

**BRADY B-490 FREEZERBONDZ MATTE WHITE POLYESTER THERMAL PRINTABLE LABEL STOCK**

TDS No. B-490  
Effective Date: 06/18/2019

**Description:**

**GENERAL**

**Print Technology:** Thermal transfer  
**Material Type:** White polyester  
**Finish:** White film with matte white thermal transfer printable coated ink  
**Adhesive:** Permanent acrylic

**APPLICATIONS**

B-490 Freezerbondz™ is designed for use in laboratory identification such as vials, centrifuge tubes, test tubes, straws, and slides.

**RECOMMENDED RIBBONS**

Brady Series R4300

**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](http://www.bradycanada.ca/weee-rohs)

In Europe: [www.bradyeurope.com/rohs](http://www.bradyeurope.com/rohs)

In Japan: [www.brady.co.jp/products/labelsuse/rohs](http://www.brady.co.jp/products/labelsuse/rohs)

All other regions: [www.bradyid.com/weee-rohs](http://www.bradyid.com/weee-rohs)

**SPECIAL FEATURES**

B-490 Freezerbondz™ can be applied to frozen surfaces including glass and polypropylene stored in liquid nitrogen. B-490 has good print smudge resistance, solvent resistance, and good high and low temperature performance. B-490 performs well in common laboratory environments such as liquid nitrogen and freezer applications. For tube/vial applications B-490 must be wrapped upon itself with at least 1/8 inch overlap.

**Details:**

PHYSICAL PROPERTIES	TEST METHODS	AVERAGE RESULTS
Thickness	ASTM D 1000 -Total (excluding liner)	0.0026 inch (0.065 mm)
Adhesion	ASTM D 1000	
-Stainless Steel	20 minute dwell 24 hour dwell	14 oz/inch (15N/100mm) 14 oz/inch (15N/100mm)
-Glass	20 minute dwell 24 hour dwell	15 oz/inch (16 N/100 mm) 19 oz/inch (21 N/100 mm)
-Polypropylene	20 minute dwell 24 hour dwell	12 oz/inch (13 N/100 mm) 16 oz/inch (18 N/100 mm)

**ENVIRONMENTAL PERFORMANCE PROPERTIES - LABEL APPLIED TO ROOM TEMPERATURE SURFACE**

B-490 samples were printed with the Brady Series R4300 ribbon. Printed B-490 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 to glass test tubes (1.1 cm outer diameter) and polypropylene centrifuge tubes (1.1 cm inner diameter, 1.5 ml capacity) were wrapped with a 1/8" overlap.

ENVIRONMENT	TEST METHOD	TYPICAL RESULTS
High Service Temperature	30 days at various temperatures	Slight discoloration at 266°F (130°C), no visible effect to print. Material discolored but functional up to 320°F (160°C)

UV Light Resistance	ASTM G155, Cycle 1 without water spray 1000 hours in Xenon Arc Chamber	Slight discoloration of topcoat. Print is still legible.
Weatherability	ASTM G155, Cycle 1 1000 hours in Xenon Arc Weatherometer	Slight chalkiness of topcoat. Print is still legible but slightly faded.
Liquid Nitrogen	3 cycles of 4 hours at -320°F (-196°C) and 20 hours at room temperature	<ul style="list-style-type: none"> <li>✓ Glass test tube 1/8" overlap</li> <li>✓ Polypropylene centrifuge tube 1/8" overlap</li> <li>✓ Glass microscope slide</li> <li>✓ Flat polypropylene</li> <li>✓ Aluminum foil</li> </ul>
Freezer	3 cycles of 16 hours at -94°F (-70°C) and 8 hours at room temperature	<ul style="list-style-type: none"> <li>✓ Glass test tube 1/8" overlap</li> <li>✓ Polypropylene centrifuge tube 1/8" overlap</li> <li>✓ Glass microscope slide</li> <li>◆ Flat polypropylene</li> <li>✓ Aluminum foil</li> </ul>
Liquid Nitrogen to boiling water	1 hour at -320°F (-196°C) then placed in boiling water 212°F (100°C) for 10 minutes	<ul style="list-style-type: none"> <li>✓ Glass test tube 1/8" overlap</li> <li>✓ Polypropylene centrifuge tube 1/8" overlap</li> <li>✓ Glass microscope slide</li> <li>✓ Flat polypropylene</li> <li>✓ Aluminum foil</li> </ul>
Freezer to boiling water	1 hour at -94°F (-70°C) then placed in boiling water 212°F (100°C) for 10 minutes	<ul style="list-style-type: none"> <li>✓ Glass test tube 1/8" overlap</li> <li>✓ Polypropylene centrifuge tube 1/8" overlap</li> <li>✓ Glass microscope slide</li> <li>✓ Flat polypropylene</li> <li>✓ Aluminum foil</li> </ul>

