

3M™ Thermal Transfer Polyester Label Material 7816

Product Description

3M™ Thermal Transfer Polyester Label Material 7816 is a durable polyester label material that offers excellent moisture resistance and thermal stability. This label product utilizes 3M™ Acrylic Adhesive 310 which is a firm adhesive which resists oozing and provides high strength on a variety of surfaces including high surface energy (HSE) plastics and metals.

Product Features

- Topcoated for thermal transfer printing. Resin ribbons are recommended for optimum durability. The topcoat also provides improved ink anchorage for traditional forms of press printing.
- 3M™ Thermal Transfer Polyester Label Material 7816 55# densified kraft liner assures consistent die cutting.
- UL recognized (File MH16411) and CSA accepted (File 99316). See the UL and CSA listings for details.



Technical Information Note

The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

Typical Physical Properties

Property	Values	
Facestock	White Polyester Gloss TC	
Facestock Thickness	0.051 mm	2.0 mil
Adhesive	310 Acrylic	
Adhesive Thickness	0.02 mm	0.8 mil
Liner	55# Densified kraft	
Liner Thickness	0.081 mm	3.2 mil
Adhesive Coat Weight	1.05 to 1.21 g/100 in ²	

Convertability

The firmness of 3M™ Acrylic Adhesive 310 is specifically designed to be compatible with thermal transfer and laser technologies. Adhesive processing issues are not anticipated when proper roll tensions, handling and storage conditions are used. Please refer to the die cutting/converting section of this data page or the “Guide to Converting and Handling Label Products” technical bulletin for additional information.

Note

Calipers are nominal values

Typical Performance Characteristics

Property	Values		Method	Notes
Minimum Application Temperature	10 °C	50 °F		
Service Temperature Range	-40 to 149 °C	-40 to 300 °F		
Release Range	5 to 50 g/2 in		TLMI	180° removal, 300 in/min

180° Peel Adhesion		Dwell/Cure Time	Substrate
4.7 N/cm	43 oz/in	10 min @ Room Temperature	Stainless Steel
5.1 N/cm	47 oz/in	10 min @ Room Temperature	Polycarbonate (PC)
2.0 N/cm	18 oz/in	10 min @ Room Temperature	Polypropylene (PP)
5.7 N/cm	52 oz/in	10 min @ Room Temperature	Glass

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Typical Performance Characteristics (continued)

180° Peel Adhesion		Dwell/Cure Time	Substrate
2.6 N/cm	24 oz/in	10 min @ Room Temperature	High Density Polyethylene (HDPE)
2.2 N/cm	20 oz/in	10 min @ Room Temperature	Low Density Polyethylene (HDPE)
5.6 N/cm	51 oz/in	72 hr @ Room Temperature	Stainless Steel
5.7 N/cm	52 oz/in	72 hr @ Room Temperature	Polycarbonate (PC)
2.0 N/cm	18 oz/in	72 hr @ Room Temperature	Polypropylene (PP)
7.4 N/cm	68 oz/in	72 hr @ Room Temperature	Glass
3.6 N/cm	33 oz/in	72 hr @ Room Temperature	High Density Polyethylene (HDPE)
3.5 N/cm	32 oz/in	72 hr @ Room Temperature	Low Density Polyethylene (LDPE)
6.6 N/cm	60 oz/in	72 hr @ 120°F(49°C)	Stainless Steel
4.5 N/cm	41 oz/in	72 hr @ 120°F(49°C)	Polycarbonate (PC)
3.8 N/cm	35 oz/in	72 hr @ 120°F(49°C)	Polypropylene (PP)
7.4 N/cm	68 oz/in	72 hr @ 120°F(49°C)	Glass
3.3 N/cm	30 oz/in	72 hr @ 120°F(49°C)	High Density Polyethylene (HDPE)
0.4 N/cm	5 oz/in	72 hr @ 120°F(49°C)	Low Density Polyethylene (LDPE)
8.1 N/cm	74 oz/in	24 hr @ 90°F(32°C) at 90% Relative Humidity	Stainless Steel
6.8 N/cm	62 oz/in	24 hr @ 90°F(32°C) at 90% Relative Humidity	Polycarbonate (PC)
4.2 N/cm	38 oz/in	24 hr @ 90°F(32°C) at 90% Relative Humidity	Polypropylene (PP)
7.2 N/cm	66 oz/in	24 hr @ 90°F(32°C) at 90% Relative Humidity	Glass
3.8 N/cm	35 oz/in	24 hr @ 90°F(32°C) at 90% Relative Humidity	High Density Polyethylene (HDPE)
2.2 N/cm	20 oz/in	24 hr @ 90°F(32°C) at 90% Relative Humidity	Low Density Polyethylene (LDPE)

