

LX45-NA Label (BC-MK-0025)

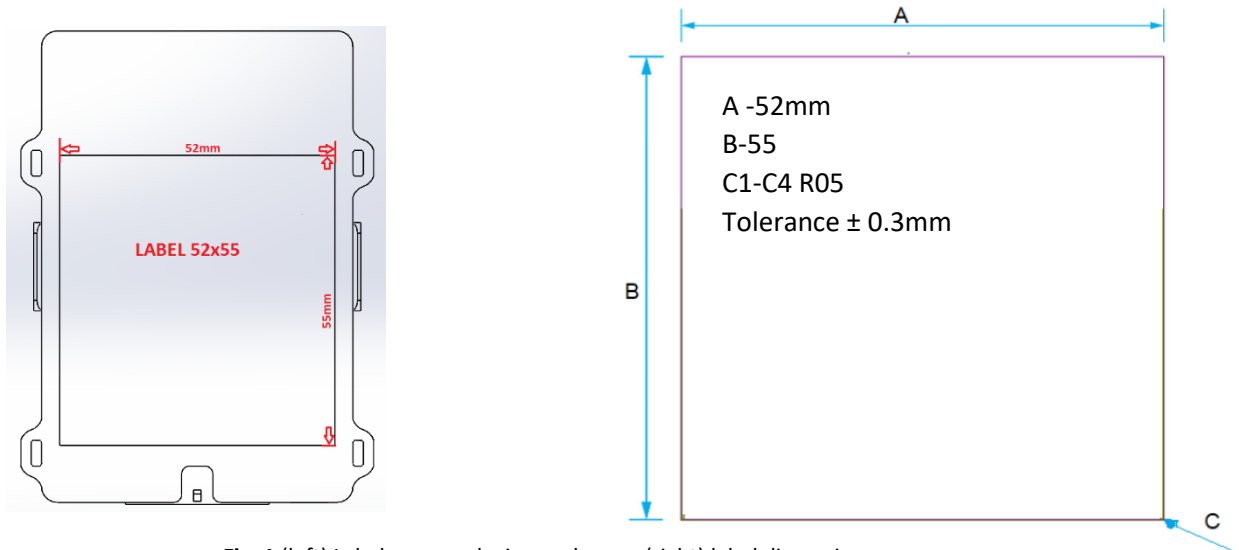


Fig. 1 (left) Label area on device enclosure, (right) label dimensions.

Label Material:

3M 7816

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.

Font/Size:

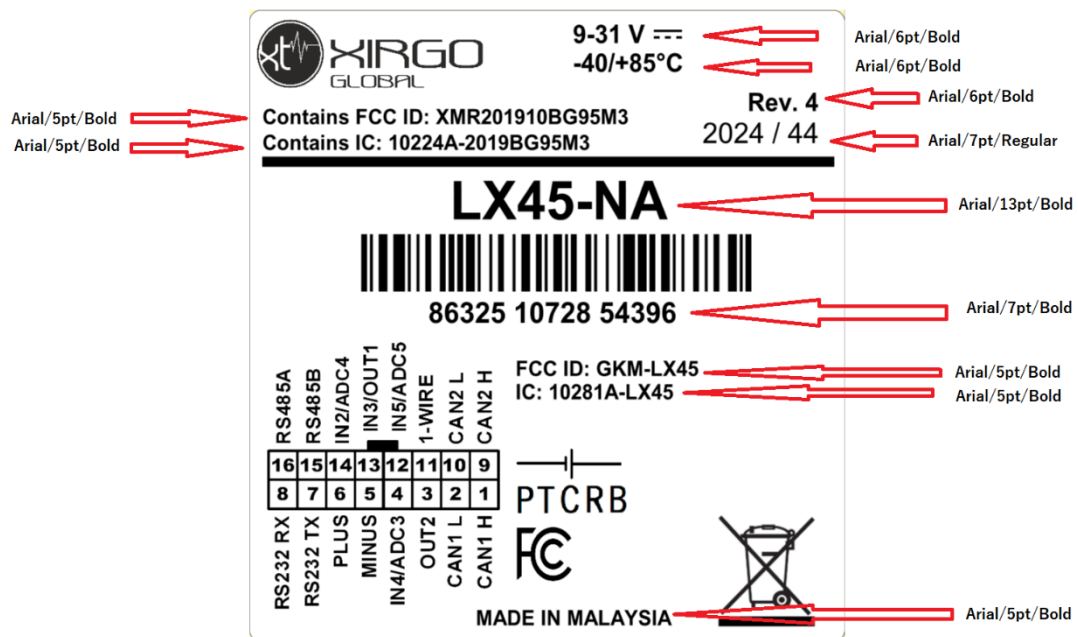


Fig. 2 LX45-NA label design

*All the variants of LX45 are identical from inside.



