



Scotchlite™

Reflective Material

9810 Multipurpose Tape

Technical Data Sheet

February 2002

Description

3M™ Scotchlite™ Reflective Material – 9810 Multipurpose Tape is a thin, conformable, stretchable, and flexible retroreflective tape that is designed to enhance the visibility of hard good articles upon which it is placed in nighttime and low-light conditions. The enhanced visibility is achieved by employing the principle of retroreflection. The retroreflective surface contains exposed, wide-angle lenses that when illuminated by a light source (such as automobile headlights), return the light back to the source (to the automobile driver's eye).

Scotchlite reflective material – 9810 multipurpose tape incorporates a non-woven scrim fabric to provide toughness, a thin profile, and conformability to many compound surfaces, along with a pressure-sensitive adhesive (PSA) for easy application to a wide variety of substrates. The PSA is initially repositionable, and then builds to a high ultimate bond strength on high surface energy materials (i.e., glass, fiber glass, metals, polycarbonate, polyester, etc.). This product is not designed for high bond strength to low surface energy materials (i.e., polyethylene, polypropylene, durably water repellent coated materials, etc.).

Note: Use of pressure-sensitive adhesives is not recommended for permanent clothing applications that require wash durability.

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°	300	150

Color

Product Number	Daytime Color	Reflected Color
9810	Silver	White†

† The color of the retroreflected light is the same as the color of the light source illuminating the material. Typically this source is white light.

Physical Performance

3M™ Scotchlite™ Reflective Material – 9810 Multipurpose Tape meets or exceeds the following performance tests:

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

Temperature Cycle: . . .12 hours @ (50±5)°C (Maintains adhesion) 20 hours @ (-30±2)°C

Service Temperature: . . -40°F (-40°C) to 200°F (95°C)

Wet Reflectivity:EN 471 Annex A (R_A ≥ 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, product placement, exposure conditions, and product maintenance. Users should test reflective material to satisfy conformance to their own requirements.

Application Instructions

Note: Whenever two or more pieces of Scotchlite reflective material are used together on a single surface, or as a set, they should be matched to ensure uniform color and reflectivity.

Scotchlite reflective material – 9810 multipurpose tape is made with 3M™ 467MP Roll Laminating Adhesive which is designed to adhere to clean dry high surface energy surfaces. Its initial adhesion is low, allowing repositionability, and builds to a high ultimate bond force.

Typical Adhesion† [oz./in. (N/100 mm)]	20 min dwell	Ultimate
Stainless Steel	44 (48)	113 (124)
ABS	40 (44)	43 (47)
Low Surface Energy Plastic	Not Recommended	

† ASTM D-3330 (modified) 90 Degree peel, 12"/min

Highest adhesion is attained on metal or glass surfaces (> 250 Dynes/cm). Good adhesion is attained on high surface energy plastics (> 38 Dynes/cm). This product is not recommended for low surface energy plastics. Prior to production, test that adhesion conforms to the requirements of the finished product.

Surface Preparation: Apply Scotchlite reflective material – 9810 multipurpose tape to clean and dry surfaces. Minimum application temperature is 50°F (10°C).

Sample Converting: Scotchlite reflective material – 9810 multipurpose tape is designed to work with a variety of converting methods. This tape can be plotter-cut, laser-cut, and die-cut, in addition to being hand-cut or guillotined. Cut graphics may be transferred using 3M™ Scotchcal™ Prespacing Tape SCPS-53X. Apply prespacing tape using firm, even pressure (≥ 20 psi).

Application: The following instructions should be followed when applying this tape.

1. Remove the silicone liner from the adhesive side of the Scotchlite reflective material – 9810 multipurpose tape.
2. Apply the Scotchlite reflective material – 9810 multipurpose tape to the article, being careful to not stretch the film greater than 10%. Over stretching the tape will result in it narrowing, and can result in “puckering” and the tape “creeping” on the surface of the article to alleviate excess internal stresses.

3. Carefully lift the tape to reposition, if necessary.
The tape is repositionable for up to 5 minutes after initial application on most surfaces.
4. Once the tape is in place, firmly roll/press it onto the article.
5. A strong bond is achieved within 72 hours. To accelerate achievement of ultimate bond strength, apply firm pressure and moderate heat (120°F) for a period of several hours.

Care and Maintenance Instructions

Important: Test each application according to appropriate care instructions required for the finished product. The actual life of 3M™ Scotchlite™ Reflective Material – 9810 Multipurpose Tape will depend upon choice of backing material, wear conditions, and application technique. Use of pressure-sensitive adhesives (PSA) are not recommended for permanent clothing applications that require wash durability.

To clean the surface of the product, wipe with a damp cloth and mild detergent, then rinse. Prolonged exposure to highly alkaline or acidic chemicals will result in reduction of retroreflective properties and discoloration.

Product Availability

Scotchlite reflective material – 9810 multipurpose tape is available in rolls with the following standard widths and roll lengths:

Units	Width	Width Tolerance	Standard Roll Length
mm	< 150 mm	± 1 mm	100 m
	150 mm ≤ W < 900 mm	0 mm to + 4 mm	(≥ 25.4 mm Width) 50 m
	900 mm - 1270 mm	+ 3 mm to + 7 mm	(< 25.4 mm Width)
inches	< 6"	± 1/32"	100 m (≥ 1" Width)
	6" ≤ W < 36"	0" to 1/8"	50 m (< 1" Width)
	36"-50"	1/8" to 1/4"	

Order and Product Information

To order 3M™ Scotchlite™ Reflective Material products contact 3M Personal Safety Products Department Customer Service at 1-800-328-7098 Ext. 2.

Storage and Shelf Life

Store in a cool, dry (humidity controlled) area and use within one year after date of receipt. Exposure of rolls wider than 2" to high humidity environments can result in non-woven expansion, and surface rippling. Store rolls in original shipping containers. Return partially used rolls to the original shipping containers or store suspended through the roll core and protected from high humidity conditions. Cut sheets should be stored flat and protected from high humidity.

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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