



Scotchlite™

Reflective Material

8710 Silver Transfer Film

Technical Data Sheet

August 1999

Description

3M™ Scotchlite™ Reflective Material - 8710 Silver Transfer Film is composed of wide angle, exposed retroreflective lenses bonded to a heat activated polyurethane adhesive. The reflective surface is protected by a white paper liner for ease in handling prior to lamination. A plastic liner protects the adhesive side and must be removed before 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
8710	Silver	White

Physical Performance

Scotchlite reflective material - 8710 silver transfer film is certified to meet EN 471 Class 2 retroreflective performance and will meet or exceed the following ANSI/ISEA 107-1999 Level 2 performance tests:

- Retroreflectivity: EN 471 Class 2
(Initial) (Table 5)
ANSI/ISEA 107-1999
Level 2 (Table 5)
- Abrasion: prEN 530 Method 2
($R_A \geq 100$) 5000 cycles
- Flexing: ISO 7854 Method A
($R_A \geq 100$) 7500 cycles
- Cold Fold: ISO 4675 (-20°C)
($R_A \geq 100$)
- Temperature Cycle: 12 hours @ (50±5)°C
($R_A \geq 100$) 20 hours @ (-30±2)°C
- Wash: ISO 6330 Method 2A
($R_A \geq 100$) 25 cycles @ 60°C (140°F)
- Dry-clean: ISO 3175 Method 9.1
($R_A \geq 100$) 25 cycles
- Wet Reflectivity: EN 471 Annex A
($R_A \geq 100$)

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 - 8710 Silver 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. Note: The protective white paper liner should not be used as the carrier when applying plotter cut and weeded images; the exposed liner may adhere to certain fabrics at recommended lamination temperatures.

Screen Printing: Use 3M™ Scotchlite™ Reflective Material - 8711 Silver Graphic-Ready Transfer Film.

Heat Lamination: Work on a flat surface where uniform heat and pressure can be applied. Avoid applying film over seams and stitches.

1. Remove plastic liner, exposing dry adhesive. Do not remove paper liner.
2. Place Scotchlite reflective material - 8710 silver transfer film on fabric (substrate) adhesive side down and apply heat and pressure as described 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 (room temperature) before removing the paper liner. Place application on a flat surface and remove the paper liner by lifting one corner and pulling (about 45° angle) in a continuous, smooth manner.

Note: Do not exceed lamination temperatures of 375°F (190°C) because the paper liner may become difficult to remove. If high temperatures are required for bond durability, follow lamination steps 1-3, and then relaminate at the higher temperature (use a non-stick slip sheet to protect the application).

The following recommendation is a general guideline for **heat press lamination**. Other lamination methods such as roll-to-roll, heat fusing, and High Frequency (HF) welding can also be used. The proper temperature/pressure/time conditions must be tested for each fabric to assure adequate adhesion. Many fabrics can be used as lamination substrates, however, nylons and fabrics treated with a durable water repellent (DWR) finish are difficult to adhere to and are not recommended.

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 - 8710 Silver Transfer Film depends on cleaning method and wear conditions. Care label recommendations:

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 - 8710 silver 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 - 8710 silver transfer film contains an aluminum layer as part of its construction. Blemishing of this aluminum layer can occur if the paper carrier is removed and 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.**



Personal Safety Products Department 3M Safety and Security Systems Division

3M Center, Building 225-4N-14
St. Paul, MN 55144-1000
800-328-7098, Ext. 2

3M Canada

P. O. Box 5757
London, Ontario, Canada N6A 4T1
800-364-3577

3M Mexico

Avenida Santa Fe #55
Col. Santa Fe, CP01210
Delegacion Alvaro Obregon
Telephone: 270-21-62
Fax: 270-22-94



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