **PERFORMANCE PROPERTIES** | **TEST METHODS** | **TYPICAL RESULTS** |
|---|---|---|
| Short Term High Service Temperature | 80 seconds at various temperatures | Slight discoloration of label but no visible effect to printed image at 572°F (300°C); Label moderately discolored, slight blurring of printed image, very slight topcoat shrinkage at 608°F (320°C); at 662°F (350°C) the label is moderately discolored, printed image is slightly blurred, topcoat is shrunken slightly, label marginally functional.. |
| | 5 minutes at various temperatures | Very slight discoloration of label and no visible effect to printed image at 500°F (260°C); Slight discoloration of label and no visible effect to printed image at 518°F (270°C); at 572°F (300°C) label moderately discolored with very slight shrinkage, printed image is slightly blurred, label remains functional. |
| | 2 hours at various temperatures | No visible effect to label or printed image at 338°F (170°C); Slight discoloration of label but no visible effect to printed image at 428°F (220°C); at 500°F (260°C) label moderately discolored, printed image difficult to read, slight wrinkling of label, label no longer functional. |
| Long Term High Service Temperature | 1000 hours at various temperatures | Very slight discoloration of label, no visible effect to printed image at 212°F (100°C); Slight discoloration of label, no visible effect to printed image at 266°F (130°C); at 320°F (160°C) label is moderately discolored with no visible effect to printed image, label remains functional. |
| Low Service Temperature | 1000 hours at -94°F (-70°C) | No visible effect to label or printed image |
| Humidity Resistance | 1000 hours at 100°F (38°C)/95%RH | No visible effect to label or printed image |
| UV Light Resistance | ASTM G155, cycle 1, Dry<br>1000 hours in Q-Sun Xenon Test Chamber | No visible effect to label or printed image |
| Weatherability* | ASTM G155, Cycle 1<br>1000 hours in Xenon arc Weather-Ometer® | No visible effect to label or printed image |

| | | |
|---|---|---|
| Salt Fog Resistance | ASTM B117<br>1000 hours in 5% salt fog solution chamber | No visible effect to label or printed image |
| Abrasion Resistance | Taber Abraser, CS-10 grinding wheels, 500 g/arm (Fed. Std. 191A, Method 5306 | Printed image legible after 1500 cycles |
| Chemical Vapor Phase Resistance | Labels adhered to epoxy PC board and exposed to the vapor of the boiling chemical for 10 minutes and then rubbed with a cotton swab saturated with the chemical for 10 rubs | |
| | Ionox® 3955 | No visible effect to label, slight smear of printed image, label still functional |
| | Micronox® MX2501 | No visible effect to label, slight smear of printed image, label still functional |

*B-735 is not recommended for outdoor use.

| PERFORMANCE PROPERTY | CHEMICAL RESISTANCE |
|---|---|

B-735 samples were laser marked using a 20 W $CO_2$ laser marking system, then laminated to FR-4 epoxy PC board. After 24 hr dwell, test samples were immersed in the test fluids for 10 minutes, then rubbed 10 times with a cotton swab saturated with the test fluid.

| CHEMICAL REAGENT | SUBJECTIVE OBSERVATION OF VISUAL CHANGE | | |
|---|---|---|---|
| | EFFECT TO LABEL | LASER MARKED IMAGE | |
| | | WITHOUT RUB | WITH RUB |
| Kyzen Corp. 15% Aquanox® A4625 at 140°F (60°C) | No visible effect | 1 | 1 |
| Kyzen Corp. 17% Aquanox® A4520 at 140°F (60°C) | No visible effect | 1 | 1 |
| Kyzen Corp. 10% Aquanox® A4638 at 150°F (65°C) | No visible effect | 1 | 1 |
| Kyzen Corp. 20% Aquanox® A4703 at 145°F (63°C) | No visible effect | 1 | 1 |
| Zestron, 15% Atron® AC205 at 150°F (65°C) | No visible effect | 1 | 1 |
| Zestron, 15% Atron® AC207 at 150°F (65°C) | No visible effect | 1 | 2 |
| Zestron, 15% Vigon® A201 at 150°F (65°C) | No visible effect | 1 | 1 |
| Zestron, 15% Vigon® N600 at 150°F (65°C) | No visible effect | 1 | 1 |
| Isopropyl Alcohol 99% at 180°F (82°C) | No visible effect | 1 | 1 |
| Deionized water at 212°F (100°C) | No visible effect | 1 | 1 |

Rating Scale:
1=no visible effect
2=slight smear or print removal, detectable but minimal smear
3=moderate smear or print removal (print still legible)
4=severe smear or print removal (print illegible or just barely legible)
5=complete print removal

| PERFORMANCE PROPERTY | TEST METHOD |
|---|---|
| **Solvent Resistance** | **MIL-STD-202G, Method 215K** |

B-735 samples were laser marked using a 20 W $CO_2$ laser marking system, then laminated to FR-4 epoxy PC board. Labels were marked with alphanumerics and barcodes. Test samples were subjected to 3 cycles of 3 minute immersions immediately followed by a toothbrush rub after each immersion.

| TEST FLUID | LASER MARKED IMAGE |
|---|---|
| Solvent A | Meets requirement |

| | |
|---|---|
| 1 part IPA, 3 parts mineral spirits | |
| Solvent C<br>Terpene Defluxer | Meets requirement |
| Solvent D<br>Saponifier @ 70°C | Meets requirement |

**Shelf Life:**
Shelf life is 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 80°F (27°C) and 60% RH. It remains the responsibility of the user to assess the risk of using this product. We encourage customers to develop testing protocols that will qualify a product's fitness for use in their actual application.

**Trademarks:**
ANSI: American National Standards Institute (U.S.A.)
ASTM: American Society for Testing and Materials (U.S.A.)
PSTC: Pressure Sensitive Tape Council (U.S.A.)
Polyken™ is a trademark of Testing Machines Inc.
Aquanox® is a registered trademark of the Kyzen Corporation
Atron® is a registered trademark of the Zestron Corporation
Ionox® is a registered trademark of the Kyzen Corporation
Micronox® is a registered trademark of the Kyzen Corporation
Vigon® is a registered trademark of the Zestron Corporation
Weather-Ometer® is a registered trademark of Atlas Material Testing Technology LLC
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.

**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.