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

◆ =Label may work in application; test results were mixed

#### ENVIRONMENTAL PERFORMANCE PROPERTIES LABEL APPLIED TO COLD SURFACE

B-490 samples were printed with the Brady Series R4300 ribbon. Surfaces listed below were stored for 24 hours in either liquid nitrogen at -320°F (-196°C) or in a freezer at -94°F (-70°C). Printed B-490 samples were then laminated immediately after removal of the surfaces from liquid nitrogen or freezer. Samples were allowed to dwell 24 hours at room temperature prior to exposure to the indicated environments. Labels applied to glass test tubes (1.1 cm outer diameter) and polypropylene centrifuge tubes (1.1 cm inner diameter, 1.5 ml capacity) were wrapped with a 1/8" overlap.

ENVIRONMENT	TEST METHOD	TYPICAL RESULTS
Liquid Nitrogen	3 cycles of 4 hours at -320°F (-196°C) and 20 hours at room temperature	<ul style="list-style-type: none"> <li>✓ Glass test tube 1/8" overlap</li> <li>✓ Polypropylene centrifuge tube 1/8" overlap</li> <li>✓ Glass microscope slide</li> <li>✓ Flat polypropylene</li> <li>✓ Aluminum foil</li> </ul>
Freezer	3 cycles of 16 hours at -94°F (-70°C) and 8 hours at room temperature	<ul style="list-style-type: none"> <li>✓ Glass test tube 1/8" overlap</li> <li>✓ Polypropylene centrifuge tube 1/8" overlap</li> <li>✓ Glass microscope slide</li> <li>✓ Flat polypropylene</li> <li>✓ Aluminum foil</li> </ul>
Liquid Nitrogen to boiling water.	1 hour at -320°F (-196°C) then placed in boiling water 212°F (100°C) for 10 minutes	<ul style="list-style-type: none"> <li>✓ Glass test tube 1/8" overlap</li> <li>✓ Polypropylene centrifuge tube 1/8" overlap</li> <li>✓ Glass microscope slide</li> <li>◆ Flat polypropylene</li> <li>✓ Aluminum foil</li> </ul>

Freezer to boiling water	1 hour at -94°F (-70°C) then placed in boiling water 212°F (100°C) for 10 minutes	<ul style="list-style-type: none"> <li>✓ Glass test tube 1/8" overlap</li> <li>✓ Polypropylene centrifuge tube 1/8" overlap</li> <li>✓ Glass microscope slide</li> <li>✓ Flat polypropylene</li> <li>✓ Aluminum foil</li> </ul>
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- ✓ = Label suitable for application; no visible effect, label remains adhered to test surface
- ◆ = Label may work in application; test results were mixed

**PERFORMANCE PROPERTIES - CHEMICAL**

Flat samples of B-490 were printed with the Brady Series R4300 ribbon. Printed samples were laminated and allowed to dwell 24 hours prior to testing. Test conducted at room temperature. Samples were 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 shows the effect to the quality of the print for each sample.

CHEMICAL REAGENT	EFFECT TO PRINT WITH RUB	EFFECT TO PRINT WITHOUT RUB	EFFECT TO LABEL STOCK
Ethanol	2	1	No visible effect
Toluene	3	1	Slight adhesive ooze
Isopropanol	2	1	No visible effect
Xylene	3	1	Slight adhesive ooze
Dimethylsulfoxide (DMSO)	2	1	No visible effect
Methylene Chloride	4	1	Slight adhesive ooze
50% Acetic Acid	1	1	No visible effect
10% Sodium Hydroxide	1	1	No visible effect
10% Clorox® Bleach Solution	1	1	No visible effect

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:**

Clorox® is a registered trademark of The Clorox Company.  
Freezerbondz™ is a trademark of Brady Worldwide, Inc.  
ASTM: American Society for Testing and Materials (U.S.A.)

**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.

Product compliance information is based upon information provided by suppliers of the raw materials used by Brady to manufacture this product or based on results of testing using recognized analytical methods performed by a third party, independent laboratory. As such, Brady makes no independent representations or warranties, express or implied, and assumes no liability in connection with the use of this information.

**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.