



# Technical Data Sheet

May 2017

## 3M™ Scotchlite™ Reflective Material Series 8800 Pressure Sensitive Adhesive Films

### Description

3M™ Scotchlite™ Reflective Material – Pressure Sensitive Adhesive Films are composed of wide angle, exposed retroreflective lenses bonded to a pressure sensitive adhesive (PSA). When properly used, Scotchlite reflective material – PSA films help to enhance the visibility of the wearer in nighttime or low-light conditions, when illuminated by a light source such as headlights, by returning the light back toward the original source, reaching the automobile driver’s eye. ANSI/ISEA 107 and NFPA certified products are available.

3M™ Scotchlite™ Reflective Material			
Product	Fabric Scrim	Adhesive	Application
8830 Silver PSA Film	94% polyester / 6% nylon	Acrylic	Helmets and rubber boots
8850 Silver PSA Film	None	Rubber	Non-vinyl rainwear and rubber boots
8886 Fluorescent red-orange PSA Film	94% polyester / 6% nylon	Acrylic	Helmets and rubber boots
8887 Fluorescent lime-yellow PSA Film	94% polyester / 6% nylon	Acrylic	Helmets and rubber boots

### Retroreflective Performance

The coefficient of retroreflection ( $R_A$ , in  $cd/lux/m^2$ ) of Scotchlite reflective material is measured by methods based on either of the following retroreflective intensity testing procedures:

ASTM E809-0892013) and E810-03(2013) ( $R_A$ )

CIE 54.2:2001 ( $R'$ )

It is important to note that use, wear, and environmental conditions will affect performance.

3M™ Scotchlite™ Reflective Material				
Product Number	Daytime Color	Reflected Color	Initial Average $R_A$ <sup>1</sup>	Minimum $R_A$ <sup>2</sup>
8830 Silver PSA Film	Silver	White	500	330
8850 Silver PSA Film	Silver	White	500	330
8886 Fluorescent red-orange PSA Film	Fluorescent red-orange	White	175	NA
8887 Fluorescent lime-yellow PSA Film	Fluorescent lime-yellow	White	175	NA

<sup>1</sup> Measured by 3M on new product at +5.0° entrance and 0.2° observation angles

<sup>2</sup> ANSI/ISEA 107-2015 minimum coefficient of retroreflection

## Physical Performance

3M™ Scotchlite™ Reflective Material – Pressure Sensitive Adhesive Films will meet or exceed the following specifications as noted.

3M™ Scotchlite™ Reflective Material		
Physical Performance <sup>3</sup>	Test Method	Approved Products
Abrasion: $R_A \geq 100$	EN 530 Method 2, 5000 cycles	8830 Silver PSA Film 8850 Silver PSA Film
Flexing: $R_A \geq 100$	ISO 7854 Method A, 7500 cycles	8830 Silver PSA Film 8850 Silver PSA Film
Cold Fold: $R_A \geq 100$	ISO 4675, -20 °C (-4 °F)	8830 Silver PSA Film 8850 Silver PSA Film
Temperature Cycle: $R_A \geq 100$	12 hours @ 50 °C (122 °F), and 20 hours @ -30° C (-22° F)	8830 Silver PSA Film 8850 Silver PSA Film
Wet Reflectivity: $R_A \geq 100$	ANSI/ISEA 107	8830 Silver PSA Film 8850 Silver PSA Film
	NFPA 1971	8830 Silver PSA Film 8886 Fluorescent red-orange PSA Film 8887 Fluorescent lime-yellow PSA Film
Heat and Thermal Shrinkage:	NFPA 1971: 5 minutes at 260 °C (500 °F) (no melt, drip, or ignition)	8830 Silver Marking Film 8886 Fluorescent red-orange PSA Film 8887 Fluorescent lime-yellow PSA Film

<sup>3</sup>  $R_A$  measured by 3M on new product at +5.0° entrance and 0.2° observation angles

## Product Certifications

### ANSI/ISEA 107, CSA Z96 and NFPA

The following Scotchlite reflective material – PSA films meet the listed requirements of the following standards. Current Certificates of Compliance are available at [Scotchlite.com](http://Scotchlite.com).

- ANSI/ISEA 107-2015 American National Standard for High-Visibility Safety Apparel and Accessories
- CSA Z96-15 High Visibility Safety Apparel
- NFPA 1971-2013 Standard on Protective Clothing and Equipment for Structural Fire Fighting and Proximity Fire Fighting
- NFPA 1977-2016 Standard on Protective Clothing and Equipment for Wildland Fire Fighting

## 3M™ Scotchlite™ Reflective Material

Product	ANSI 107	CSA Z96	NFPA 1951 and NFPA 1971	
			Retroreflectivity	Fluorescence
8830 Silver PSA Film	X	X	X	
8850 Silver PSA Film	X	X		
8886 Fluorescent red-orange PSA Film			X	X
8887 Fluorescent lime-yellow PSA Film			X	X

## General Information

While use of 3M™ Scotchlite™ Reflective Material enhances visibility, no reflective material can guarantee absolute visibility, particularly in adverse weather conditions. Performance will vary depending upon actual use, exposure conditions and maintenance.