XIRGO
GLOBAL

9-31 V $\overline{=}$
-40/+85°C

Contains FCC ID: XMR201910BG95M3
Contains IC: 10224A-2019BG95M3

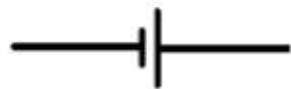
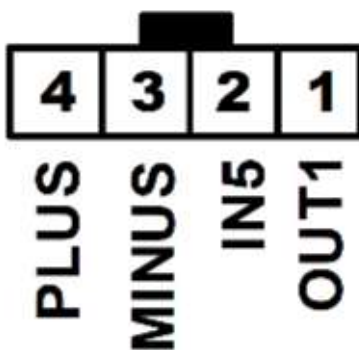
Rev. 4
2024 / 44

LX41-NA



86325 10728 54396

FCC ID: GKM-LX45
IC: 10281A-LX45



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Contains IC: 10224A-2019BG95M3

Rev. 4

2024 / 44

LX42-NA

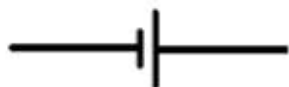


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| | | | |
|----------|----------|----------|--------|
| IN2/ADC4 | IN3/OUT1 | IN5/ADC5 | 1-WIRE |
| 8 | 7 | 6 | 5 |
| 4 | 3 | 2 | 1 |
| PLUS | MINUS | IN4/ADC3 | OUT2 |

FCC ID: GKM-LX45

IC: 10281A-LX45



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XIRGO
GLOBAL

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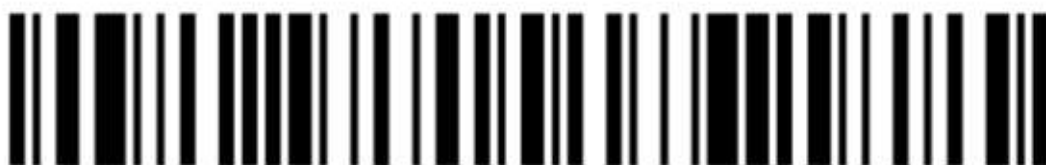
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Rev. 4

2024 / 44

LX43-NA

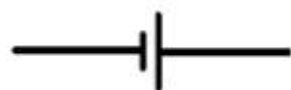


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| | | | | | | | |
|----------|----------|----------|-------|------|--------|------|-----------|
| RS485A | RS485B | IN2/ADC4 | IN 3 | IN 5 | 1-WIRE | ADC3 | OUT3 |
| 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| RS232 RX | RS232 TX | PLUS | MINUS | IN 4 | OUT2 | OUT1 | ADC5/OUT4 |

FCC ID: GKM-LX45

IC: 10281A-LX45



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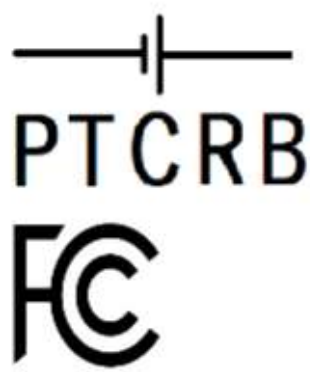
LX44-NA



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| | | | | | | | |
|----------|----------|----------|----------|----------|--------|--------|--------|
| OUT3 | OUT4 | IN2/ADC4 | IN3/OUT1 | IN5/ADC5 | 1-WIRE | CAN2 L | CAN2 H |
| 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| RS232 RX | RS232 TX | PLUS | MINUS | IN4/ADC3 | OUT2 | CAN1 L | CAN1 H |

FCC ID: GKM-LX45
IC: 10281A-LX45



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XIRGO
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-40/+85°C

Contains FCC ID: XMR201910BG95M3
Contains IC: 10224A-2019BG95M3

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LX45-NA



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| | | | | | | | |
|----------|----------|----------|----------|----------|--------|--------|--------|
| RS485A | RS485B | IN2/ADC4 | IN3/OUT1 | IN5/ADC5 | 1-WIRE | CAN2 L | CAN2 H |
| 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| RS232 RX | RS232 TX | PLUS | MINUS | IN4/ADC3 | OUT2 | CAN1 L | CAN1 H |

