



3M™ Scotchlite™ Reflective Material - Transfer Films

Description

3M™ Scotchlite™ Reflective Material - Transfer Films are designed for use on safety, 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.

Summary of Product Details								
3M™ Scotchlite™ Reflective Material	Initial Typical Brightness (R _A) ^d	Minimum Initial Brightness (R _A) ^d	Wash ^a			Flame Resistance	Liner	
			Home Cycles ^b	Dry-clean Cycles ^c	Industrial Washable		Adhesive Side	Retro-reflective Side
5807 Custom Cuttable Transfer Film	500	>330	50	30			None	Clear Polyester Film
8711 Silver Graphic- Ready Transfer Film	500	>330	25	10			Paper	None
8712 Silver Transfer Film ^e	500	>330	25	10			Pink polyurethane	Paper
8725/8725LL Silver Transfer Film ^{e f}	500	>330	50	30			None	Paper/None
8735 Flame Resistant Transfer Film	500	>330	50			Yes	None	None
8787 Fluorescent lime-yellow Transfer Film	175	>65					None	Paper
9725 Silver Industrial Wash Transfer Film	500	>330	100	50	Yes		None	None
9745 Silver Industrial Wash Flame Resistant Transfer Film	500	>330	100	Up to 25 ^g	Yes	Yes	None	None

a. See Care Instructions section for Home Wash and Industrial Wash.

b. ISO 6330 Method 6N at 60°C (140°F) and R_A ≥ 100 Home Wash).

c. ISO 3175-2 and R_A ≥ 100 (Dry Cleaning with Perchloroethylene).

d. Measured by 3M on new product at +5.0° entrance and 0.2° observation angles. Results are measured in R_A (cd/lux/m²).

e. 3M™ Scotchlite™ Reflective Material- 8712 Silver Transfer Film and 3M™ Scotchlite™ Reflective Material-8725 Silver Transfer Film are available with or without "3M" imaged surface.

f. Scotchlite 8725 is available with or without a liner

g. Satisfies ANSI/ISEA 107-2020 High-Visibility Safety Apparel (brightness) requirements and CSA Z96-2022 High-Visibility Safety Apparel (brightness) requirements when dry cleaned and tested according to ISO 3175-2 procedures.

This product satisfies brightness and FR requirements when dry cleaned according to EN469 performance requirements for protective equipment.

Flame-resistance performance to ASTM D6413 will be degraded post ISO 3175-2 dry cleaning exposure, as specified in multiple NFPA standards. The level of flame-resistance performance degradation may depend on the base/garment fabric used. Performance requirements may vary by region based on mandated test standards. For help with product selection and use, consult your on-site safety professional, industrial hygienist, or other subject matter expert.

Given the variety of factors that can affect the use and application of a 3M product, it is essential that the user evaluate the 3M product to determine whether it is fit for a particular purpose and suitable for user's method of use or application.

Product Certification

The following 3M™ Scotchlite™ Reflective Material, as listed in the table below, meet the requirements of the listed standards. Current certificates are available at [3M.com/Scotchlite](https://www.3m.com/Scotchlite) or by request. Some products have OEKO-TEX® certification as well.

Certifications								
Product Number	Visibility Standards		NFPA					CGSB
	ANSI/ISEA 107	CSA Z96	1970 (1971)	1970 (1975)	1950 (1951)	1950 (1977)	2112	155.22
Edition Year	2020	2022	2025	2025	2020	2022	2023	2014 (R2024)
5807	x	x						
8711	x	x						
8712	x	x						
8725 and 8725LL	x	x						
8735	x	x	x	x	x	x	x	
9725	x	x						
9745	x	x	x	x	x	x	x	x

Official name of standards listed above:

- ANSI/ISEA 107-2020 American National Standard for High-Visibility Safety Apparel
- CSA Z96: 2022 High-Visibility Safety Apparel
- NFPA 1970-2025 Standard on Protective Ensembles for Structural and Proximity Firefighting, Work Apparel, Open-Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services, and Personal Alert Safety Systems (PASS)
- NFPA 1950-2025 Standard on Personal Protective Equipment for Technical Rescue Incidents, Emergency Medical Operations, and Wildland and Urban Interface Firefighting
- NFPA 2112-2023 Standard on Flame-Resistant Garments for Protection of Industrial Personnel Against Flash Fire
- CAN/CGSB 155.22-2014 (Reconfirmed 2024) Fireline Workwear for Wildland Firefighter

3M™ Scotchlite™ Reflective Material products are used globally. Please contact your local 3M representative for more information on certification to other high-visibility apparel and flame resistance standards.

Physical Performance

These 3M™ Scotchlite™ Reflective Materials will meet or exceed the following performance specifications as noted. It is important to note that cleaning methods, use, wear conditions, maintenance and environmental conditions will affect performance. See product certificates on [3M.com/Scotchlite](https://www.3m.com/Scotchlite) for testing laboratory and test date information.