3M presents a Scotchlite reflective material product portfolio that offers a range of product attributes, and recommends that all customers establish an ongoing quality system throughout their production, in accordance with good manufacturing practices, to ensure their finished goods meets their needs.

Please visit our website, [Scotchlite.com](http://Scotchlite.com), or contact your local 3M Personal Safety Division Technical Service representative for new or updated technical literature.

## Application

Whenever two or more pieces of Scotchlite reflective material – pressure sensitive adhesive films are used together on a single surface or as a set, they should be matched to ensure uniform daytime color and nighttime reflectivity. All high visibility safety apparel items should be constructed in accordance with the appropriate standard.

- Remove the adhesive side liner and apply to clean, dry, smooth surfaces. Position the film and press firmly into place across the entire surface.

- Allow 72 hours for adhesion to reach its maximum strength.
- 3M™ Scotchlite™ Reflective Material – 8850 Silver PSA Film has a white paper liner on the reflective surface. Remove this liner after application.

**Cutting:** Scotchlite reflective material – PSA films can be die-cut, hand-cut or guillotined.

**Screen Printing:** Images may be printed on the surface of Scotchlite reflective material – PSA films. All inks should be continuously tested to ensure acceptable adhesion in the event of changes occurring in the manufacturing process or composition of the ink. Prior to printing, wiping the surface with a soft cloth lightly dampened with isopropyl alcohol may help ink adhesion. Printed areas will not be retroreflective. Please see 3M™ Scotchlite™ Reflective Material Screen Printing Technical Bulletin for ink recommendations.

#### Handling Precautions

1. 3M™ Scotchlite™ Reflective Material – 8830 Silver PSA Film and Scotchlite reflective material – 8850 silver PSA film contain an aluminum layer as part of their construction. Blemishing of this aluminum layer can occur if the reflective surface of the product comes in to direct contact with bare hands during application and is then exposed to hot and humid conditions, greater than 26.7 °C (80 °F) and 70% relative humidity, for a period of weeks. These blemishes do not affect performance of the product. Please refer to 3M Technical Bulletin “Care Guidelines to Reduce Staining on 3M™ Scotchlite™ Reflective Material” for more information.
2. Scotchlite reflective material – 8850 silver PSA film may not be compatible with some polyvinyl chloride (PVC, vinyl) films, especially those containing phosphate plasticizers. It is possible that some plasticizers might migrate into the reflective material, making the reflective surface soft and sticky. We recommend that substrates always be tested prior to production to ensure that they meet specific needs. For alternate products and additional information, please refer to 3M Technical Bulletin “Plasticizer Migration in 3M™ Scotchlite™ Reflective Material – 8710 Silver Transfer Film and Related Products.”

## Care and Maintenance Instructions

**Important:** Test each application per appropriate care instructions required for the finished product. Actual life of Scotchlite reflective material depends on cleaning methods and wear conditions. Use of pressure sensitive adhesives is not recommended for permanent clothing applications that require wash durability.

#### Care Recommendation

Damp wipe only, using warm water and mild detergent. Rinse thoroughly, dry with a soft cloth or allow to air dry.

## Product Availability

Scotchlite reflective material – PSA films are available in rolls with the following standard widths and lengths:

3M™ Scotchlite™ Reflective Material – PSA Films	
Width	Standard Roll Length
< 300 mm (< 12 in.)	100 m (109 yd)
300 to 1220 mm (12 to 48 in.)	50 m (54.7 yd)

## Order and Product Information

To order Scotchlite reflective material products, contact Customer Service at 800-328-7098.

## Storage and Shelf Life

Store in a cool (4 to 32 °C, 40 to 90 °F), dry area (less than 70% relative humidity) and use within one year of date of receipt. Store rolls in original shipping cartons. Ensure that the lot/roll identification remains with product rolls. Return partially used rolls to the carton or suspend horizontally through the core. Cut pieces should be stored flat. Always maintain lot information.

## Important Notice

**WARRANTY, LIMITED REMEDY AND DISCLAIMER:** 3M warrants that 3M™ Scotchlite™ Reflective Material that is stored, maintained and used in accordance with 3M's written instructions will meet the applicable 3M product specifications. 3M MAKES NO OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY OR CONDITION ARISING OUT OF A COURSE OF DEALING, CUSTOM OR USAGE OF TRADE. If any Scotchlite reflective material does not conform to this warranty, then the sole and exclusive remedy is, at 3M's option, replacement of the 3M product or refund of the purchase price.

**LIMITATION OF LIABILITY:** Except where prohibited by law, 3M will not be liable for any loss or damage arising from the 3M product, whether direct, indirect, special, incidental or consequential, regardless of the legal theory asserted, including warranty, contract or strict liability.

**PRODUCT USE:** Because of the variety of factors that can affect the use and performance of Scotchlite reflective material, user is solely responsible for evaluating the product and determining whether it is fit for a particular purpose and suitable for user's method of application. User is solely responsible for determining the proper amount and placement of the product. While reflective products enhance visibility, no reflective product can ensure visibility or safety under all possible conditions. 3M may change the product, specification and availability of the product as improvements are made; therefore, user should contact 3M for latest information before specifying the product.



### Personal Safety Division

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Scotchlite.com  
800-364-3577 3M HELPS

### 3M Canada

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3M.ca/Scotchlite

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