FCC ID: GKM-LX45
IC: 10281A-LX45



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XIRGO
GLOBAL

9-31 V $\overline{=}$

-40/+85°C

Contains FCC ID: XMR201910BG95M3

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Rev. 4

2024 / 44

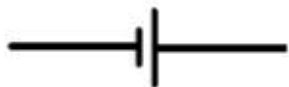
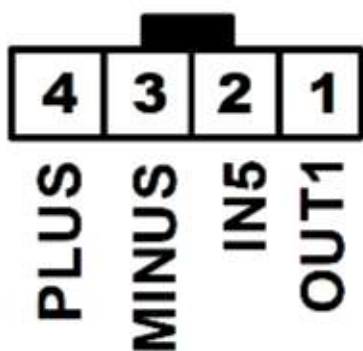
LT41-NA



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FCC ID: GKM-LX45

IC: 10281A-LX45



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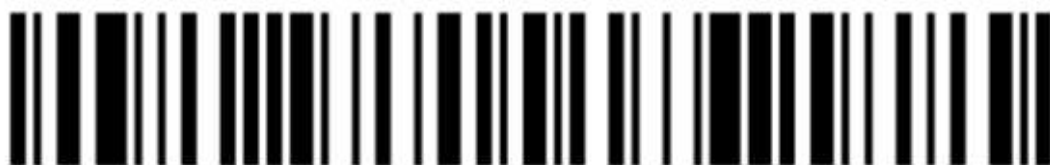
XIRGO
GLOBAL

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Rev. 4
2024 / 44

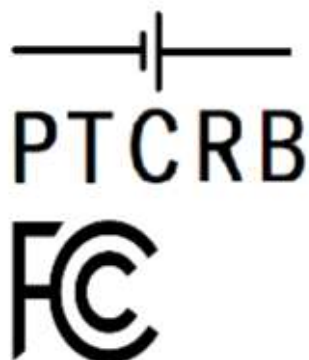
LT42-NA



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| | | | |
|----------|----------|----------|--------|
| IN2/ADC4 | IN3/OUT1 | IN5/ADC5 | 1-WIRE |
| 8 | 7 | 6 | 5 |
| 4 | 3 | 2 | 1 |
| PLUS | MINUS | IN4/ADC3 | OUT2 |

FCC ID: GKM-LX45
IC: 10281A-LX45



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Rev. 4
2024 / 44

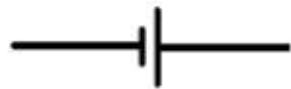
LT43-NA



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| | | | | | | | |
|----------|----------|----------|-------|------|--------|------|-----------|
| RS485A | RS485B | IN2/ADC4 | IN 3 | IN 5 | 1-WIRE | ADC3 | OUT3 |
| 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| RS232 RX | RS232 TX | PLUS | MINUS | IN 4 | OUT2 | OUT1 | ADC5/OUT4 |

FCC ID: GKM-LX45
IC: 10281A-LX45



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9-31 V $\overline{\text{---}}$

-40/+85°C

Contains FCC ID: XMR201910BG95M3

Contains IC: 10224A-2019BG95M3

Rev. 4

2024 / 44

LT44-NA

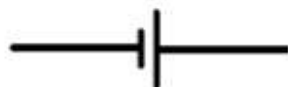


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| | | | | | | | |
|----------|----------|----------|----------|----------|--------|--------|--------|
| OUT3 | OUT4 | IN2/ADC4 | IN3/OUT1 | IN5/ADC5 | 1-WIRE | CAN2 L | CAN2 H |
| 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| RS232 RX | RS232 TX | PLUS | MINUS | IN4/ADC3 | OUT2 | CAN1 L | CAN1 H |

FCC ID: GKM-LX45

IC: 10281A-LX45



PTCRB



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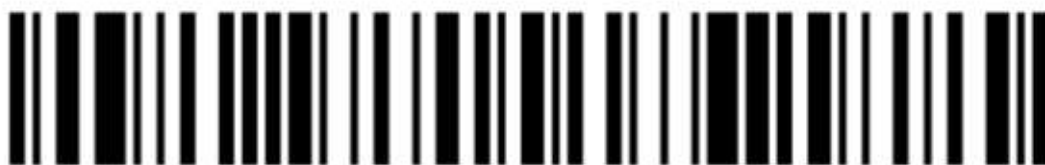
XIRGO
GLOBAL

9-31 V $\overline{=}$
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Contains FCC ID: XMR201910BG95M3
Contains IC: 10224A-2019BG95M3