Physical Performance	Test Method
Retroreflectivity (initial): $R_A \geq$ requirement listed in ANSI 107-2020 or CSA Z96:2022	ASTM E808 and ASTM E809
Abrasion: $R_A \geq 100$	ISO 12947-2, 5000 cycles
Flexing: $R_A \geq 100$	ISO 7854 Method A, 7500 cycles
Cold Fold: $R_A \geq 100$	ISO 4675, -20°C (-4°F)
Temperature Cycle: $R_A \geq 100$	12 hours @ 50°C (122°F) 20 hours @ -30°C (-22°F)
Wash: $R_A \geq 100$	ISO 6330 Method 6N, @ 60°C (140°F) number of cycles listed on page 1

Physical Performance	Test Method
Dry Clean: $R_A \geq 100$	ISO 3175-2 as noted in ISO 3759 number of cycles listed on page 1
Wet Reflectivity: $R_A \geq 100$	ANSI/ISEA 107-2020 Clause 10.4.6; CSA Z96:2022 Clause 7.4.9 or NFPA1970 Section 9.8.1.4.3
Flame Resistance ^a : <100 mm (4") char length, <2 second after flame	ASTM D6413
Heat Resistance ^a : Cannot melt, drip, separate or ignite	ASTM F2894: 5 minutes @ 260°C (500°F)
Convective Heat ^a : $R_A \geq 100$	NFPA 1970 Section 9.1.5 After 10 minutes @ 140°C (285°F)

- a. Only when retroreflective products certified to NFPA 1970 (1971), NFPA 1950 (1951), 1950 (1977) or CAN/CGSB155.22 standards (listed under Certifications) are applied to compliant fabrics such as certain aramids, modacrylics, and FR treated cottons.

Application Instructions

Whenever two or more pieces of 3M™ Scotchlite™ Reflective Materials are used together on a single surface or as a set, they should be matched to ensure uniform daytime color and nighttime retroreflectivity.

Cutting

The material can be cut in various ways including die-cut, hand-cut or guillotined. Do not use 3M™ Scotchlite™ Reflective Material-Transfer Films that incorporate a liner in plotter cutting. After weeding, the exposed liner may adhere to the fabric during lamination. 3M™ Scotchlite™ Reflective Material – 5807 Custom Cuttable Transfer Film is recommended for these applications.

Application of Heat Transfer Adhesive Backed Materials Using a Heat Press

1. Work on a flat surface where uniform heat and pressure can be applied. Avoid applying film over seams and stitches. Do not remove retroreflective side liner until after heat lamination process.
2. If the product has an adhesive side liner, remove it to expose the dry adhesive.
3. Place 3M™ Scotchlite™ Reflective Material on substrate with the adhesive side down and apply heat and pressure as described in the table below.
4. Allow application to cool to room temperature before removing the liner covering the retroreflective side. Place application on a flat surface and remove the liner by lifting one corner and pulling (about 45° angle) in a continuous, smooth manner. Optional: To prevent any excess adhesive transfer contamination, a non-stick slip sheet can be placed between the platen and laminating surface.

Additional Precautions for Heat Lamination

1. The lamination temperature, time, and pressure listed below should be used as a guide. Each substrate and retroreflective film combination should be tested to determine the best set of conditions that will meet customer requirements.
2. Other lamination methods, such as roll to roll, heat fusing, and HF welding can also be used. The proper temperature, time, and pressure conditions must be tested for each fabric to assure adequate adhesion and physical performance.
3. Many fabrics can be used as lamination substrates; however, some substrates such as nylons and fabrics treated with a durable water repellent (DWR) finish are difficult to adhere to. 3M™ Scotchlite™ Reflective Material-Fabric is recommended for these applications.
4. Laminating 3M™ Scotchlite™ Reflective Material to the surface of other 3M™ Scotchlite™ Reflective Material can be difficult and caution is required when applying other materials to it.
5. It is recommended that initial and continuous testing be done on all heat lamination methods, retroreflective materials and fabrics to ensure that acceptable adhesion and physical performance is maintained, as input materials may vary. For specific application assistance, contact your local 3M Application Engineer.
6. Do not exceed lamination temperature listed below as the paper liner may become difficult to remove. If high temperatures are required for bond durability, follow the lamination steps 1-3 using the recommend temperature, removed paper liner and then laminate again at the higher temperature (using a non-stick sheet to protect the reflective surface).

3M™ Scotchlite™ Reflective Material			
Product Number	Temperature	Dwell Time (seconds)	Line Pressure
5807	165-177°C (325-350°F)	10-20	Firm (30-40 psi)
8711 8712	165-190°C(325-375°F)	10-20	Firm (30-40 psi)
8725/8725LL	165-177°C (325-350°F)	10-20	Firm (30-40 psi)
8735	175-190°C(350-375°F)	10-15	Firm (30-40 psi)
8787 9725 9745	165-177°C (325-350°F)	10-20	Firm (30-40 psi)

Printing

Screen Printing – Images maybe 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.

