

3M™ Scotchlite™ Reflective Material 8725 / 8725 LL Silver Transfer Film European Product Bulletin

1. Product Information

3M™ Scotchlite™ Reflective Material - 8725 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 - 8725 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 - 8725 Silver Transfer Film and 3M™ Scotchlite™ Reflective Material - 8725 LL Silver Transfer Film provide the same performance.
- 3M™ Scotchlite™ Reflective Material - 8725 Silver Transfer Film comes with a protective paper liner on the reflective side, whereas 3M™ Scotchlite™ Reflective Material - 8725 LL Silver Transfer Film is a linerless product.

2.2 High Performance according to EN 471 and EN 1150

3M™ Scotchlite™ Reflective Material - 8725 Silver Transfer Film:

- Exceeds the highest brightness requirements (EN 471 Level 2) for retroreflective material.
- Is non-orientation sensitive.
- Offers 60°C domestic wash durability, 50 cycles per EN 471, depending on substrate.
- Offers good dry cleaning durability, 30 cycles per EN 471, depending on substrate.
- Offers good drapability and fabric compatibility.

2.3 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 - 8725 Silver Transfer Film Product Bulletin carefully.

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

- Verify the suitability of 3M™ Scotchlite™ Reflective Material - 8725 Silver Transfer Film for the intended use of the PPE (EC Directive 89/656/EEC Art. 4 and Art. 5; EC Communication 89/C328/EEC Annex §7).
- 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 suitability for intended use and for the selection of appropriate care conditions.

4. Product Application

Retroreflective materials are important in applications where being visible can reduce the risk of an accident. Example 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.

3M™ Scotchlite™ Reflective Material - 8725 Silver Transfer Film is recommended for garments not suffering from harsh wear impact and being subjected to domestic wash care procedures.

Occupational Application

- Clothing for road works, track maintenance, sanitation, ambulance and rescue, utility companies, transportation, postal service, armed forces and police.

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 - 8725 Silver Transfer Film can be handcut, die-cut or guillotined.

Note: Cutting of 3M™ Scotchlite™ Reflective Material - 8725 LL may promote handling difficulties, particularly, if the cut design is complex. It is recommended that 3M™ Scotchlite™ Reflective Material - 8725 Silver Transfer Film is used.

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

5.1.1 Plotter-cutting, kiss-cuttings

3M™ Scotchlite™ Reflective Material - 8725 Silver Transfer Film is not recommended for plotter-cutting or kiss-cutting.

5.2 Lamination onto substrate

3M™ Scotchlite™ Reflective Material - 8725 Silver Transfer Film can be applied in form of trims, emblems and logos directly to many different types of substrates.

Both, 3M™ Scotchlite™ Reflective Material - 8725 and 8725 LL Silver Transfer Film can be laminated using the process conditions recommended below. Convertors are advised to determine, which configuration best suits their lamination process.

5.3 Lamination Process

Work with lamination equipment, which provides uniform heat and pressure.

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

Substrate	Temperature [°C]	Time [sec]	Pressure [bar]
100% Cotton	175	15	1.5
Polyester/Cotton	175	15	1.5
Vinyl or PU	150	10	1.5
Knitted PES	175	15	1.5
2-ply or 3-ply PU/PES	165	15	1.5
3-ply PTFE/PES	175	15	1.5
Aramid fibres	175	20	1.5

- Preheat the press.
- Material can be applied with or without paper liner.
- Place the transfer film 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.

- If laminating the lined version, 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 - 8725 Silver Transfer Film is not recommended for polyamide fabrics. The adhesion on polyamides such as Nylon is often not satisfying.
- Lamination on coated substrates might require reduced lamination temperature and time to prevent surface damages. Appropriate lamination parameters have to be determined accordingly. Air blisters have to be avoided.
- Substrate finishes such as silicone, parafin, fluorocarbon resin or flame retardant coating might strongly influence 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 3M™ Scotchlite™ Reflective Material - 8725 Silver Transfer Film on the actual substrate being used.

- Whenever two or more pieces of reflective transfer film are used together on a single surface or as a set, they should be matched to assure uniform day time colour appearance.
- Production dependent colour deviations of new retroreflective material do not affect the suitability of 3M™ Scotchlite™ Reflective Material according to the performance requirements laid down in EN 471 for retroreflective material.

5.4 Lamination on Continuous Heat Fusing Machines

Refer to 3M Technical Information, “Continuous Lamination of 3M™ Scotchlite™ Reflective Material - 8725 / 8725LL Silver Transfer Film”.

5.5 Silk Screen Printing

3M™ Scotchlite™ Reflective Material - 8725 Silver Transfer Film should not be silk screen printed before application.

The linerless version can be printed using either silk screen or rotary printing methods.

Due to the product construction, durable prints on glass bead products are difficult to obtain.

Choice of ink will depend upon usage condition and care procedure. User should make test applications and select the appropriate care instruction for the finished product to ensure adequate adhesion of the ink. It is recommended to test the ink adhesion on the actual batch of 3M™ Scotchlite™ Reflective Material - 8725 Silver Transfer Film being used before production.

Opaque silk screen printing inks will appear black, transparent inks will reduce brightness when viewed as retroreflected light at low light conditions.

Note: It is the responsibility of the converter to ensure the compatibility of ink with the reflective material and the suitability of the printing process.

For more information please refer to 3M Technical Information “**Printing Guidelines for Glass Bead Products**”.

6. Handling and Storage

6.1 Product Storage

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 shipping 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 Material. 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 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 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 clothing depends on the degree of soiling expected in the working environment condition.

Before usage, the user shall determine the suitability of the intended care process for 3M™ Scotchlite™ Reflective Material - 8725 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 - 8725 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.

Washing/cleaning conditions harsher than those recommended shorten the product's lifetime significantly.

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 bio-contamination will require the application of a specific decontamination process.
- Application of high alkaline products, high pH-products, bleaches, etc, is not recommended.
- Do not overdry. The temperature of the material should not exceed 70°C at any time during drying.

7.3 Maintenance Misuse

3M™ Scotchlite™ Reflective Material - 8725 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 $R' = 100 \text{ cd/lx/m}^2$ (refer to EN 471).

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 - 8725 Silver Transfer Film can also be diminished in extreme weather conditions.

- Test results show, that 3M™ Scotchlite™ Reflective Material - 8725 Silver Transfer Film exceeds the retroreflective performance requirements in rainfall conditions as defined in EN 471. 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.