

BRADY B-652 DOT MATRIX / LASER PRINTABLE HIGH TEMPERATURE POLYIMIDE LABEL

TDS No. B-652
Effective Date: 03/26/2019

Description:

GENERAL

Print Technology: Dot matrix and laser
Material Type: Polyimide
Finish: Matte Greenish/Amber
Adhesive: Permanent Acrylic

APPLICATIONS

Printed circuit board and electronic component pre-process labeling

RECOMMENDED RIBBONS

Brady Series R5000

REGULATORY APPROVALS

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-652 in combination with the Brady Series R5000 ribbon passes the requirements of: SAE-AS81531 Marking of Electrical Insulating Material MIL-STD-202G, Method 215K (B-652 printed with laser print does not meet these requirements)

Pre-heat can be employed to further enhance print permanence in the case of extreme solvent and/or abrasion exposure.

Details:

| PHYSICAL PROPERTIES | TEST METHODS | AVERAGE RESULTS |
|---------------------|---|--|
| Thickness | ASTM D 1000 -Substrate -Adhesive -Total (excluding liner) | 0.0028 inch (0.072 mm) 0.0016 inch (0.039 mm) 0.0044 inch (0.111 mm) |
| Adhesion to: | ASTM D 1000 | |
| -Stainless Steel | 20 minute dwell 24 hour dwell | 45 oz/inch (49 N/100 mm) 47 oz/inch (51 N/100 mm) |
| -Epoxy PC Board | 20 minute dwell 24 hour dwell | 33 oz/inch (36 N/100 mm) 48 oz/inch (53 N/100 mm) |
| -Textured ABS | 20 minute dwell 24 hour dwell | 10 oz/inch (11 N/100 mm) 15 oz/inch (16 N/100 mm) |
| -Polypropylene | 20 minute dwell 24 hour dwell | 20 oz/inch (22 N/100 mm) 21 oz/inch (23 N/100 mm) |
| Tack | ASTM D 2979 Polyken™ Probe Tack (0.5 second dwell, 1 cm/sec separation) | 66 oz. (1883 grams) |
| Drop Shear | PSTC-7 (except use 1/2" x 1" sample) | >100 hours |
| Dielectric Strength | ASTM D 1000 | 10,000 Volts |
| Flammability | ASTM D 1000 Average Burn Time | Less than 5 seconds |

Performance properties tested on B-652 printed with the Brady Series R5000 dot matrix ribbon. Printed samples of B-652 were laminated to aluminum and allowed to dwell 24 hours before exposure to the indicated environmental conditions. Unless noted,

results are the same for the two methods tested.

| PERFORMANCE PROPERTIES | TEST METHODS | TYPICAL RESULTS |
|--|--|---|
| Short Term High Service Temperature | 5 minutes at various Temperatures | No visible effect to label at 536°F (280°C). Label discolors slightly at 572°F (300°C) but still functional. At 608°F (320°C) label still functional but slightly discolored and adhesive discolored at label edge. |
| | 2 hours at various Temperatures | No visible effect to label at 500°F (260°C). Adhesive brown at edge of label at 536°F (280°C). |
| Long Term High Service Temperature | 1000 hours at various Temperatures | No visible effect to label at 356°F (180°C). At 392°F (200°C) label still functional but slightly discolored and adhesive brown at edge. At 392°F (200°C) laser print degraded. |
| Low Service Temperature | 1000 hours at -94°F (-70°C) | No visible effect |
| Humidity Resistance | 1000 hours at 100°F, 95%R.H. | No visible effect |
| UV Light Resistance | ASTM G155, Cycle 1, dry 1000 hours in Q-Sun Xenon Test Chamber | Topcoat fades to off white, label still functional |
| Weatherability ¹ | ASTM G155, Cycle 1 1000 hours in Xenon Arc Weatherometer | Topcoat degraded |
| Salt Fog Resistance | 1000 hours days at 5% salt fog (ASTM B 117) | Slight discoloration of topcoat, no visible effect to print |
| Abrasion Resistance | Taber Abraser, CS-10 grinding wheels, 500 g/arm (Fed. Std. 191A, Method 5306) | Slight topcoat removal but print still legible with the Brady Series R5000 ribbon at 200 cycles. |
| Wave Solder and Vapor Phase Resistance | Label adhered to epoxy PC board and exposed to: 1. 10 second dip at 480°F (249°C) 2. Vapor of boiling chemical for 10 minutes and then rubbed with a wetted cotton swab for 10 rubs. Test samples were baked 4 minutes at 160°C prior to testing Ionox ® 3955 Micronox® MX 2501 | Solder Dip: No visible effect The Brady Series R5000 ribbon Slight smear/print removal Laserjet 2300 Moderate smear/print removal The Brady Series R5000 ribbon Slight smear/print removal Laserjet 2300 Moderate smear/print removal |

