

# Technical Data Sheet

## 3M™ Scotchlite™ Reflective Material – 5807 Custom Cuttable Transfer Film

### Description

3M™ Scotchlite™ Reflective Material – 5807 Custom Cuttable Transfer Film is designed as an electronic/plotter cuttable transfer film for use on safety garments. It can be used to create reflective graphic transfers that are easy to cut, weed, and can be laminated in one step. When properly used, Scotchlite reflective material – 5807 custom cuttable transfer film helps 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 and reaching the automobile driver's eye. Scotchlite reflective material – 5807 custom cuttable transfer film is composed of wide angle, exposed retroreflective lenses bonded to a heat activated adhesive with a clear polyester liner to protect the retroreflective side during handling. The clear polyester liner allows for ease of registration of transfers when laminating.

### Retroreflective Performance

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

ASTM E809-02 and E810-03 ( $R_A$ )

CIE 54.2:2001 ( $R'$ )

Retroreflective performance data was generated by 3M and is based on testing new product. The  $R_A$  values listed in the following tables were measured at +5.0° entrance and 0.2° observation angles.

It is important to note that use, wear, laundering, and environmental conditions will affect performance. Please contact your 3M representative for proposed product specifications.

3M™ Scotchlite™ Reflective Material			
Entrance Angle	Observation Angle	Initial Average $R_A$	Minimum $R_A$ <sup>1</sup>
+5.0°	0.2°	500	330

<sup>1</sup>ANSI/ISEA 107-2004 minimum coefficient of retroreflection for Level 2 retroreflective material.

### Color

3M™ Scotchlite™ Reflective Material		
Product Number	Daytime Color	Reflected Color
5807	Silver	White

## Physical Performance

3M™ Scotchlite™ Reflective Material – 5807 Custom Cuttable Transfer Film is certified to ANSI/ISEA 107-2004 American National Standard for High-Visibility Safety Apparel and Headwear for Level 2 retroreflective performance and will meet the requirements for CAN/CSA Z96-02 High Visibility Safety Apparel. Scotchlite reflective material – 5807 custom cuttable transfer film will meet or exceed the following specifications as noted. All  $R_A$  values are at  $+5.0^\circ$  entrance angle and  $0.2^\circ$  observation angle.

3M™ Scotchlite™ Reflective Material		3M™ Scotchlite™ Reflective Material	
Physical Performance	Test Method	Physical Performance	Test Method
Retroreflectivity: (Initial)	ASTM E808-01 and E809-02 ANSI/ISEA 107-2004, Level 2 (Table 5)	Temperature Cycle: $R_A \geq 100$	12 hours @ $50^\circ\text{C}$ ( $122^\circ\text{F}$ ) 20 hours @ $-30^\circ\text{C}$ ( $-22^\circ\text{F}$ )
Abrasion: $R_A \geq 100$	EN 530 Method 2, 5000 cycles	Wash: $R_A \geq 100$	ISO 6330 Method 2A, @ $60^\circ\text{C}$ ( $140^\circ\text{F}$ ) 50 cycles
Flexing: $R_A \geq 100$	ISO 7854 Method A, 7500 cycles	Dry-clean: $R_A \geq 100$	ISO 3175 Method 9.1, 30 cycles
Cold Fold: $R_A \geq 100$	ISO 4675, $-20^\circ\text{C}$ ( $-4^\circ\text{F}$ )	Wet Reflectivity: $R_A \geq 100$	ANSI/ISEA 107-2004, Appendix A

## Other Standards

Scotchlite reflective material – 5807 custom cuttable transfer film is used globally. Please visit our website at [Scotchlite.com](http://Scotchlite.com) for more information on certification to other high visibility standards such as EN 471 and AS/NZS 1906. Scotchlite reflective material – 5807 custom cuttable transfer film is not certified for marine safety applications requiring IMO type approval. 3M™ Scotchlite™ Reflective Material – SOLAS Grade Products have this type of certificate.

## Performance

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. Customers should be aware that 3M presents a Scotchlite reflective material product portfolio that has a range of product attributes, and users should test reflective material to satisfy conformance to their own requirements.

## Application Instructions

Whenever two or more pieces of Scotchlite reflective material – 5807 custom cuttable transfer film are used together on a single surface or as a set, they should be matched to ensure uniform daytime color and nighttime retroreflectivity. All high visibility safety garments should be constructed in accordance with the appropriate standard(s).

**Cutting** – Scotchlite reflective material – 5807 custom cuttable transfer film can be electronic/plotter cut, die-cut, hand-cut, or guillotined. Please refer to 3M Technical Bulletin “Plotter/Electronic Cutting Guideline for 3M™ Scotchlite™ Reflective Material”. For specific application assistance, contact 3M Technical Service.

