



3M™ Scotchlite™ Reflective Material - Consumer Solutions Products

Description

3M™ Scotchlite™ Reflective Material - Consumer Solutions Products are designed for use on athletic and casual garments. They are composed of wide-angle, exposed, retroreflective lenses bonded to a heat-activated adhesive. When properly used, these materials help 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 eyes..

3M™ Scotchlite™ Reflective Material				
Product Number	Film or Fabric	Adhesive Side Liner	Reflective Side Liner	Primary Method of Application
C420 Silver Footwear Film ¹	N/A	Clear Polyethylene	Paper	See Below Paragraph
C725 Silver Transfer	Heat Transfer Polyurethane Adhesive	Rose Polyethylene	Paper	Heat Lamination
C750 Silver Transfer Film	Heat Transfer Polyester Adhesive	None	Paper	Heat Lamination

1. This material requires the addition of a customized adhesive.

3M™ Scotchlite™ Reflective Material – C420 Silver Footwear Film is protected by a white paper carrier layer. This product does not contain an adhesive layer; converters can apply various adhesive systems and substrates onto the backside of the film to get the desired attributes required by the designer. A clear plastic liner protects the backside of the film and must be removed before an adhesive system is added.

Retroreflective Performance

The coefficient of retroreflection (R_A , in cd/lux/m^2) of 3M™ Scotchlite™ Reflective Material is measured by methods based on either of the following retroreflective intensity procedures:

ASTM E809-02 and E810-30 (R_A)

Retroreflective performance data were generated by 3M and are 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.

3M™ Scotchlite™ Reflective Material			
Product Number	Daytime Color	Reflected Color	Initial Typical Brightness (R_A) ¹
C420 Silver Footwear Film	Silver	White	500
C725 Silver Transfer	Silver	White	500
C750 Silver Transfer Film	Silver	White	500

1. Measured by 3M on new product at +5.0° entrance and 0.2° angles

Not Certified for Occupational Use

The 3M™ Scotchlite™ Reflective Material – Consumer Solutions Products are designed for consumer garment use. If you require 3M™ Scotchlite™ Reflective Material designed for occupational use, please consult the 3M website at [3M.com/Scotchlite](https://www.3M.com/Scotchlite) or contact 3M Technical Service for additional assistance with product selection.

3M™ Scotchlite™ Reflective Material – Consumer Solutions products are not certified for marine safety applications requiring IMO type approval.

Performance

While the 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 offers a range of product attributes, and users should test the reflective material on their finished garments to satisfy conformance to their own requirements.

The following 3M™ Scotchlite™ Reflective Material – Consumer Solutions products will have a minimum reflectivity R_A^1 greater than 100 after the listed number of wash cycles when washed per ISO 6330 Textiles – Domestic washing and drying procedure for textile testing, Method 6N (60°C/140°F).

3M™ Scotchlite™ Reflective Material		
Product Number	Wash Cycles	Wash Method ISO 6330
C420 Silver Footwear Film	N/A	N/A
C725 Silver Transfer	25	Method 6N (60°C/140°F)
C750 Silver Transfer Film	50	Method 6N (60°C/140°F)

3M recommends that all customers, in accordance with good manufacturing practices, establish an ongoing quality system which includes maintaining lot/roll identification throughout the garment production process. Customer should also store input materials and final products in accordance with manufacturer recommendations, as well as implement continuous testing throughout production and on finished garments that reflects the garment needs. For lamination operations, customers should periodically check their equipment to ensure that the temperature set point matches the platen or roll temperature and that the temperature and pressure are uniform across lamination area.

Please visit our website, [3M.com/Scotchlite](https://www.3m.com/Scotchlite) for new or updated technical literature as well as contacting your local 3M Personal Safety Division Technical Service.

Application Instructions

Whenever two or more pieces of 3M™ Scotchlite™ Reflective Material 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: Die-cutting is recommended, although it can also be hand-cut or guillotined. For 3M™ Scotchlite™ Reflective Material – Transfer Films with a white paper liner, the protective white paper liner should not be used as the carrier when applying (laminating) plotter cut and weeded images; the exposed liner may adhere to certain fabrics at recommended lamination temperatures. For these applications, 3M™ Scotchlite™ Reflective Material – 5807 Custom Cuttable Transfer Film is recommended.

Heat Lamination:

1. Work on a flat surface where uniform heat and pressure can be applied. Avoid applying film over seams and stitches.
2. Remove adhesive side liner (if the product has one), exposing dry adhesive. Do not remove reflective side liner. See table above to determine which liner is adhesive side liner.
3. Place 3M™ Scotchlite™ Reflective Material – transfer film on substrate with the 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.
4. Allow application to cool to room temperature before removing the liner covering the reflective side (if the product has one). 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. Some products may not have a reflective side liner; see the table for information.