Rev. 4
2024 / 44

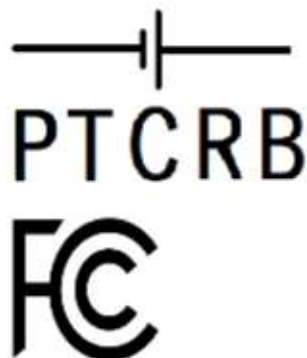
LT45-NA



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| | | | | | | | |
|----------|----------|----------|----------|----------|--------|--------|--------|
| RS485A | RS485B | IN2/ADC4 | IN3/OUT1 | IN5/ADC5 | 1-WIRE | CAN2 L | CAN2 H |
| 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| RS232 RX | RS232 TX | PLUS | MINUS | IN4/ADC3 | OUT2 | CAN1 L | CAN1 H |

FCC ID: GKM-LX45
IC: 10281A-LX45



MADE IN MALAYSIA



May, 2017

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 | 1.00 to 1.25 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

| 90° Peel Adhesion | | Dwell/Cure Time | Dwell Time Units | Temp C | Temp F | Environmental Condition | Substrate | Backing |
|-------------------|----------|-----------------|------------------|--------|--------|-------------------------|----------------------------------|-----------|
| 2.6 N/cm | 24 oz/in | 72 | hr | 22C | 72F | 52%RH | Polypropylene (PP) | 2 mil PET |
| 41 oz/in | 4.5 N/cm | 72 | hr | 22C | 72F | 52%RH | Stainless Steel | 2 mil PET |
| 2.2 N/cm | 20 oz/in | 72 | hr | 22C | 72F | 52%RH | High Density Polyethylene (HDPE) | 2 mil PET |
| 22 oz/in | 2.4 N/cm | 72 | hr | 22C | 72F | 52%RH | Low Density Polyethylene (LDPE) | 2 mil PET |
| 5.0 N/cm | 46 oz/in | 72 | hr | 49C | 120F | 52%RH | Stainless Steel | |
| 3.5 N/cm | 32 oz/in | 72 | hr | 49C | 120F | 52%RH | Polycarbonate (PC) | |
| 3.3 N/cm | 30 oz/in | 72 | hr | 49C | 120F | 52%RH | Polypropylene (PP) | |
| 4.6 N/cm | 42 oz/in | 72 | hr | 49C | 120F | 52%RH | Glass | |

Table continued on next page

Typical Performance Characteristics (continued)

| 90° Peel Adhesion | | Dwell/Cure Time | Dwell Time Units | Temp C | Temp F | Environmental Condition | Substrate | Backing |
|-------------------|----------|-----------------|------------------|--------|--------|-------------------------|----------------------------------|-----------|
| 2.2 N/cm | 20 oz/in | 72 | hr | 49C | 120F | 52%RH | High Density Polyethylene (HDPE) | |
| 0.9 N/cm | 8 oz/in | 72 | hr | 49C | 120F | 52%RH | Low Density Polyethylene (LDPE) | |
| 5.1 N/cm | 47 oz/in | 72 | hr | 22C | 72F | 52%RH | Glass | 2 mil PET |
| 4.7 N/cm | 43 oz/in | 72 | hr | 22C | 72F | 52%RH | Polycarbonate (PC) | 2 mil PET |
| 5.0 N/cm | 46 oz/in | 24 | hr | 32C | 90F | 90%RH | Stainless Steel | |
| 4.4 N/cm | 40 oz/in | 24 | hr | 32C | 90F | 90%RH | Polycarbonate (PC) | |
| 3.0 N/cm | 27 oz/in | 24 | hr | 32C | 90F | 90%RH | Polypropylene (PP) | |
| 3.5 N/cm | 32 oz/in | 24 | hr | 32C | 90F | 90%RH | Glass | |
| 3.0 N/cm | 27 oz/in | 24 | hr | 32C | 90F | 90%RH | High Density Polyethylene (HDPE) | |
| 2.6 N/cm | 24 oz/in | 24 | hr | 32C | 90F | 90%RH | Low Density Polyethylene (LDPE) | |
| 3.8 N/cm | 35 oz/in | 10 | min | 22C | 72F | 52%RH | Stainless Steel | |
| 4.0 N/cm | 37 oz/in | 10 | min | 22C | 72F | 52%RH | Polycarbonate (PC) | |
| 1.8 N/cm | 16 oz/in | 10 | min | 22C | 72F | 52%RH | Polypropylene (PP) | |
| 3.7 oz/in | 34 oz/in | 10 | min | 22C | 72F | 52%RH | Glass | |
| 1.8 N/cm | 16 oz/in | 10 | min | 22C | 72F | 52%RH | High Density Polyethylene (HDPE) | |
| 1.3 N/cm | 12 oz/in | 10 | min | 22C | 72F | 52%RH | Low Density Polyethylene (LDPE) | |

