Scotchlite™ Reflective Material

3M™ Scotchlite™ Reflective Material 8712 NS Non-Stretch Transfer Film

3M™ Scotchlite™ Reflective Material 8712 S Stretch Transfer Film

Technical Data Sheet

Release 1, October 2025

Description

3M™ Scotchlite™ Reflective Material 8712 NS and 8712 S Transfer Film series 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 eye.

8712 NS is designed for use with fabrics exhibiting minimal stretch. 8712 S is designed for fabrics with higher stretch performance, including knitwear and fabrics containing elastane. Both products are available with or without a subtle "3M" logo viewable as a watermark.

Summary of Product Details

3M™ Scotchlite™ Reflective Material	Typical Brightness (R_A[d])	Wash[a]		Liner	
		Home Wash Cycles[b]	Dry Clean Cycles[c]	Adhesive Side	Retroreflective Side
8712 S Stretch Transfer Film	500	30	15	Pink plastic film	Translucent plastic film
8712 NS Non-Stretch Transfer Film	500	30	15	Pink plastic film	Translucent plastic film

a. See Care Instructions section.
b. Certified to high visibility standards to listed number of home wash cycles per ISO 6330 6N /F 60°C (140°F), where $R_A \geq 100$ cd/lux/m^2.
c. Certified to high visibility standards to listed number of dry cleaning cycles per ISO 3175-2, where $R_A \geq 100$ cd/lux/m^2.
d. Measured by 3M on new product (unwashed) at +5.0° entrance and 0.2° observation angles.

Certifications

The following 3M™ Scotchlite™ Reflective Material products meet the requirements of the standards listed in the following table. Current certificates are available at 3M.com/Scotchlite or by request.

Product Number	High Visibility Standards				
	ANSI 107	AS/NZS 1906.4	CSA Z96	ISO 20471	GB 20653
Edition Year	2020	2023	2022	2016	2020
8712 NS	x	x	x	x	x
8712 S	x	x	x	x	x

Full name of standards listed above:

- ANSI/ISEA 107-2020. American National Standard for High-Visibility Safety Apparel.
- CSA/Z96 2022. High Visibility Safety Apparel.
- AS/NZS 1906.4:2023. Retroreflective materials and devices for road traffic control purposes. Part 4: High-visibility materials for safety garments.
- DIN EN ISO 20471:2013+A1:2016. High-visibility clothing – Test methods and requirements.
- GB 20653-2020. Protective Clothing – High visibility warning clothing for professional use.

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

Physical Performance

3M™ Scotchlite™ Reflective Material products will meet or exceed the following performance specifications as noted. It is important to note that use, wear, and environmental conditions will affect performance. See product certificates on 3M.com/Scotchlite for testing laboratory and test date information.

Minimum Physical Performance	Test Method
Retroreflectivity (initial): R_A ≥ requirements listed in high visibility standards	ASTM E808-01 (2016) and ASTM E809-08 or CIE 54.2:2001 (R')
Abrasion: R_A ≥ 100	ISO 12947-2 , 5000 cycles
Flexing: R_A ≥ 100	ISO 7854, 7500 cycles
Cold Fold: R_A ≥ 100	ISO 4675, -20 °C (-4 °F)
Temperature Cycle: R_A ≥ 100	12 hours @ 50 °C (122 °F) 20 hours @ -30 °C (-22 °F)
Wash: R_A ≥ 100	ISO 6330 Method 6N /F @ 60°C (140°F) number of cycles listed on page 1
Wet Reflectivity in Rainfall: R_A ≥ 100	Per ANSI 107-2020 Appendix B; CSA Z96 2022 Clause 7.4.8; ISO 20471 Clause 6.2.2, 7.4.5 and Annex C; AS/NZS 1906.4:2023 Clause 3.8; GB 20653 Clause 6.2.6, 7.6 and Appendix E.

Application Instructions

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

Cutting

The material can be cut in various ways including die-cut, hand-cut or guillotined, as well as rewinding slitting and lathe slitting. Note: Laser cut is subject to generate certain black edge if the laser energy is high, but it can be mitigated by changing the original liner to a PSA liner.

Application of Heat-Activated 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. Remove the adhesive side liner prior to lamination process. Do not remove retroreflective side liner until after heat lamination process.
2. Place 3M™ Scotchlite™ Reflective Material on substrate with the adhesive side down and apply heat and pressure as described in the table below.
3. 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 the direction of the segments) 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 on customer's equipment 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. Each substrate and retroreflective film combination should be tested on customer's equipment to determine the best set of conditions that will meet customer requirements.
3. 8712 S is recommended if high anti-sparking performance during HF welding is desired and if the target fabrics are highly stretchable.

4. Laminating 3M™ Scotchlite™ Reflective Material to the surface of other 3M™ Scotchlite™ Reflective Material can be difficult and therefore not recommended.
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. Please ensure the laminator temperature is calibrated to the actual temperature readout. Large differences between actual temperature and displayed temperature may affect the strength of the adhesive bond to the fabric.
7. For reflective logo lamination, it is recommended to change the original liner to a suitable PSA liner before the logo making process or use two steps methods for lamination (laminate at lower temperature for a few seconds, then remove the liner, and perform the 2nd lamination with recommended lamination conditions).
8. 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. Thorough testing should be done before mass production.

3M™ Scotchlite™ Reflective Material-Transfer Films may not be compatible with some polyvinyl chloride (PVC, vinyl) films, especially those containing phosphate plasticizers. It is possible that some PVC plasticizers may migrate into the retroreflective material, making the retroreflective surface soft and sticky. We recommend that substrates always be tested prior to production to ensure that they meet your specific needs. For alternate products and additional information, please refer to 3M Technical Bulletin Plasticizer Migration in 3M™ Scotchlite™ Reflective Material – 8712 Silver Transfer Film and Related Products.

Temperature	Dwell Time (seconds)	Line Pressure
150°C (300°F)	25	Firm

To ensure you have good adhesion, wait 24 hours and wash the applied material multiple times under normal conditions. Check for lifting or delamination and if present, you must re-evaluate your application process until the desired performance is achieved. The lamination temperature, time and pressure listed should be used as a guideline. Each substrate should be tested to determine the optimal conditions that will meet customer requirements.

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. 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 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. Customers should implement continuous testing throughout their production and on their finished garments that reflects their garment needs.

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

Care 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, wear conditions, and maintenance.

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. Follow the garment manufacturer's instructions for

best practices.

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 for 3M™ Scotchlite™ Reflective Material are below:

Care Label Recommendations									
Wash		**Dry**		**Iron**		**Dry-Cleaning**		**Bleach**	
	Machine wash hot, 60°C (140°F), pH between 6 and 10.5		Tumble dry low.		Use cool iron, 110°C (230°F)		Dry-clean, normal cycle		Non chlorinated bleach only, when needed

Product Availability

These 3M™ Scotchlite™ Reflective Material products are available in rolls with the following standard widths and lengths listed in the following table. Product configurations will vary by region. Contact your 3M representative for further information.

Product Number	Roll Width	Standard Roll Length
8712 NS 8712 S	1270 mm	50 m
	25.4 mm	100 m
	304.8 mm	500 m
	50.8 mm	200 m
	60 mm	200 m
	914.4mm	50 m

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 the time stated below. Time starts from 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.

Product	Shelf Life
8712 NS	1 year
8712 S	1 year

Contact Us

For current technical literature and technical support, go to 3M.com/Scotchlite, or call Customer Service at 1-800-328-1667. To purchase, go to 3M.com/Scotchlite and click on Support for a list of our distributors.

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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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