Property: 180° Peel Adhesion
Method: ASTM D3330

90° Peel Adhesion		Dwell/Cure Time	Substrate
3.8 N/cm	35 oz/in	10 min @ Room Temperature	Stainless Steel
4.0 N/cm	37 oz/in	10 min @ Room Temperature	Polycarbonate (PC)
1.8 N/cm	16 oz/in	10 min @ Room Temperature	Polypropylene (PP)
3.7 N/cm	34 oz/in	10 min @ Room Temperature	Glass
1.8 N/cm	16 oz/in	10 min @ Room Temperature	High Density Polyethylene (HDPE)

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Typical Performance Characteristics (continued)

90° Peel Adhesion		Dwell/Cure Time	Substrate
1.3 N/cm	12 oz/in	10 min @ Room Temperature	Low Density Polyethylene (HDPE)
4.5 N/cm	41 oz/in	72 hr @ Room Temperature	Stainless Steel
4.7 N/cm	43 oz/in	72 hr @ Room Temperature	Polycarbonate (PC)
2.6 N/cm	24 oz/in	72 hr @ Room Temperature	Polypropylene (PP)
5.1 N/cm	47 oz/in	72 hr @ Room Temperature	Glass
2.2 N/cm	20 oz/in	72 hr @ Room Temperature	High Density Polyethylene (HDPE)
2.4 N/cm	22 oz/in	72 hr @ Room Temperature	Low Density Polyethylene (HDPE)
5.0 N/cm	46 oz/in	72 hr @ 120°F(49°C)	Stainless Steel
3.5 N/cm	32 oz/in	72 hr @ 120°F(49°C)	Polycarbonate (PC)
3.3 N/cm	30 oz/in	72 hr @ 120°F(49°C)	Polypropylene (PP)
4.6 N/cm	42 oz/in	72 hr @ 120°F(49°C)	Glass
2.2 N/cm	20 oz/in	72 hr @ 120°F(49°C)	High Density Polyethylene (HDPE)
0.9 N/cm	8 oz/in	72 hr @ 120°F(49°C)	Low Density Polyethylene (LDPE)
5.0 N/cm	46 oz/in	24 hr @ 90°F(32°C) at 90% Relative Humidity	Stainless Steel
4.4 N/cm	40 oz/in	24 hr @ 90°F(32°C) at 90% Relative Humidity	Polycarbonate (PC)
3.0 N/cm	27 oz/in	24 hr @ 90°F(32°C) at 90% Relative Humidity	Polypropylene (PP)
3.5 N/cm	32 oz/in	24 hr @ 90°F(32°C) at 90% Relative Humidity	Glass
3.0 N/cm	27 oz/in	24 hr @ 90°F(32°C) at 90% Relative Humidity	High Density Polyethylene (HDPE)
2.6 N/cm	24 oz/in	24 hr @ 90°F(32°C) at 90% Relative Humidity	Low Density Polyethylene (LDPE)

Property: 90° Peel Adhesion
Method: ASTM D3330

Available Sizes**Packaging**

Finished labels should be stored in plastic bags.

Typical Environmental Performance**Chemical and Environmental Exposure**

The properties defined are based on four hour immersions at room temperature (72°F/22°C) unless otherwise noted. Samples were applied to stainless steel panels 24 hours prior to immersion and were evaluated one hour after removal from the solution for peel adhesion. Adhesion measured at 180° peel angle (ASTM D 3330) at 12 inches/minute.

Typical Environmental Performance (continued)

Chemical	Adhesion to Stainless Steel		Appearance	Edge Penetration
	Oz./in.	N/100 mm	Visual	Millimeters
Isopropyl Alcohol	54	59	No change	1
Detergent 1% Alconox® Cleaner	66	72	No change	0
Engine Oil (10W30) @ 250°F (121°C)	70	77	No change	1.5
Water for 48 hours	72	79	No change	0
pH 4	70	77	No change	0
pH 10	66	72	No change	0
Formula 409® Cleaner	65	71	No change	0
Toluene	29	32	No change	6.3
Acetone	38	42	No change	4.5
Brake Fluid	77	84	No change	0
Gasoline	32	35	No change	5.5
Diesel Fuel	55	60	No change	1
Mineral Spirits	48	52	No change	2.3
Hydraulic Fluid	58	63	No change	0

Humidity Resistance

24 hours at 100°F (38°C) and 100% relative humidity: no significant change in appearance or adhesion

Temperature Resistance

When applied to stainless steel. Other substrates should be tested per application.

