Technical
Data Sheet

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3M™ Scotchlite™ Reflective Material
8710 Silver Transfer Film

1. Product Information

3M™ Scotchlite™ Reflective Material - 8710 Silver Transfer Film is intended for the application on high-visibility warning clothing such as occupational workwear, consumer garments and accessories to enhance the visibility of the wearer during darkness and low light conditions. The product will appear brilliant white, when illuminated by vehicle headlights, even when the wearer is situated at the side of the road.

When converting/storing the reflective material, certain circumstances (see e.g. 6.2) may change the uniform appearance of the reflective material; the reflective properties – and hence the defined functionality – will not be affected by this.

2. Product Features

2.1 Product Design

3M™ Scotchlite™ Reflective Material - 8710 Silver Transfer Film consists of exposed high performance glass lenses bonded to a durable polymer layer, which is coated with a heat activated adhesive.

3M™ Scotchlite™ Reflective Material - 8710 Silver Transfer Film comes with a protective paper liner on the reflective side and a rose polyester liner on the adhesive side.

2.2 High Performance according to AS/NZS 1906.4

3M™ Scotchlite™ Reflective Material - 8710 Silver Transfer Film:

• Exceeds the brightness requirements (AS/NZS 1906.4) for retroreflective performance material.

• Is non-orientation sensitive.

• Offers 60°C home wash durability, 25 cycles per ISO 6330 (Method 2A).

• Offers good dry cleaning durability, 25 cycles per ISO 3175 (Method 9.1).

• Offers excellent drapability and fabric conformity.

• Can be applied to stretchable substrates.

2.3 Other Special Features

To ensure consistency of performance, 3M™ Scotchlite™ Reflective Materials are manufactured within an ISO 9002 controlled manufacturing environment.

3. General Safety Information

Read 3M™ Scotchlite™ Reflective Material - 8710 Silver Transfer Film Product Bulletin carefully.

The wearer is ultimately responsible for his/her own safety.

• Verify the suitability of 3M™ Scotchlite™ Reflective Material - 8710 Silver Transfer Film for the intended use of the PPE (AS/NZS 4501.1).

• No reflective material can guarantee absolute visibility.

• Various factors (e.g. environmental) can influence visibility. For further details, see chapter 8 - “Specific Safety Information”.

• Field test the finished garment to verify its suitability for intended use and to select appropriate care conditions.

4. Product Application

Retroreflective materials are important in applications where being visible can reduce the risk of an accident. Examples of environments where high-visibility garments should be worn include applications of vehicular hazard such as motorways, rural and urban roads, railway environments, airports and docks.

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3M™ Scotchlite™ Reflective Material - 8710 Silver Transfer Film is recommended for garments not suffering from harsh wear impact and being subjected to domestic wash care procedures.

Occupational Application

• Clothing intended for non-excessive wash and wear impact e.g. vests.

Non-Occupational Application

• Clothing for pedestrians, joggers, cyclists and children.

Accessories

• Head-, arm-, legbands, gloves, footwear, webbing, pipings, belts, back packs, emblems and logos.

5. Product Converting

5.1 Cutting

3M™ Scotchlite™ Reflective Material - 8710 Silver Transfer Film can be handcut, die-cut or guillotined (max. 5cm stack height).

Note: Use very sharp cutting knives only and cut from the reflective side.

5.2 Lamination onto substrates

3M™ Scotchlite™ Reflective Material - 8710 Silver Transfer Film can be applied as trims, emblems or logos directly to many different types of substrates.

The reflective surface of the film is protected by a paper liner which facilitates handling and application. A removable plastic liner protects the heat-activatable adhesive.

5.3 Lamination process

Use lamination equipment, which provides uniform heat and pressure.

The following recommendations are general guidelines for heat press lamination. Other lamination methods (roll-to-roll, HF welding, etc.) can also be used. Proper lamination parameters must be determined for each substrate to assure adequate adhesion.

