Technical Data Sheet

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

TDS No. B-652
Effective Date: 11/06/2014

Description:

GENERAL

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

APPLICATIONS

Printed circuit board and electronic component pre-process labeling

RECOMMENDED RIBBONS

Brady Series R2000
Brady Series R5000

REGULATORY

Brady B-652 is RoHS compliant to RoHS directive 2011/65/EU.

SPECIAL FEATURES

B-652 in combination with the Series R2000 and 5000 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 exteme solvent and/or abrasion exposure.

Details:

PHYSICAL PROPERTIES	TEST METHODS	AVERAGE RESULTS
Thickness	ASTM D 1000 -Substrate -Adhesive -Total	0.0028 inch (0.072 mm) 0.0016 inch (0.039 mm) 0.0044 inch (0.111 mm)
Adhesion to: -Stainless Steel	ASTM D 1000 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 (1 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 Series R2000 and R5000 dot matrix ribbons and Hewlett Packard LaserJet 2300 laser printer. 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 the same for three methods tested.

PERFORMANCE PROPERTIES	TEST METHODS	TYPICAL RESULTS
Short Term High Service Temperature	5 minutes at 536°F (280°C) 2 hours at 500°F (260°C)	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. 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 356°F (180°C)	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 R2000 and R5000 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 R2000/R5000 Slight smear/print removal Laserjet 2300 Moderate smear/print removal R2000/R5000 Slight smear/print removal Laserjet 2300 Moderate smear/print removal

[1]B-652 is not recommended for outdoor use.

PERFORMANCE PROPERTY	CHEMICAL RESISTANCE

Samples printed with Series R2000 and R5000 dot matrix ribbons 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	R2000/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%	No visible effect	2	4

Aquanox®A4703 at 145°F (63°C)			
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 R2000 and R5000 dot matrix ribbons 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	R2000 AND 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.

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 80 degrees F (27°C) and 60% 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:
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PSTC: Pressure Sensitive Tape Council (U.S.A.)
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Note: All values shown are averages and should not be used for specification purposes.
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