



Thermal Transfer Polyester Label Material

7871 • 7871FL

Technical Data

November, 2006

Product Description

3M™ Thermal Transfer Polyester Label Materials 7871 and 7871FL are gloss radiant white polyester label stocks that offer premium durability and moisture resistance. These label products utilize 3M™ Adhesive 350 which is an universal adhesive for label material that offers excellent chemical resistance and holding strength even at high temperatures.

Construction

(Calipers are nominal values.)

Product	Facestock	Adhesive	Liner
3M label material 7871	2.0 mil (51 micron) Gloss radiant white polyester	1.8 mil (46 micron) #350 Acrylic	3.2 mil (81 micron) 55# Densified kraft
3M label material 7871FL	2.0 mil (51 micron) Gloss radiant white polyester	1.8 mil (46 micron) #350 Acrylic	1.5 mil (38 micron) Polyester

Features

- Adhesive can permanently bond to high surface energy (HSE) and low surface energy (LSE) plastics, textured and contoured surfaces, powder coatings, and slightly oily metals.
- Thick adhesive caliper provides for stronger bond on textured surfaces.
- Facestock is 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 label material 7871 55# densified kraft liner assures consistent die cutting.
- 3M label material 7871FL polyester liner contributes to improved die cutting by allowing for deeper die cuts than paper without the added concern of exposing paper fibers. A backside release coating helps minimize label blocking. The film liner resists breaking during high speed dispensing. The polyester liner is recommended for clean room applications.
- UL recognized (File MH16411) and CSA accepted (File 99316). See the UL and CSA listings for details.
- UL listing includes approval for use on powder coated surfaces.
- Satisfies the requirements of UL-197 for occasional exposure to cooking oil when applied to stainless steel surfaces.
- Meets British Standard BS-5609.

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Typical Physical Properties

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

Adhesion: 180° peel test procedure is ASTM D 3330.

90° peel test procedure is ASTM D 3330 modified for the angle change.

Surface	Initial (10 Minute Dwell/RT)				Conditioned for 3 Days at Room Temperature 72°F (22°C)			
	180° Peel		90° Peel		180° Peel		90° Peel	
	Oz./In.	N/100 mm	Oz./In.	N/100 mm	Oz./In.	N/100 mm	Oz./In.	N/100 mm
Stainless Steel	88	96	63	69	96	105	75	82
Polycarbonate	90	98	65	71	94	103	69	76
Polypropylene	73	80	29	32	83	91	31	34
Glass	93	102	69	76	99	108	77	84
HD Polyethylene	54	59	27	30	58	63	32	35
LD Polyethylene	53	58	30	32	56	61	37	40
Smooth Powder Coating*	85	93	–	–	89	97	–	–
Finely Textured Powder Coating*	49	54	–	–	52	57	–	–

*Calculated using averages of different powder coated surfaces.

Surface	Conditioned for 3 Days at 120F (49°C)				Conditioned for 24 hours at 90°F (32°C) at 90% Relative Humidity			
	180° Peel		90° Peel		180° Peel		90° Peel	
	Oz./In.	N/100 mm	Oz./In.	N/100 mm	Oz./In.	N/100 mm	Oz./In.	N/100 mm
Stainless Steel	108	118	96	105	99	108	81	89
Polycarbonate	66	72	34	37	77	84	59	64
Polypropylene	81	89	33	16	78	85	47	51
Glass	106	116	86	94	89	97	72	79
HD Polyethylene	56	61	32	35	50	55	38	42
LD Polyethylene	15	16	14	15	43	47	40	44
Smooth Powder Coating*	93	102	–	–	88	96	–	–
Finely Textured Powder Coating*	56	61	–	–	50	55	–	–

*Calculated using averages of different powder coated surfaces.

Liner Release: 180° Removal of Liner from Facestock

Product	Rate of Removal	Gram/Inch Width	N/100 mm
3M™ Thermal Transfer Polyester Label Material 7871	90 inches/minute 300 inches/minute	16 22	0.62 0.85
3M™ Thermal Transfer Polyester Label Material 7871FL	90 inches/minute	15	0.58

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Environmental Performance

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

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.

Chemical Resistance:

Chemical	Adhesion to Stainless Steel		Appearance	Edge Penetration
	Oz./in.	N/100 mm	Visual	Millimeters
Isopropyl Alcohol	88	96	No change	0.6
Detergent 1% Alconox® Cleaner	92	101	No change	1.3
Engine Oil (10W30) @ 250°F (121°C)	102	112	No change	0.6
Water for 48 hours	67	73	No change	0.1
pH 4	88	96	No change	0.7
pH 10	83	91	No change	1.4
409® Formula	92	101	No change	1.3
Toluene	50	55	No change	5.2
Acetone	59	65	No change	4.9
Brake Fluid	98	107	No change	0.1
Gasoline	56	61	No change	4.6
Diesel Fuel	93	102	No change	0.7
Mineral Spirits	80	88	No change	2.2
Hydraulic Fluid	96	105	No change	0.0

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
0.4% MD shrinkage
0.6% CD shrinkage

-40°F (-40°C) for 10 days:

no significant visual change

Humidity Resistance:

24 hours at 100°F (38°C) and 100% relative humidity:

no significant change in appearance or adhesion

Accelerated Aging:

ASTM D 3611:

96 hours at 150°F (65°C) and 80% relative humidity

Product		Rate of Removal	Gram/Inch Width	N/100 mm
3M™ Thermal Transfer Polyester Label Material 7871	180° Removal of Liner from Facestock	90 inches/minute	12	0.46
3M™ Thermal Transfer Polyester Label Material 7871FL	180° Peel Adhesion from Stainless Steel	12 inches/minute	87	95
3M label material 7871	180° Peel Adhesion from Stainless Steel	12 inches/minute	87	95

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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.

Application Ideas

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

Agency Listing Information

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

Aarmor: AXR-7; AXR-7+; AXR-600

Astromed: R5

CP: 5440 Red; 5640 Blue; 5940 Black

Dasco: DR-74; DR-84

Great Ribbon: SDR

ICS: ICS-CC-4099.1

Iimak: SH-36; SP-330; PrimeMark

Intermec: 053258-2; 054048-4

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

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Processing

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. Refer to Graphic Ink Selection Guide or call 3M Customer Service at 1-800-223-7427 for additional information.

Die Cutting:

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.

Packaging:

Finished labels should be stored in plastic bags.

Storage

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

Shelf Life

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

Product Use

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ISO 9001:2000

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