Substrate	Temperature [°C]	Time [sec]	Pressure [kg/cm²]
100% Cotton	175	15	1.5
Polyester/Cotton	175	15	1.5
Vinyl	150	10	1.5
Urethane	150	10-12	1.5

• Preheat the press.

• Remove plastic liner from adhesive side. Do not remove the paper carrier.

• Place transfer film on substrate with adhesive side facing the substrate. Apply heat and pressure as described. It is not recommended to apply film over seams and stitches.

• A press cloth or a siliconised slip-sheet for delicate or coated substrates may be used to cover the transfer film and substrate during lamination.

• Allow the paper liner to cool to room temperature before stripping. To remove the paper liner, lift the liner from one corner and pull gently with a single motion while holding the substrate flat.

Note:

• In general, 3M™ Scotchlite™ Reflective Material - 8710 Silver Transfer Film is not recommended for use on polyamide fabrics. The adhesion on polyamides such as Nylon is often not satisfactory.

• Lamination on coated substrates might require reduced lamination temperature and time to prevent surface damage. Appropriate lamination parameters have to be determined accordingly. Care must be taken to avoid air blisters.

• Substrate finishes such as silicone, parafin, fluorocarbon resin or flame retardant coating could significantly affect the level of adhesion to the substrate.

• To ensure adequate adhesion to substrate, it is strongly recommended to test the application in the intended care procedure for the finished product.

• Prior to production, it is essential to test the actual product and substrate being used.

• Production dependent colour deviations of new retroreflective material do not affect the suitability of 3M™ Scotchlite™ Reflective Materials according to the performance requirements laid down in AS/NZS 1906.4 for retroreflective material.

5.4 Lamination of plotter or kiss-cut material

Plotter-, kiss-cut transfers require special procedures for lamination.

Typical procedures are:
a) 2-step lamination
b) lamination with application tape

For detailed info please refer to Technical Guideline “Plotter-Cutting of reflective material”.

5.5 Silk Screen Printing

3M™ Scotchlite™ Reflective Material - 8710 Silver Transfer Film should not be silk screen printed before the application. For direct screen printing it is recommended to use 3M™ Scotchlite™ Reflective Material - 8711 Silver Graphic Ready Transfer Film.

For further information contact your 3M representative.

6. Handling and Storage

6.1 Product Storagea

Store in a cool, dry area and use within 1 year of receipt.

Rolls should be stored in their original cartons, whilst partially used rolls should be returned to their carton or suspended horizontally from the core via a rod or pipe.

Cut sheets should be stored flat.

6.2 Handling and Storage Precautions

Aggressive chemicals, e.g. sulphur- or chlorine- containing compounds, perspiration, strong acids or bases may affect the aesthetic appearance of 3M™ Scotchlite™ Silver Reflective Materials. When exposed to excessive heat and more than 70% relative humidity conditions these products have the potential to become stained. These stains do not affect the retroreflective performance of the material and do not indicate that the input product was defective.

Care must be taken by the user when handling 3M™ Scotchlite™ Silver Reflective Material in hot and humid environments. During application, storage and shipping ambient conditions should be kept. Measures like cooling, dehumidifying the manufacturing area and specific handling precautions should be taken. Appropriate specific storekeeping is essential.

In condition of excessive heat and humidity, it is recommended to leave the paper liner on the applied transfer film as long as possible.

Knowing the individual situation, the user may contact 3M for further advice if needed.

7. Product Maintenance

Reflective fabrics and films naturally age. Ageing depends upon material type, conditions of use, environment and maintenance procedures.

The retroreflective performance of all reflective materials is affected by soiling. Any kind of dirt, liquid chemicals, grease and alike will reduce the brightness in the area of contamination.

7.1 Product Cleaning

Frequent care and maintenance will ensure the continued effectiveness of the reflective material. The cleaning frequency of the warning clothing depends on the degree of soiling expected in the working environment.

