



# Thermal Transfer Polyester Label Materials

7816 • 7816FL • 7875

## Technical Data

May 2017

### Product Description

3M™ Thermal Transfer Polyester Label Materials 7816, 7816FL and 7875 are durable polyester label materials that offer excellent moisture resistance and thermal stability. These label products utilize 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.

### Construction

| Product                   | Facestock  | Adhesive                            | Liner  |
|---------------------------|--|-------------------------------------|--|
| 3M™ Label Material 7816   | 2.0 mils (51 microns)<br>White Polyester Gloss TC    | 0.8 mil (20 microns)<br>310 Acrylic | 3.2 mils (81 microns)<br>55# Densified kraft |
| 3M™ Label Material 7816FL | 2.0 mils (51 microns)<br>White Polyester Gloss TC    | 0.8 mil (20 microns)<br>310 Acrylic | 1.5 mils (38 microns)<br>Polyester           |
| 3M™ Label Material 7875   | 2.0 mils (51 microns)<br>Matte Platinum Polyester TC | 0.8 mil (20 microns)<br>310 Acrylic | 3.2 mils (81 microns)<br>55# Densified kraft |

(Calipers are nominal values.)

### 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 Materials 7816 and 7875 55# densified kraft liner assures consistent die cutting.
- 3M™ Thermal Transfer Polyester Label Material 7816FL 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.

### Application Ideas

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

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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.

|                                 |   |   |
|---------------------------------|---|---|
| Adhesive Coat Weight            | 1.05 to 1.21 g/100 in <sup>2</sup>  | TM-2279                                 |
| Release Range                   | 5 to 50 g/2 in.   | TLMI Method, 180° removal, 300 in./min. |
| Service Temperature             | -40°F to 300°F (-40°C to 149°C)   |   |
| Minimum Application Temperature | 50°F (10°C)   |   |
| 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. |   |

## Typical Peel Adhesion 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<br>(10 Minute Dwell/RT) |          |          |          | Conditioned for 3 Days at<br>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 | 43                              | 47       | 35       | 38       | 51  | 56       | 41       | 45       |
| Polycarbonate   | 47                              | 51       | 37       | 40       | 52  | 57       | 43       | 47       |
| Polypropylene   | 18                              | 20       | 16       | 18       | 18  | 20       | 24       | 26       |
| Glass           | 52                              | 57       | 34       | 37       | 68  | 74       | 47       | 51       |
| HD Polyethylene | 24                              | 26       | 16       | 18       | 33  | 36       | 20       | 22       |
| LD Polyethylene | 20                              | 22       | 12       | 13       | 32  | 35       | 22       | 24       |

| Surface         | Conditioned for 3 Days at<br>120°F (49°C) |          |          |          | Conditioned for 24 hours at 90°F<br>(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 | 60  | 66       | 46       | 50       | 74  | 81       | 46       | 50       |
| Polycarbonate   | 41  | 45       | 32       | 35       | 62  | 68       | 40       | 44       |
| Polypropylene   | 35  | 38       | 30       | 33       | 38  | 42       | 27       | 30       |
| Glass           | 68  | 74       | 42       | 46       | 66  | 72       | 32       | 35       |
| HD Polyethylene | 30  | 33       | 20       | 22       | 35  | 38       | 27       | 30       |
| LD Polyethylene | 5   | 4        | 8        | 9        | 20  | 22       | 24       | 26       |

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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                     | 54                          | 59       | No change  | 1                |
| Detergent<br>1% Alconox® Cleaner      | 66                          | 72       | No change  | 0                |
| Engine Oil (10W30)<br>@ 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                |

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

### 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 7816 & 7875 | 180° Removal of Liner from Facestock<br>90 inches/minute    | 11              | 0.42     |
| 3M™ Thermal Transfer Polyester Label Material 7816FL      | 180° Removal of Liner from Facestock<br>90 inches/minute    | 8               | 0.31     |
| 3M Label Material 7816 & 7875                             | 180° Peel Adhesion from Stainless Steel<br>12 inches/minute | 49              | 1.89     |
| 3M Label Material 7816FL                                  | 180° Peel Adhesion from Stainless Steel<br>12 inches/minute | 49              | 1.89     |

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|                          |  |
|--------------------------|--|
| Application Techniques   | <p>For maximum bond strength, the surface should be clean and dry. Typical cleaning solvents are heptane and isopropyl alcohol.*</p> <p>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.</p> <p>*When using solvents, read and follow the manufacturer's precautions and directions for use.</p>  |
| Printing                 | <p>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.</p> <p>Thermal Transfer Printing<br/>Printer: UL no longer requires evaluation and listing of specific printers.</p> <p>Ink Ribbon/UL Recognized Components</p> <hr/> <p>Advent: 301 Black; 303 Black; 501 Black; 501 Red; 501 Blue; 501 Green Armor: AXR-7; AXR-7+; AXR-600<br/>Astromed: R5<br/>CP: 5440 Red; 5640 Blue; 5940 Black Dasco:<br/>DR-74; DR-84<br/>Great Ribbon: SDR<br/>limak: SH-36; SP-330; PrimeMark<br/>Intermec: 053258-2; 054048-4<br/>ITW: B324<br/>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)<br/>Kurz: K500; K501<br/>Markem: 716 (suitable for indoor use only) Mid<br/>City Columbia: CGL-80; CGL-80HE<br/>NCR: Matrix Resin; Matrix; PaceSetter; Promark II; Ultra V<br/>Pelikan: T016<br/>Ricoh: B110A; B110C; B110CX<br/>Sato: Premier 1<br/>Sony: 4070; 4072; 4075; 4085; 5070; Signature Series Resin; Signature Series Wax UBI: HR03; HR04<br/>Zebra: 5095; 5099; 5100; 5175</p> |
| Die Cutting / Converting | <p>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.</p>  |

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|            |   |
|------------|---|
| 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. |

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