Technical Data Sheet

B-461 CLEAR POLYESTER FILM TAPE

TDS No. B-461
Effective Date: 2008-07-08

Description:

GENERAL
Print Technology: Thermal transfer
Material Type: Clear polyester
Finish: Clear film with matte white printable zone coated ink
Adhesive: Permanent acrylic

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

RECOMMENDED RIBBONS
Brady Series R4300
Brady Series R4500 (colors - red, blue, green)
Brady Series R6200 (alternate)*
*B-461 can be printed with Series R6200 ribbon; please note that testing described in this TDS was performed on materials printed with the R4300 Series ribbon.

REGULATORY/AGENCY APPROVALS
Brady B-461 is RoHS compliant to 2005/618/EC MCV amendment to RoHS Directive 2002/95/EC.

SPECIAL FEATURES
B-461 can be offered in a self-laminating format which has a white thermal printable zone and a clear overlaminating area. B-461 has good print smudge resistance, solvent resistance, good high and low temperature performance. B-461 performs well in common laboratory environments such as liquid nitrogen and autoclave applications

Details:

PHYSICAL PROPERTIES	TEST METHODS	AVERAGE RESULTS
Thickness	ASTM D1000 - Substrate - Adhesive - Total (excluding liner)	0.0009 inch (0.0229 mm) 0.0010 inch (0.0254 mm) 0.0019 inch (0.0483 mm)
Adhesion to: - Stainless Steel - Polypropylene - Glass	ASTM D 1000 20 minute dwell 24 hour dwell 20 minute dwell 24 hour dwell 20 minute dwell 24 hour dwell	32 oz/inch (35 N/100 mm) 39 oz/inch (43 N/100 mm) 10 oz/inch (11 N/100 mm) 10 oz/inch (11 N/100 mm) 37 oz/inch (40 N/100 mm) 39 oz/inch (43 N/100 mm)

PERFORMANCE PROPERTIES - ENVIRONMENTAL
Performance properties tested on B-461 printed with Series R4300 ribbon on Brady TLS2200® Thermal Labeling System thermal transfer printer. Printed samples were laminated to 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	Slight discoloration at 230°F (110°C), no visible effect to print. Material discolored but functional up to 266°F (130°C)
Pressure Cooker (simulate autoclave)	3 cycles of 1 hour in 250°F (121°C)/15 psi pressure cooker and 23 hours at room temperature	Very slight discoloration and very slight print bleed after 3 cycles
Liquid Nitrogen***	3 cycles of 4 hours at -320°F (-196°C) and 20 hours at room temperature	No visible effect after 3 cycles
Freezer	3 cycles of 16 hours at -94°F (-70°C) and 8 hours at room temperature	No visible effect after 3 cycles
Liquid Nitrogen to boiling water***	1 hour at -320°F (-196°C) then placed in boiling water 212°F (100°C) for 10 minutes	Very slight discoloration
Freezer to boiling water	1 hour at -94°F (-70°C) then placed in boiling water 212°F (100°C) for 10 minutes	Very slight discoloration

**samples for this testing were placed only on glass panels and glass test tubes
***also tested labels on aluminum foil

PERFORMANCE PROPERTIES - CHEMICAL				
Flat and self-laminating samples of B-461 were printed with Series R4300 ribbon on Brady TLS2200® Thermal Labeling System thermal transfer printer. Printed samples were laminated to test tubes and allowed to dwell 24 hours prior to testing. Test conducted at room termperature. 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			
	EFFECT TO LABEL STOCK		EFFECTS TO PRINTED IMAGE	
	FLAT	WRAPPED	WITHOUT RUB	WITH RUB WRAPPED
Ethanol	No visible effect	No visible effect	1	1
Toluene	Slight adhesive ooze	Slight adhesive ooze	1	1
Isopropanol	No visible effect	No visible effect	1	1
Xylene	No visible effect	No visible effect	1	1
Dimethylsulfoxide (DMSO)	No visible effect	Slight adhesive ooze	1	1
Methylene Chloride	Adhesive ooze	Slight adhesive ooze and label unwrap	1	1
50% Acetic Acid	No visible effect	No visible effect	1	1
10% Hydrochloric Acid	No visible effect	No visible effect	1	1
10% Sodium Hydroxide	No visible effect	No visible effect	1	1
10% Chlorox Solution	No visible effect	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

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 *(27°C)* and 60% RH. We are confident that our product will perform well beyond this time frame. How ever, 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:
TLS2200® is a registered 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.

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