Before usage, the user shall determine the suitability of the intended care process for 3M™ Scotchlite™ Reflective Material - 8710 Silver Transfer Film. A test application of the finished garment should be conducted to determine the maximum number of care cycles expected for each application.

For cleaning see **3M™ Scotchlite™ Reflective Material - 8710 Silver Transfer Film Care Guideline.**

For consultation on care, contact your local 3M representative.

For manual cleaning, damp wipe with a soft sponge or cloth using a mild wash lye.

For stain removal of fat or mineral oil etc. use a soft, clean cloth dipped into white spirit. Wipe clean with water afterwards.

Caution:

The use of other stain removers such as aromatic solvents or oxidising/corrosive substances is not recommended.

7.2 Special Cleaning Instructions

• For application on rainwear a regular fluorocarbon treatment of the garment is recommended.

• Chemical splashes should be removed with a soft dry cloth. Cleaning the garment the same day is recommended.

• Splashes of strong acids or alkalis should immediately be neutralised with plenty of water.
• Contamination with toxic or poisonous substances or biocontamination will require the application of a specific decontamination process.

• Application of high alkaline products, high pH-products, bleaches, etc, is not recommended.

• Do not over dry. The temperature of the material should not exceed 70°C at any time during drying.

7.3 Maintenance Misuse

3M™ Scotchlite™ Reflective Material - 8710 Silver Transfer Film is an optical system. Coating of the product with material of high refractive index such as oil will greatly diminish reflective performance.

• No harsh mechanical treatment, e.g. abrasion with wire brushes or sand paper.

• No uniform coating or spraying of oils, protective waxes, inks or paint.

• No application of products such as leather spray or shoe shine.

7.4 Inspection

High-visibility warning clothing should be maintained in good condition and inspected regularly for signs of damage or deterioration.

Where frequent care cycles are performed, inspection should be pursued after every cleaning cycle. Records of test results should be kept for reference.

Replacement of the reflective material must be considered, if the retroreflective performance is below R´ = 100 cd/lx/m² (refer to AS/NZS 1906.4).

For specific guidance contact your 3M representative.

7.5 Product Disposal

Product can be recycled attached to the garment. The product can be incinerated in a commercial or industrial facility or disposed in a sanitary landfill. Before recycling, the compatibility shall be determined with the intended recycling process.

8. Specific Safety Information

Visibility Limits see chapter 3 “General Safety Information”

Various environmental factors, like line of sight, rain, fog, smoke, dust and visual noise can influence visibility.

Recognition of the wearer can also be significantly reduced, if the reflective material is covered, e.g. by simultaneously wearing other personal protective equipment or by obstacles in the working zone.

In such instances the wearer should be aware of these limitations.

The brightness of 3M™ Scotchlite™ Reflective Material - 8710 Silver Transfer Film can also be diminished in extreme weather conditions.

• Test results show, that 3M™ Scotchlite™ Reflective Material - 8710 Silver Transfer Film exceeds the retroreflective performance requirements in rainfall conditions as defined in AS/NZS 1906.4. Initial brightness levels return as the material dries.

• Fog, mist, smoke and dust can scatter the light from headlights. Wearer must be aware that detection distances will be severely reduced.

• Visual noise (contrast variations in the visual field) decreases the contrast of the reflective material with the background and affects the visibility in low-light conditions.

Important Notice to Purchaser / Converter / Wearer:

All statements, technical information and recommendations herein are based on tests we believe to be reliable, but the accuracy or completeness thereof is not guaranteed. We shall not be liable and no warranty shall apply for products not applied according to our published information folder.

Before using/converting, the user/converter must determine the suitability of the product for its intended use/converting, and the user/converter assumes all risk and liability whatsoever in connection therewith. All questions of warranty and liability relating to this product are governed by the terms of the sale subject where applicable to the prevailing law.

No statement or recommendation not contained herein shall have any force or effect unless in an agreement signed by officers of us.

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