### Heat Lamination

1. Work on a flat surface where uniform heat and pressure can be applied. Avoid applying film over seams and stitches.
2. Place Scotchlite reflective material – 5807 custom cuttable transfer film on fabric (substrate) adhesive side down and apply heat and pressure as described in the table below. Place a non-stick slip sheet between the platen and laminating surface to prevent any excess adhesive transfer contamination.
3. Allow application to cool to room temperature before removing the polyester liner. Place application on a flat surface and remove the polyester liner by lifting one corner and pulling (about  $45^\circ$  angle) in a continuous, smooth manner.

### Additional Precautions for Heat Lamination

1. Do not exceed lamination temperatures listed in the following chart because the polyester liner may become difficult to remove. If high temperatures are required for bond durability, follow lamination steps 1-3 using recommended temperature, remove polyester liner, and then laminate again at the higher temperature (using a non-stick slip sheet to protect reflective surface.)

- The lamination temperature, time, and pressure listed below should be used as a guide. Each substrate and reflective film combination should be tested to determine the best set of conditions that will meet customer requirements.
- Other lamination methods, such as roll to roll, heat fusing, and High Frequency (HF) welding can also be used. The proper temperature, time, and pressure conditions must be tested for each fabric to assure adequate adhesion and physical performance.
- Many fabrics can be used as lamination substrates; however, nylons and fabrics treated with a durable water repellent (DWR) finish are not recommended because it is difficult to obtain good adhesion to these substrates. For specific application assistance, contact 3M Technical Service.

3M™ Scotchlite™ Reflective Material					
Product Number	Adhesive Side Liner	Reflective Side Liner	Temperature	Dwell Time (seconds)	Line Pressure
5807	None	Clear Polyester	165-177 °C (325-350 °F)	10-20	Firm (30-40 psi)

**Screen Printing** – Images may be printed on the surface of 3M™ Scotchlite™ Reflective Material – 5807 Custom Cuttable Transfer Film. Inks should be tested continuously to ensure acceptable adhesion due to changes in the processes or composition of the ink. Before printing, wiping the surface with a soft cloth lightly damp with isopropyl alcohol may help ink adhesion. Printed areas will not be retroreflective. Please refer to the Technical Bulletin “Recommendations for screen printing inks to be used on 3M™ Scotchlite™ Reflective Material.”

#### Handling Precautions

- Scotchlite reflective material – 5807 custom cuttable transfer film contains an aluminum layer as part of the construction. Blemishing of this aluminum layer can occur if the polyester carrier is removed and the front surface of the product has direct contact with hands during application and is then exposed to hot and humid conditions, greater than 26.7 °C (80 °F) and greater than 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”.
- Scotchlite reflective material – 5807 custom cuttable transfer film may not be compatible with some polyvinyl chloride (PVC, vinyl) films, especially those containing phosphate plasticizers. It is possible that some plasticizers might be able to 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 your 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 according to appropriate care instructions required for the finished product. Actual life of Scotchlite reflective material depends on cleaning methods and wear conditions.

### Home Wash Guidelines

Scotchlite reflective material – 5807 custom cuttable transfer film may be home washed and dry-cleaned. Garment care label guidelines need to consider the garment fabric as well as the recommendations for garment components such as retroreflective trim.

Care label recommendations for Scotchlite reflective material – 5807 custom cuttable transfer film:

3M™ Scotchlite™ Reflective Material			
Product	Maximum Wash Temp	Dry	Iron
5807 Custom Cuttable Transfer Film	 Machine wash hot, 60 °C (140 °F)	 Tumble dry low	 Cool iron, 110 °C (230 °F)

 Dry-clean, normal cycle

 Non-chlorine bleach when needed

## Product Availability

3M™ Scotchlite™ Reflective Material – 5807 Custom Cuttable Transfer Film is available in rolls with the following standard widths and roll lengths:

3M™ Scotchlite™ Reflective Material			
Units	Width	Width Tolerance	Standard Roll Length
mm	150 mm ≤ w < 900 mm ≥ 900	0 mm to + 4 mm + 3 mm to + 7 mm	100 m (> 300 mm = 50 m)

## Order and Product Information

To order 3M™ Scotchlite™ Reflective Material Products contact 3M Visibility and Insulation Solutions Customer Service at 800-328-7098.

## Storage and Shelf Life

Store in a cool, dry area and use within one year after date of receipt. Store rolls in original shipping cartons. Return partially used rolls to the carton or suspend horizontally through the core. Cut pieces should be stored flat.

## Important Notice to User

**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, negligence 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.



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