Property: 90° Peel Adhesion
Method: ASTM D3330
notes: 12 in/min (300 mm/min)

| 180° Peel Adhesion | | Dwell/Cure Time | Dwell Time Units | Temp C | Temp F | Environmental Condition | Substrate |
|--------------------|----------|-----------------|------------------|--------|--------|-------------------------|--------------------|
| 4.7 N/cm | 43 oz/in | 10 | min | 22C | 72F | 52%RH | Stainless Steel |
| 5.1 N/cm | 47 oz/in | 10 | min | 22C | 72F | 52%RH | Polycarbonate (PC) |

Table continued on next page

Typical Performance Characteristics (continued)

| 180° Peel Adhesion | | Dwell/Cure Time | Dwell Time Units | Temp C | Temp F | Environmental Condition | Substrate |
|--------------------|----------|-----------------|------------------|--------|--------|-------------------------|----------------------------------|
| 2.0 N/cm | 18 oz/in | 10 | min | 22C | 72F | 52%RH | Polypropylene (PP) |
| 5.7 N/cm | 52 oz/in | 10 | min | 22C | 72F | 52%RH | Glass |
| 5.7 N/cm | 52 oz/in | 72 | hr | 22C | 72F | 52%RH | Polycarbonate (PC) |
| 2.0 N/cm | 18 oz/in | 72 | hr | 22C | 72F | 52%RH | Polypropylene (PP) |
| 7.4 N/cm | 68 oz/in | 72 | hr | 22C | 72F | 52%RH | Glass |
| 3.6 N/cm | 33 oz/in | 72 | hr | 22C | 72F | 52%RH | High Density Polyethylene (HDPE) |
| 3.5 N/cm | 32 oz/in | 72 | hr | 22C | 72F | 52%RH | Low Density Polyethylene (LDPE) |
| 6.6 N/cm | 60 oz/in | 72 | hr | 49C | 120F | 52%RH | Stainless Steel |
| 4.5 N/cm | 41 oz/in | 72 | hr | 49C | 120F | 52%RH | Polycarbonate (PC) |
| 3.8 N/cm | 35 oz/in | 72 | hr | 49C | 120F | 52%RH | Polypropylene (PP) |
| 3.3 N/cm | 30 oz/in | 72 | hr | 49C | 120F | 52%RH | High Density Polyethylene (HDPE) |
| 0.4 N/cm | 5 oz/in | 72 | hr | 49C | 120F | 52%RH | Low Density Polyethylene (LDPE) |
| 5.6 N/cm | 51 oz/in | 72 | hr | 22C | 72F | 52%RH | Stainless Steel |
| 7.4 N/cm | 68 oz/in | 72 | hr | 49C | 120F | 52%RH | Glass |
| 8.1 N/cm | 74 oz/in | 24 | hr | 32C | 90F | 90%RH | Stainless Steel |
| 6.8 N/cm | 62 oz/in | 24 | hr | 32C | 90F | 90%RH | Polycarbonate (PC) |
| 4.2 N/cm | 38 oz/in | 24 | hr | 32C | 90F | 90%RH | Polypropylene (PP) |
| 7.2 N/cm | 66 oz/in | 24 | hr | 32C | 90F | 90%RH | Glass |
| 3.8 N/cm | 35 oz/in | 24 | hr | 32C | 90F | 90%RH | High Density Polyethylene (HDPE) |
| 2.2 N/cm | 20 oz/in | 24 | hr | 32C | 90F | 90%RH | Low Density Polyethylene (LDPE) |
| 2.6 N/cm | 24 oz/in | 10 | min | 22C | 72F | 52%RH | High Density Polyethylene (HDPE) |

Table continued on next page

Typical Performance Characteristics (continued)

| 180° Peel Adhesion | | Dwell/Cure Time | Dwell Time Units | Temp C | Temp F | Environmental Condition | Substrate |
|--------------------|----------|-----------------|------------------|--------|--------|-------------------------|---------------------------------|
| 2.2 N/cm | 20 oz/in | 10 | min | 22C | 72F | 52%RH | Low Density Polyethylene (LDPE) |

Property: 180° Peel Adhesion
Method: ASTM D3330
notes: 12 in/min (300 mm/min)

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

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.

| | Adhesion to Stainless Steel | | Appearance | Edge Penetration |
|---------------------------------------|-----------------------------|----------|------------|------------------|
| Chemical | 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

Typical Environmental Performance (continued)

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.

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
limak: 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.

3M™ Thermal Transfer Polyester Label Material 7816

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.

References

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

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 |

ISO Statement

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

Information

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