



BRADY B-457 GLOSSY WHITE THERMAL TRANSFER PRINTABLE POLYIMIDE LABEL STOCK

TDS No. B-457
 Effective Date: 07/07/2010

Description:

GENERAL

Print Technology: Thermal Transfer
Material Type: White Polyimide (2 mil film)
Finish: Glossy
Adhesive: Permanent Acrylic

APPLICATIONS

Printed circuit board and electronic component preprocess labeling

RECOMMENDED RIBBONS

Brady Series R6000
 Brady Series R6000HF (low halogen)

REGULATORY/AGENCY APPROVALS

Brady B-457 is UL Recognized to UL969 Labeling and Marking Standard when printed with the Brady Series R6000 and Series R6000HF ribbons. See UL file MH17154 for specific details.

Brady B-457 is RoHS compliant to 2005/618/EC MCV amendment to RoHS Directive 2002/95/EC.

SPECIAL FEATURES

The B-457, in combination with the Series R6000 and Series R6000HF ribbons, passes the requirements of MIL-STD-202G, Notice 12, Method 215K.

Preheat can be employed to further enhance print permanence in the case of extreme solvent and/or abrasion exposure, although this is not typically required for board processing applications.

Details:

PHYSICAL PROPERTIES	TEST METHODS	AVERAGE RESULTS
Thickness	ASTM D 1000 -Substrate -Adhesive -Total	0.0027 inch (0.068 mm) 0.0017 inch (0.043 mm) 0.0044 inch (0.111 mm)
Adhesion to: -Stainless Steel	ASTM D 1000 20 minute dwell 24 hour dwell	38 oz/in (42 N/100 mm) 50 oz/in (55 N/100 mm)
-Epoxy PC Board	20 minute dwell 24 hour dwell	29 oz/in (32 N/100 mm) 39 oz/in (43 N/100 mm)
Tack	ASTM D 2979 Polyken™ Probe Tack 1 second dwell	37 oz (1030 g)
Drop Shear	PSTC-7 (except use 1/2" x 1"	>100 hours

	sample)	
Dielectric Strength	ASTM D 1000	9500 volts

Performance properties tested on B-457 printed with Series R6000 and Series R6000HF ribbon. Printed samples of B-457 were laminated to aluminum and allowed to dwell 24 hours before exposure to the indicated environmental conditions.

*B-457 is not recommended for outdoor use.

PERFORMANCE PROPERTY	CHEMICAL RESISTANCE
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Samples printed with Series R6000 and Series R6000HF. Labels printed with 3:1 ratio barcodes with 6 mil X dimension bars. Samples exposed to indicated environments.

PERFORMANCE PROPERTIES	TEST METHODS	TYPICAL RESULTS
Short Term High Service Temperature	80 seconds at 572°F (300°C)	No visible effect to label at 572°F (300°C), label discolors slightly at 626°F (330°C), but still functional, at 662°F (350°C) label still functional but moderately discolored and adhesive discolored at label edge; print is still legible.
	5 minutes at 500°F (260°C)	No visible effect to label at 260°C, label discolors slightly at 270°C, at 300°C label moderately discolors and adhesive discolors at label edge. Label remains functional.
	2 hours at 338°F (170°C)	No visible effect to label at 170°C, label discolors slightly at 190°C, moderately at 220°C, and severely at 260°C. Label remains functional.
Long Term High Service Temperature	1000 hours at 212°F (100°C)	No visible effect to label at 100°C, label discolors slightly at 120°C, moderately at 145°C. Label remains functional.
Low Service Temperature	1000 hours at -94°F (-70°C)	No visible effect
Humidity Resistance	1000 hours at 100°F (37°C), 95% R.H.	No visible effect
UV Light Resistance	1000 hours in UV Sunlighter™ 100	Topcoat turns light yellow, label remains functional
Weatherability*	ASTM G155, Cycle 1 1000 hours in Xenon Arc Weatherometer	R6000 - Slight discoloration
Salt Fog Resistance	ASTM B 117 30 days in 5% salt fog solution chamber	No visible effect
Abrasion Resistance	Taber Abraser, CS-10 grinding wheels, 500 g/arm (Fed. Std. 191A, Method 5306)	Print legible to 100 cycles.
Vapor Phase Resistance	Label adhered to epoxy PC board and exposed to: 2 minutes in Fluorinert™ FC-5312 vapor phase at 420°F (216°C)	No visible effect without rub, moderate to total print smear with rub

PERFORMANCE PROPERTY	CHEMICAL RESISTANCE
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Samples printed with Series R6000 and Series R6000HF thermal transfer ribbons. Labels printed using a 3:1 barcode ratio with a 5 mil narrow X dimension bar. Samples laminated to FR-4 board and allowed to

dwell for 24 hours at room temperature before testing. Samples rubbed 10 times with a cotton swab immersed in test fluid after 10 minute immersion.

CHEMICAL REAGENT	EFFECT TO LABEL	SUBJECTIVE OBSERVATION OF VISUAL CHANGE			
		R6000		R6000HF	
		WITHOUT RUB	WITH RUB	WITHOUT RUB	WITH RUB
Kyzen Corp. Aquanox SSA™ 30% aqueous, 40-45°C - 10 minutes	No visible effect	1	1	1	1
Isopropyl Alcohol 99%, 82°C - 10 minutes	No visible effect	1	1-2	1	1-4
BIOACT® EC-7R™ Terpene Cleaner, 40-45°C - 10 minutes	No visible effect	1	2	1	1-2
Deionized Water, 100°C - 10 minutes	No visible effect	1	1	1	1
Alpha Metals Inc. 2110 Saponifier 6% aqueous, 65-70°C - 10 minutes	No visible effect	1	2	1	2-3

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
Chemical Resistance	MIL-STD-202F, Notice 12, Method 215J

Samples printed with Series R6000 and Series R6000HF ribbons. Labels printed with alphanumerics and 3:1 ratio barcodes with 6 mil X dimension bars. Samples subjected to 3 cycles of 3 minute immersions immediately followed by a toothbrush rub after each immersion.

TEST FLUID	TYPICAL RESULTS
Solvent A 1 part IPA, 3 parts Mineral Spirits	No visible effect
Solvent B 1,1,1-Trichloroethane	Solvent deleted per Notice 12
Solvent C Terpene Defluxer	No visible effect
Solvent D Saponifier	No visible effect

Product testing, customer feedback, and history of similar products, support a customer performance 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.

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AISI: American Iron and Steel Institute (U.S.A.)
ASTM: American Society for Testing and Materials (U.S.A.)
PSTC: Pressure Sensitive Tape Council (U.S.A.)
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.

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