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Technical Data Sheet

BRADY B-492 FREEZERBONDZ WHITE POLYESTER THERMAL PRINTABLE LABEL STOCK

TDS No. B-492
Effective Date: 02/04/2019

Description:

GENERAL

Print Technology: Thermal Transfer
Material Type: Polyester
Finish: White film with white thermal transfer printable topcoat
Adhesive: Permanent Acrylic

APPLICATIONS

B-492 Freezerbondz™ is designed for use in laboratory identification such as vials, centrifuge tubes, test tubes, straws, and slides.

RECOMMENDED RIBBONS

Brady Series R6400
Brady Series R4300 (alternate)*
Please note that testing described in this Technical Data Sheet was performed on materials printed with the Brady Series R6400 ribbon.
*Note: Brady Series R4300 ribbon may be used if chemical resistance is not required with Ethanol, Toluene and Xylene.

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-492 Freezerbondz™ can be applied to frozen surfaces including glass and polypropylene stored in liquid nitrogen.
B-492 offers excellent print smudge resistance, solvent resistance when using the Brady Series R6400 Ribbon, and excellent low temperature performance. B-492 performs well in common laboratory environments such as liquid nitrogen and freezer applications.

Select the video links below for demonstration of product use.

Details:

PHYSICAL PROPERTIES	TEST METHODS	AVERAGE RESULTS
Thickness	ASTM D 1000 -Total (excluding liner)	 0.0032 inch (0.081 mm)
Adhesion to: -Glass	ASTM D 1000 20 minute dwell 24 hour dwell	 30 oz/in (33 N/100 mm) 40 oz/in (43 N/100 mm)
-Polypropylene	20 minute dwell 24 hour dwell	12 oz/in (13 N/100 mm) 20 oz/in (22 N/100 mm)
-Stainless steel	20 minute dwell 24 hour dwell	15 oz/inch (16.6 N/100 mm) 22 oz/inch (24.4 N/100 mm)

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ENVIRONMENTAL PERFORMANCE PROPERTIES	LABEL APPLIED TO ROOM TEMPERATURE SURFACE

B-492 samples were printed with Series R6400 ribbon. Printed B-492 samples were laminated at room temperature to surfaces listed below and allowed to dwell 24 hours at room temperature prior to exposure to the indicated environments. Labels applied with three applications (gapped, overlapped [with ⅛" overlap], longitudinal to 1.5 mL Eppendorf tubes, 5 mL Cryogenic (polypropylene) vials, 15 mL and 50 mL Polypropylene tubes, 15 mL Glass tubes, wrapped around straws and flat on plastic Whirl-pak bags and boxes. For best results label should be wrapped around and overlapped on itself by at least ⅛".

NOTE for Surfaces: Testing was completed on the following surfaces; Cardboard, Aluminum and Stainless steel boxes[1]; Eppendorf 1.5mL tube and tube tops[1], Xryogenic (Polypropylene) vials 5mL[2], 50mL Polypropylene tubes[1], 15mL Polypropylene tubes[3], 15mL Glass tubes[1], Plastic bags (Whirl-pak)[4] and Straws[5]

Manufacturer:
[1] = VWR International
[2] = Nalgene®
[3] = Becton Dickinson Labware - Blue Max™ Jr.
[4] = Nasco
[5] = Penetration innovation (Small straw #13441/0280), (Large straw #19042/0010)

ENVIRONMENT	TEST METHOD	TYPICAL RESULTS
High Service Temperature	30 days at various temperatures	Moderate discoloration at 230°F (110°C), no visible effect to print. Severe yellowing at 266°F (130°C), label still functional
Liquid Nitrogen	3 cycles of 4 hours at -320°F (-196°C) and 20 hours at room temperature	✔Glass test tube ⅛" overlap, gapped, longitudinal ✔Polypropylene tube/vial ⅛" overlap, gapped, longitudinal ✔Glass microscope slide ✔Straws; Large & Small ◆Plastic Whirl-Pak bags ◆Flat polypropylene ✔Aluminum foil ✔Aluminum and cardboard storage boxes
Freezer	3 cycles of 16 hours at -112°F (-80°C) and 8 hours at room temperature	✔Glass test tube ⅛" overlap, gapped, longitudinal ✔Polypropylene tube/vial ⅛" overlap, gapped, longitudinal ✔Glass microscope slide ✔Straws; Large & Small ◆Plastic Whirl-Pak bags ✔Flat polypropylene ✔Aluminum foil ✔Stainless steel, aluminum and cardboard storage boxes
Liquid Nitrogen to boiling water	1 hour at -320°F (-190°C) then placed in boiling water 212°F (100°C) for 10 minutes	✔Glass test tube ⅛" overlap, gapped, longitudinal ✔Polypropylene tube/vial, gapped ◆Polypropylene tube/vial, ⅛" overlapped, longitudinal ◆Glass microscope slide ◆Flat polypropylene ✔Aluminum foil
Freezer to boiling water	1 hour at -112°F (-80°C) then placed in boiling water 212°F (100°C for 10 minutes	✔Glass test tube ⅛" overlap, gapped, longitudinal ✔Polypropylene tube/vial, gapped ◆Polypropylene tube/vial, longitudinal, ⅛" overlap ✔Glass microscope slide ✔Flat polypropylene ✔Aluminum foil