¹B-652 is not recommended for outdoor use.

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

Samples printed with the Brady Series R5000 dot matrix ribbon and LaserJet 2300 laser printer. Samples laminated to epoxy PC board and allowed to dwell 24 hours prior to testing. Test samples baked 4 minutes at 160°C before testing. All test samples were immersed in the test fluids for 10 minutes prior to rub with cotton swab 10 times.

| CHEMICAL REAGENT | SUBJECTIVE OBSERVATION OF VISUAL CHANGE | | |
|--|---|-------|-------------|
| | EFFECT TO LABEL STOCK | R5000 | LASERJET 5P |
| Kyzen Corp. 15% Aquanox® A4625 at 140°F (60°C) | No visible effect | 2 | 4 |
| Kyzen Corp. 17% Aquanox® A4520 at 140°F (60°C) | No visible effect | 2 | 4 |
| Kyzen Corp. 10% Aquanox® A4638 at 150°F (65°C) | No visible effect | 2 | 3 |

| | | | |
|---|-------------------|---|---|
| Kyzen Corp. 20% Aquanox®A4703 at 145°F (63°C) | No visible effect | 2 | 4 |
| Zestron 15% Atron® AC205 at 150°F (65°C) | No visible effect | 2 | 3 |
| Zestron 15% Atron® AC207 at 150°F (65°C) | No visible effect | 3 | 4 |
| Zestron 15% Vigon A201 at 150°F (65°C) | No visible effect | 2 | 4 |
| Zestron 15% Vigon N600 at 150°F (65°C) | No visible effect | 2 | 5 |
| 99% Isopropyl Alcohol at 180°F (82°C) | No visible effect | 1 | 3 |
| 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 | MIL-STD-202G, METHOD 215K |
|-----------------------------|----------------------------------|

Samples printed with the Brady Series R5000 dot matrix ribbon and LaserJet 2300 laser printer. Printed labels subjected to 3 cycles of 3 minute immersions immediately followed by a toothbrush rub after each immersion.

| TEST FLUID | R5000 DOT MATRIX | LASERJET 5P LASER PRINT |
|---|-------------------------------|--|
| Solvent A 1 part IPA, 1 part Mineral Spirits | Meets requirement | Print removed, does not meet requirement |
| Solvent B 1,1,1,-Trichloroethane | Solvent deleted per Notice 12 | Solvent deleted per Notice 12 |
| Solvent C Terpene Defluxer | Meets requirement | Print removed, does not meet requirement |
| Solvent D Saponifier at 70°C | Meets requirement | Meets requirement |

Laser printed sample failed test.

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:

- ASTM: American Society for Testing and Materials (U.S.A.)
- All S.I. Units (metric) are mathematically derived from the U.S. Conventional
- Aquanox® is a registered trademark of the Kyzen Corporation
- Atron® is a registered trademark of the Zestron Corporation
- lonox® is a registered trademark of the Kyzen Corporation
- Micronox® is a registered trademark of the Kyzen Corporation
- PSTC: Pressure Sensitive Tape Council (U.S.A.)
- Polyken™ is a trademark of Testing Machines Inc. Units.
- Vigon® is the registered trademark of Zestron Corporation

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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