



Scotchlite™

Reflective Material

8786 Fluorescent red-orange Transfer Film

8787 Fluorescent lime-yellow Transfer Film

Technical Data Sheet

January 1999

Description

3M™ Scotchlite™ Reflective Material – 8786 Fluorescent red-orange and 8787 Fluorescent lime-yellow Transfer Film are composed of wide-angle, exposed, retroreflective lenses bonded to a heat-activated polyester adhesive. The reflective surface is protected by a white paper liner for ease in handling 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°	175	138
+5.0°	0.33°	100	75

Color

Product Number	Daytime Color	Reflected Color
8786	Fluorescent red-orange	White
8787	Fluorescent lime-yellow	White

Physical Performance

Scotchlite reflective material – 8786 fluorescent red-orange and 8787 fluorescent lime-yellow transfer film will maintain a minimum R_A of 30 after exposure to the following performance tests:

- Retroreflectivity: EN 471 Class 2 (Initial) (Table 7)
- Abrasion: prEN 530 Method 2 5000 cycles
- Flexing: ISO 7854 Method A 7500 cycles
- Cold Fold: ISO 4675 (-20°C)
- Temperature Cycle: 12 hours @ (50±5)°C 20 hours @ (-30±2)°C
- Wash: AATCC Method 135-1973 5 cycles @ 40°C (105°F)
- Dry-clean: ISO 3175 Method 9.1 5 cycles
- Wet Reflectivity: EN 471 Annex A

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 – 8786 Fluorescent red-orange or 8787 Fluorescent lime-yellow 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.

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

1. Place 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.
2. 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 transfer liner may become difficult to remove. If high temperatures are required for bond durability, follow lamination steps at the recommended conditions, and then relaminate at the higher temperature (use a non-stick slip sheet to protect the image).

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 ensure 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
325–330°F (160–177°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 – 8786 Fluorescent red-orange and 8787 Fluorescent lime-yellow Transfer Film depends on cleaning method and wear conditions.

Wash: Machine wash warm, 40°C (105°F)



maximum temperature

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 – 8786 fluorescent red-orange and 8787 fluorescent lime-yellow transfer film is available in rolls with the following standard widths and roll lengths:

Units	Width Tolerance	Width Roll Length	Standard
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.

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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