✔= Label suitable for application; no visible effect, label remains adhered to test surface
◆= Label may work in application; test results were mixed
X = Label not recommended for application; label came off either during testing or after test surface was removed from environment.
[1]Metal surfaces should be labeled at room temperature only.

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ENVIRONMENTAL PERFORMANCE PROPERTIES	LABEL APPLIED TO COLD SURFACE

B-492 samples were printed with the Brady Series R6400 ribbon. Surfaces listed below were stored for 24 hours in either liquid nitrogen at -320°F (-196°C) or in a freezer ar -112°F (-80°C). Printed B-492 samples were then laminated immediately after removal of the surfaces from liquid nitrogen or freezer. Labels were applied with three applications (gapped, overlapped [with ⅛" overlap], longitudinal) to glass test tubes (1.1 cm outer diameter) and polypropylene tubes (1.5 ml and 5ml capacity). For best results label should be wrapped around and overlapped on itself by at least ⅛".

ENVIRONMENT	TEST METHOD	TYPICAL RESULTS
Liquid Nitrogen	3 cycles of 4 hours at -320°F (-196°C) and 20 hours at room temperature	✔Glass test tube, ⅛" overlap ✔Polypropylene tube/vial, ⅛" overlap ✔Glass microscope slide ◆Flat polypropylene ◆Plastic Whirl-Pak bags ✔Straws; Large & Small ✔Aluminum foil ✔Cardboard storage boxes
Freezer	3 cycles of 16 hours at -112°F (-80°C) and 8 hours at room temperature	✔Glass test tube, gapped ◆Glass test tube, longitudinal, ⅛" overlap ✔Polypropylene tube/vial, gapped ◆Polypropylene tube/vial, ⅛" overlap, longitudinal ◆Plastic Whirl-Pak bags ✔Straws; Large & Small ✔Glass microscope slide ✔Flat polypropylene ✔Aluminum foil ✔Stainless steel, aluminum and cardboard storage boxes
Liquid Nitrogen to boiling water	1 hour at -320°F (-190°C) then placed in boiling water 212°F (100°C) for 10 minutes	✔Glass test tube, gapped ◆Glass test tube ⅛" overlap, longitudinal ✔Polypropylene tube/vial ⅛" overlap ◆Glass microscope slide ◆Flat polypropylene ✔Aluminum foil
Freezer to boiling water	1 hour at -112°F (-80°C) then placed in boiling water 212°F (100°C for 10 minutes	✔Glass test tube, gapped ◆Glass test tube, ⅛" overlap, longitudinal ✔Polypropylene tube/vial, ⅛" overlap ✔Glass microscope slide ✔Flat polypropylene ✔Aluminum foil

PERFORMANCE PROPERTIES	CHEMICAL RESISTANCE

The chemical resistance of B-492 samples printed with the Brady Series R6400 and the Brady Series R4300 ribbons was tested at room temperature. Printed samples were laminated to aluminum panels and allowed to dwell 24 hours prior to testing. Samples immersed in test solvents for 15 minutes. The samples were removed and rubbed 10 times with a cotton swab saturated with the test fluid. The rating scale below show the effect to the quality of the print for each sample.

CHEMICAL REAGENT	SUBJECTIVE OBSERVATION OF VISUAL CHANGE				
	EFFECT TO LABEL STOCK	EFFECTS TO PRINTED IMAGE			
		R6400		R4300	
		WITHOUT RUB	WITH RUB	WITHOUT RUB	WITH RUB
Ethanol	No visible effect	1	1	1	2
Toluene	Slight edge infiltration or lifting	1	1	1	4

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Isopropanol	Slight edge infiltration or lifting	1	1	1	2
Xylene	Slight edge infiltration or lifting	1	1	1	4
Dimethylsulfoxide (DMSO)	No visible effect	1	1	1	2
50% Acetic Acid	No visible effect	1	1	1	1
10% Sodium Hydroxide	Topcoat delaminates from label	4	4	4	4
10% Chlorox® Solution	No visible effect	1	1	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

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:
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Nalgene® is a registered trademark of Nalge Nunc International Corporation
S.I.: International System of Units

Note: All values shown are averages and should not be used for specification purposes.
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