Essential Information

While the use of 3M™ Scotchlite™ Reflective Material enhances visibility, no retroreflective material can guarantee absolute visibility, particularly in adverse weather conditions. Performance will vary depending upon actual use, exposure conditions, and maintenance. Exposure to contaminants (i.e. corrosive) may decrease the retroreflectivity. For optimal retroreflectivity, reflective apparel exposed to contaminants should be promptly clean and laundered in accordance with its care instructions. Customers should be aware that 3M presents a 3M™ Scotchlite™ Reflective Material product portfolio that offers a range of product attributes, and users should test the retroreflective material on their finished garments to satisfy conformance to their own requirements. All high visibility safety apparel items should be constructed in accordance with the appropriate standard(s).

3M™ Scotchlite™ Reflective Material can contain 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 for a period of weeks (greater than 26.7°C (80°F) and greater than 70% relative humidity). These blemishes do not affect performance. Please see the 3M Technical Bulletin [Care Guidelines to Reduce Staining of 3M™ Scotchlite™ Reflective Material](#) for more information.

3M recommends that all customers, in accordance with good manufacturing practices, establish an ongoing quality system which includes maintaining lot/roll identification, and implementing continuous testing that reflects their garment needs throughout their production process. For lamination operations, to 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 the lamination area. Every substrate should be tested for overall compatibility to 3M™ Scotchlite™ Reflective Material products.

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

3M™ Scotchlite™ Reflective Material- 8711 Silver Graphic-Ready Transfer Film and 3M™ Scotchlite™ Reflective Material- 8712 Silver Transfer Film performs best when laminated to polyester and polyester blend fabrics. They should not be used on knitted T-shirts or 100% cotton fabrics where good adhesion is required for extended use.

Care Instructions

IMPORTANT NOTE
 Test each application according to appropriate care instructions required for the finished product. Actual life of 3M™ Scotchlite™ Reflective Material will depend on cleaning methods, use, wear conditions, maintenance and environmental 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). Drying methods such as tumble drying at high temperatures, can limit garment life and should be considered as part of the cleaning process.

If bleach is needed, only non-chlorine bleach should be used. 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	
8711 8712		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
5807 8725 8725LL 9725 9745		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
8735		Machine wash hot, 60°C (140°F)		Tumble dry low		Cool iron, 110°C (230°F)		Do not dry clean		Non-chlorine bleach when needed
8787		Do not wash								

Industrial Wash Guidelines

Industrial laundering means regularly washing large amounts of clothing in a relatively short amount of time, with large machines (> 25 kg loads), aggressive detergent chemistry (pH 10.5 – 12), and high wash temperatures (up to 85°C, 185°F). Drying methods (tumble dry or tunnel finish) can limit garment life and should be considered as part of the cleaning process. Using harsher cleaning conditions than those recommended may significantly reduce product performance.

Refer to the table on page one for the retroreflective materials suitable for applications that will be exposed to industrial laundering.

Industrial Wash Guidelines	
Washing	
Special instructions:	Stain treatment wash processing may reduce life of 3M™ Scotchlite™ Reflective Material.
Wash chemistry:	Lower pH (nearer to neutral) and lower active alkalinity may increase the lifetime performance of the retroreflective material. Actual lifetime will be dependent upon the detergent system and dosage level. Do not use solvenated surfactants. Do not use chlorine or perborate bleach. Low to medium alkaline, high surfactant detergents are preferred.
Maximum wash temperature:	75°C (165°F)
Break/suds cycles:	Less than 20 minutes total.
Drying/Pressing	
Tunnel dry:	• Inlet temperature should not exceed 160°C (320°F). • Do not overdry. The drying time should not exceed 7 minutes. • Reflective material temperature should not exceed 135°C (275°F) at any time during drying. • The distance between the garments during the finishing process should be in a range of 70 – 100mm (2.75 in. – 4 in.).
Tumble dry:	Maximum exhaust temperature 90°C (195°F).
Pressing:	Do not exceed 150°C (300°F).

Product Availability

3M™ Scotchlite™ Reflective Material – Transfer Films are available in rolls of various widths and lengths. Check with your distributor for availability or on [3M.com/Scotchlite](https://www.3M.com/Scotchlite). Availability may vary by region.

Storage and Shelf Life

Store in a cool (4 to 32°C, 40 to 90°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 [3M.com/Scotchlite](https://www.3M.com/Scotchlite), or call Customer Service at 1-800-328-1667. To purchase, go to [3M.com/Scotchlite](https://www.3M.com/Scotchlite) and click on Support for a list of our distributors.

Important Notice

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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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