300°F (149°C) for 24 hours: no significant visual change, 0.7% MD shrinkage, 0.8% CD shrinkage

-40°F (-40°C) for 10 days: no significant visual change

Accelerated Aging		Notes
0.042 N/cm	11 g/in	180° Removal of Liner from Facestock at 90 in/min
0.189 N/cm	49 g/in	180° Peel Adhesion from Stainless Steel at 12 in/min

Property: Accelerated Aging

Method: ASTM D3611

Test Condition : 96 hr @ 150°F (65°C) and 80% relative humidity

Handling/Application Information**Application Ideas**

- Barcode labels and rating plates
- Property identification and asset labeling
- Warning, instruction, and service labels for durable goods
- Nameplates and durable goods

Application Techniques

For maximum bond strength, the surface should be clean and dry. Typical cleaning solvents are heptane and isopropyl alcohol.*

For best bonding conditions, application surface should be at room temperature or higher. Low temperature surfaces, below 50°F (10°C), can cause the adhesive to become so firm that it will not develop maximum contact with the substrate. Higher initial bonds can be achieved through increased rubdown pressure.

*When using solvents, read and follow the manufacturer's precautions and directions for use.

3M™ Thermal Transfer Polyester Label Material 7816

Printing

Facestock is topcoated for improved ink receptivity and is designed for thermal transfer printing. It is printable by all standard roll processing methods including flexography, hot stamp, letterpress, and screen printing.

Thermal Transfer Printing

Printer: UL no longer requires evaluation and listing of specific printers.

Ink Ribbon/UL Recognized Components

Advent: 301 Black; 303 Black; 501 Black; 501 Red; 501 Blue; 501 Green Armor: AXR-7; AXR-7+; AXR-600

Astromed: R5

CP: 5440 Red; 5640 Blue; 5940 Black Dasco: DR-74; DR-84

Great Ribbon: SDR

Ilimak: SH-36; SP-330; PrimeMark Intermec: 053258-2; 054048-4

ITW: B324

Japan Pulp and Paper: JP Resin 1; JP Resin 2 Blue; JP Resin 2 Red (suitable for indoor use only);

JP Resin 2 Green (suitable for indoor use only)

Kurz: K500; K501

Markem: 716 (suitable for indoor use only) Mid City Columbia: CGL-80; CGL-80HE

NCR: Matrix Resin; Matrix; PaceSetter; Promark II; Ultra V

Pelikan: T016

Ricoh: B110A; B110C; B110CX

Sato: Premier 1

Sony: 4070; 4072; 4075; 4085; 5070; Signature Series Resin; Signature Series Wax UBI: HR03; HR04

Zebra: 5095; 5099; 5100; 5175

Converting

Rotary die cutting is recommended. Fanfolding of labels is not recommended. Small labels should be evaluated carefully. Winding tensions should be kept at a minimum to help prevent the adhesive from oozing.

Storage and Shelf Life

Store at room temperature conditions of 72°F (22°C) and 50% relative humidity.

If stored under proper conditions, product retains its performance and properties for 24 months from date of manufacture.

Industry Specifications

UL Recognized (File MH16411)

CSA Accepted (File 99316)

Trademarks

3M is a trademark of 3M Company.

Alconox is a registered trademark of Alconox, Inc.

Formula 409 is a registered trademark of Clorox Inc.

Family Group

	7816	7816FL	7875
Facestock	White Polyester Gloss TC	White Polyester Gloss TC	Matte Platinum Polyester TC
Facestock Thickness (mm)	0.051	0.051	0.051
Adhesive	310 Acrylic	310 Acrylic	310 Acrylic
Adhesive Thickness (mm)	0.02	0.02	0.02
Liner	55# Densified kraft	Polyester	55# Densified kraft
Liner Thickness (mm)	0.081	0.038	0.081

3M™ Thermal Transfer Polyester Label Material 7816

References

1. 3m.com Product Page
Url: https://www.3m.com/3M/en_US/company-us/all-3m-products/~//3M-Thermal-Transfer-Label-Materials-7816/?N=5002385+3294001419&rt=rud
2. Safety Data Sheet
Url: https://www.3m.com/3M/en_US/company-us/SDS-search/results/?gsaAction=msdsSRA&msdsLocale=en_US&co=ptn&q=7816

ISO Statement

This Industrial Adhesives and Tapes Division product was manufactured under a 3M quality system registered to ISO 9001 standards.

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