3M™ Scotchlite™ Reflective Material - Transfer Films			
Product Number	Temperature	Dwell Time (seconds)	Line Pressure
C725 Silver Transfer Film	165-190°C (325-375°F)	10-20	Firm 2-3 kgf/cm ² (30-45 psi)
C750 Silver Transfer Film	165-177°C (325-350°F)	10-20	Firm 2-3 kgf/cm ² (30-45 psi)

Additional Precautions for Heat Lamination:

1. Do not exceed lamination temperatures listed above as the paper liner may become difficult to remove. If high temperatures are required for bond durability, follow lamination steps 1-3 using recommended temperature, remove paper liner, and then laminate again at the higher temperature (using a non-stick slip sheet to protect reflective surface).
2. The lamination temperature, time, and pressure listed above 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.
3. Other lamination methods, such as roll to roll, heat fusing, and HF welding can also be used unless noted. The proper temperature, time, and pressure conditions must be tested for each fabric to ensure adequate adhesion and physical performance.
4. 3M™ Scotchlite™ Reflective Materials can adhere to many fabrics. However, some fabrics such as nylons and those treated with a durable water repellent (DWR) finish can be difficult to adhere to. For the best adhesion in these cases, sewing is recommended by using 3M™ Scotchlite™ Reflective Material – Fabric. When transfer films are used, continuous testing should be done to ensure acceptable adhesion is maintained as input materials may vary. For specific application assistance, contact 3M Technical Service.
5. 3M™ Scotchlite™ Reflective Material – C725 Silver Transfer Film performs best when laminated to polyester and polyester blend fabrics. It should not be used on knitted T-shirts or 100% cotton fabrics where good adhesion is required for extended use.
6. The reflective surface of 3M™ Scotchlite™ Reflective Material can be difficult to adhere to and caution is required when applying other materials to it. If you are laminating a 3M™ Scotchlite™ Reflective Material – Transfer Film to the surface of 3M™ Scotchlite™ Reflective Material, then testing is recommended to ensure the attachment meets the customer's specifications. It is also recommended that continuous testing be done to ensure acceptable adhesion is maintained throughout the manufacturing process. If acceptable adhesion cannot be achieved, then contact your local 3M Technical Service for assistance.
7. 3M recommends that all customers, in accordance with good manufacturing practices, periodically check their lamination equipment to ensure that temperature set point agrees with the platen or roll temperature and that the temperature is uniform across the lamination area. Customers should also store input materials and final products in accordance with manufacturer recommendations, as well as implement continuous testing throughout production.

Printing

Screen Printing – Images may be printed on the surface of some 3M™ Scotchlite™ Reflective Material. All inks should be continuously tested to ensure acceptable adhesion in the event of changes occurring in the manufacturing process or composition of the ink. Prior to printing, wiping the surface with a soft cloth lightly dampened with isopropyl alcohol may help ink adhesion. Printed areas will not be retroreflective

Handling Precautions

1. Many 3M™ Scotchlite™ Reflective Materials contain an aluminum layer as part of their 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 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](#).

Care and Maintenance Instructions



IMPORTANT NOTE

Test each application according to appropriate care instructions required for the finished product. Actual life of 3M™ Scotchlite™ Reflective Material depends on cleaning methods and wear conditions.

Home Wash Guidelines

Home laundering means using a top or front loading consumer type home washing machine with a consumer detergent at moderate water temperatures (up to 60°C, 140°F). Garment finishing such as tumble drying at high temperatures can limit garment life and should be considered as part of the cleaning process. High alkaline treatments such as stain removal products should not be used. 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										
Product	Wash		Dry		Iron		Dry-Cleaning		Bleach	
C420 Silver Footwear Film		Do not wash		Do not tumble dry		Do not iron		Do not dry clean		Non-chlorine bleach when needed
C725 Silver Transfer Film		Machine wash warm, 40°C (105°F)		Tumble dry low		Cool iron, 110°C (230°F)		Dry-clean, normal cycle		Non-chlorine bleach when needed
C750 Silver 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 – Consumer Solutions Products are available in rolls of various widths and lengths. Check with your distributor for availability or on 3M.com/Scotchlite. Availability may vary by region.

Storage and Shelf Life

Store in a cool (4 to 27°C, 40 to 80°F), dry area (less than 70% relative humidity) and use within one year of date of receipt from 3M. 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. Ensure that the lot/roll identification remains with product rolls and cut pieces.

Contact Us

For current technical literature and technical support, go to Scotchlite.com, or call Customer Service at 1-800-328-1667. To purchase, go to Scotchlite.com and click on Support for a list of our distributors.

Important Notice

Technical Information: The technical information, guidance, and other statements contained in this document or otherwise provided by 3M are based upon records, tests, or experience that 3M believes to be reliable, but the accuracy, completeness, and representative nature of such information is not guaranteed. Such information is intended for people with knowledge and technical skills sufficient to assess and apply their own informed judgment to the information. No license under any 3M or third party intellectual property rights is granted or implied with this information.

Product Selection and Use: Many factors beyond 3M's control and uniquely within user's knowledge and control can affect the use and performance of reflective material in a particular application. As a result, customer is solely responsible for evaluating the product and determining whether it is appropriate and suitable for customer's application, including conducting a workplace hazard assessment and reviewing all applicable regulations and standards (e.g., OSHA, ANSI, etc.), as well as determining the proper amount and placement of reflective material. While reflective material can enhance visibility, no reflective product can ensure visibility or safety under all possible conditions. Failure to properly evaluate, select, and use a 3M product in accordance with all applicable instructions and with appropriate safety equipment, or to meet all applicable safety regulations, may result in injury, sickness, death, and/or harm to property. 3M may change the product, specification, and availability; therefore, customer should contact 3M for latest information before specifying the product.

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