Product Information Sheet
B-499 Lab
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B-499 THERMAL TRANSFER/DOT MATRIX PRINTABLE NYLON CLOTH LABEL

NOTE: This Product Information Sheet is focused on the suitability of B-499 for laboratory applications. For additional data regarding B-499 performance please refer to B-499 Technical Data Sheet.

Description:

GENERAL
Print Technology: Thermal transfer
Material Type: Polyamide coated nylon cloth
Finish: Matte white
Adhesive: Permanent acrylic

APPLICATIONS
Laboratory identification such as vials, centrifuge tubes, test tubes, straws, well plates and slides

RECOMMENDED RIBBONS
Brady series 4300
Brady series 4500 (colors – red, blue, green)
Brady series 4900, 6000 and 6200 (all alternate)*
*B-499 can be printed with series 4900, 6000, 6200 ribbon; please note that testing described in this product information sheet was performed on materials printed with the 4300 series ribbon.

AGENCY APPROVALS
UL: Recognized to UL969 Labeling and Marking Standard when printed with Brady series R4300 ribbon (see UL file MH17154 for specific details).
CSA: accepted when printed with Brady series R4900 and R4300 ribbons (see CSA Acceptance Record LS41833 for specific details).

Details:
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.

PHYSICAL PROPERTIES	TEST METHODS	AVERAGE RESULTS
Thickness	ASTM D1000 -Substrate -Adhesive -Total (excluding liner)	 0.115 mm (0.0045 inch) 0.051 mm (0.0020 inch) 0.166 mm (0.0065 inch)
Adhesion to:	ASTM D1000	

-Stainless Steel	20 minute dwell 24 hour dwell	45 oz/inch (50 N/100 mm) 80 oz/inch (88 N/100 mm
-Polypropylene	20 minute dwell 24 hour dwell	24 oz/inch (26 N/100 mm) 24 oz/inch (26 N/100 mm)
-Glass	20 minute dwell 24 hour dwell	105 oz/inch (115 N/100 mm) 127 oz/inch (139 N/100 mm)

PERFORMANCE PROPERTIES – LAB SIMULATED ENVIRONMENT
Performance properties tested on B-499 printed with Series R4300 ribbon on Brady TLS2200® Thermal Labeling System thermal transfer printer. Printed samples were laminated to glass microscope slides, glass test tubes (1.1 cm outer diameter) and polypropylene centrifuge tubes (1.1 cm inner diameter, 1.5 ml capacity) and allowed to dwell 24 hours before exposure to the indicated environments.

ENVIRONMENT	**TEST METHOD**		**TYPICAL RESULTS**
High Service Temperature**	30 days at elevated temperatures		No visible effect at 90°C (194°F). Material discolored but functional up to 120°C (248°F)
Pressure Cooker	3 cycles of 1 hour in 121°C (250°F) 15 psi pressure cooker/23 hour room temperature	✓ ✓ ✓	Glass test tube Polypropylene centrifuge tube Glass microscope slide
Liquid Nitrogen	3 cycles of 4 hours at -196°C (-320°F)/8 hours at room temperature	✓ ✓ ✓ ✓	Glass test tube Polypropylene centrifuge tube Glass microscope slide Aluminum Foil
Freezer	3 cycles of 16 hours at –70°C (–94°F)/ 8 hours at room temperature cycles	✓ ✓ ✓	Glass test tube Polypropylene centrifuge tube Glass microscope slide
Liquid Nitrogen to boiling water***	1 hour at -196°C (-320°F) then placed in boiling water 100°C (212°F) for 10 minutes	✗ ◆ ◆ ✓	Glass test tube Polypropylene centrifuge tube Glass microscope slide Aluminum Foil
Freezer to boiling water	1 hour at -70°C (-94°F) then placed in boiling water 100°C (212°F)	✗ ◆ ◆	Glass test tube Polypropylene centrifuge tube Glass microscope slide

** Samples for this testing were placed on glass panels and glass test tubes
*** Also tested labels on aluminum foil

✓ Label suitable for application; no visible effect, label remains adhered to test surface

◆ Label may work in application; test results were mixed

✘ Label not recommended for application; label came off either during testing or after test surface was removed from environment.

PERFORMANCE PROPERTIES - CHEMICAL
Samples of B-499 were printed with Series R4300 ribbon on Brady TLS2200® Thermal Labeling System thermal transfer printer. Printed samples were laminated to glass microscope slides and allowed to dwell 24 hours prior to testing. Test conducted at room temperature. Samples were immersed in the test solvent for 15 minutes. The samples were removed and rubbed 10 times with a cotton swab saturated with the test fluid. The rating scale below shows the effect to the quality of the print for each sample.

CHEMICAL REAGENT	SUBJECTIVE OBSERVATION OF VISUAL CHANGE		
	EFFECTS TO LABEL STOCK	EFFECTS TO PRINTED IMAGE	
		WITHOUT RUB	WITH RUB
Ethanol	No visible effect	1	3-4
Toluene	Adhesive softens	1	3
Isopropanol	No visible effect	1	3
Chloroform	Adhesive softens	1	4
Xylene	Slight adhesive ooze, adhesive softens	1	3
Dimethylsulfoxide (DMSO)	No visible effect	1	5
Methylene Chloride	Adhesive softens	1	2
50% Acetic Acid	No visible effect	2	5
10% Hydrochloric Acid	No visible effect	1	5
10% Sodium Hydroxide	No visible effect	1	3
10% Chlorox Solution	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 and/or topcoat removal
NP=print removed prior to rub

Storage Stability:

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 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 and References:

TLS2200® is a registered trademark of Brady Worldwide, Inc.

ASTM: American Society for Testing and Materials (U.S.A.)
CSA: Canadian Standards Association
UL: Underwriters Laboratories Inc. (U.S.A.)

All S.I. Units (metric) are mathematically derived from the U.S. Conventional Units

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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.**