



Scotchlite™

Reflective Material

8711 Silver Graphic-Ready Transfer Film

Technical Data Sheet

April 2001

Description

3M™ Scotchlite™ Reflective Material - 8711 Silver Graphic-Ready Transfer Film is composed of wide angle, exposed retroreflective lenses bonded to a heat activated polyurethane adhesive. The reflective surface is exposed for surface printing. A removable white paper liner protects the adhesive side and adds support prior to lamination.

Retroreflective Performance

The coefficient of retroreflection (R_A , in cd/lux/m²) is measured by methods traceable to either of the following retroreflective intensity testing procedures:

- ASTM E809 and E810 (R_A)
- CIE 54: 1982 (R')

The R_A values were measured at the listed specific entrance and observation angles.

Entrance Angle	Observation Angle	Typical R_A	Minimum R_A
-4.0°	0.2°	500	330
+5.0°	0.33°	330	250

Color

Product Number	Daytime Color	Reflected Color
8711	Silver	White

Physical Performance

Scotchlite reflective material - 8711 silver graphic-ready transfer film is certified to meet ANSI/ISEA 107-1999 Level 2 retroreflective performance and EN 471 Class 2 retroreflective performance, and will meet or exceed the following specifications:

Retroreflectivity:ANSI/ISEA 107-1999
 (Initial) Level 2 (Table 5)
 EN 471 Class 2 (Table 5)

Abrasion:EN 530 Method 2
 ($R_A \geq 100$)¹ 5000 cycles

Flexing:ISO 7854 Method A
 ($R_A \geq 100$)¹ 7500 cycles

Cold Fold:ISO 4675 (-20°C)
 ($R_A \geq 100$)¹

Temperature Cycle: . . .12 hours @ (50±2)°C
 ($R_A \geq 100$)¹ 20 hours @ (-30±2)°C

Wash:ISO 6330 Method 2A
 ($R_A \geq 100$)¹ 25 cycles @ 60°C (140°F)

Dry-clean:ISO 3175 Method 9.1
 ($R_A \geq 100$)¹ 25 cycles

Wet Reflectivity:ANSI/ISEA 107-1999 Annex A
 ($R_A \geq 100$)¹ EN 471 Annex A

¹ Measured at 0.2° observation angle and 5.0° entrance angle.

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. Users should test reflective material to satisfy conformance to their own requirements.

Application Instructions

Whenever two or more pieces of 3M™ Scotchlite™ Reflective Material - 8711 Silver Graphic-Ready Transfer Film are used together on a single surface or as a set, they should be matched to ensure uniform daytime color and nighttime or low-light reflectivity.

Cutting: Die-cutting is recommended, although film can also be hand-cut, guillotined, kiss-cut, or plotter-cut.

Screen Printing: Contact local Technical Service representative for latest ink and screening recommendations.

Pre-masking: Pre-masking is recommended for the handling and application of screen printed Scotchlite reflective material - 8711 silver graphic-ready transfer film. Pre-mask is a paper-backed, low tack adhesive tape applied to the printed surface of the transfer film to reduce film stretching and wrinkling during lamination. 3M™ Scotchcal™ Prespacing Tape SCPS-2 is recommended for use with Scotchlite reflective material - 8711 silver graphic-ready transfer film. The transfer film printed surface must be completely dry before applying the pre-mask and should be applied just prior to lamination. Place the pre-mask on a smooth

surface with the adhesive side up. The transfer film reflective side should be firmly pressed against the adhesive surface using a squeegee to obtain uniform contact. Scotchcal prespacing tape SCPS-2 should not be left on screen printed transfer film overnight.

Heat Lamination:

1. Remove the white paper liner to expose the heat activated adhesive.
2. Using the pre-mask to position the Scotchlite reflective material - 8711 silver graphic-ready transfer film, place the adhesive side on the fabric (substrate). Apply heat and pressure as described below.
3. Cool to room temperature before removing pre-mask.

The following recommendation is a general guideline for **heat press lamination**. Although many fabrics are suitable for Scotchlite reflective material - 8711 silver graphic-ready transfer film lamination, some nylons and fabrics with durable water resistant (DWR) finishes are difficult to adhere to and are not recommended. User should test each application for fabric adhesion and adjust lamination conditions to provide best bond.

Temperature	Dwell Time	Pressure
325-375°F (165-190°C)	10-20 seconds	Firm (30-40 psi line pressure)

Care and Maintenance Instructions

Important: Test each application according to appropriate care instructions required for the finished product. Actual life of 3M™ Scotchlite™ Reflective Material - 8711 Silver Graphic-Ready Transfer Film depends on cleaning method and wear conditions.

Wash: Machine wash warm, 40°C (105°F)



Bleach: Only non-chlorine bleach when needed



Dry: Tumble dry low



Iron: Use cool iron, 110°C (230°F)



Dry-clean: Dry-clean, normal cycle



Product Availability

Scotchlite reflective material - 8711 silver graphic-ready transfer film is available in rolls with the following standard widths and roll lengths:

Units	Width	Width Tolerance	Standard Roll Length
inches	< 6"	±1/32"	100 yd.
inches	6" ≤ w < 36" ≥ 36"	0" to +1/8" +1/8" to +1/4"	100 yd. (> 12" = 50 yd.)
mm	< 150 mm	±1 mm (std) ±.5 mm (special)	100 m
mm	150 mm ≤ w < 900 mm ≥ 900 mm	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 Personal Safety Products Department Customer Service at 800-328-7098 Ext. 2.

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 sheets should be stored flat.

Handling Precautions for Hot and Humid Environments

Scotchlite reflective material - 8711 silver graphic-ready transfer film contains an aluminum layer as part of its construction. Blemishing of this aluminum layer can occur if the front surface of the product has direct contact from hands during application and is then exposed to hot and humid conditions, greater than 80°F and greater than 70% relative humidity, for a period of weeks. These blemishes do not affect the performance of the product.

Important Notice to Purchaser:

Except where prohibited by law, 3M makes the following limited warranty in place of any others, express or implied, including any implied warranties or conditions of MERCHANTABILITY or fitness for a particular purpose or any implied warranty or condition commonly found in the industry: 3M shall replace or, at its option, refund the price paid to 3M for any 3M™ Scotchlite™ Reflective Material or other 3M reflective products (“Products”) which at the time of shipment to 3M’s purchaser do not meet 3M’s published Product specifications.

Because of the unlimited variety of potential applications for Products, BEFORE production use, the User (which may be a converter or end product manufacturer or others) must determine that the Products are suitable for the intended use and are compatible with other component materials. User is solely responsible for determining the proper amount and placement of Products. While reflective Products enhance visibility, no reflective product can ensure visibility or safety under all possible conditions. **3M shall not be liable in contract or in tort, for any indirect, incidental, special, or consequential damages (including, without limitation, lost profits, goodwill and business opportunity) relating to the use or inability to use the Products.**



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