

3M™ Scotchlite™ Reflective Material – Product Bulletin

8906 Silver Fabric

1. Product Description

3M™ Scotchlite™ Reflective Material – 8906 Silver Fabric Trim is intended for the application on high-visibility warning clothing such as warning vests or occupational work wear to enhance the visibility of the wearer during darkness and low light conditions. The fabric 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 – 8906 Silver Fabric Trim consists of exposed high performance glass lenses bonded to a cloth backing (100% Polyester).

2.2 Performance according to ISO 20471

3M™ Scotchlite™ Reflective Material – 8906 Silver Fabric Trim:

- Exceeds the highest brightness requirements (ISO 20471 Class 2) for retroreflective material.
- Is non-orientation sensitive.
- Offers excellent drapeability and smooth hand.
- Offers 60°C domestic wash durability per ISO 20471, 30 cycles per ISO 6330 6N.

2.3 Special Features

To ensure consistency of performance, 3M™ Scotchlite™ Reflective Materials are manufactured within an ISO 9001 controlled manufacturing environment.

3. General Safety Information

Read 3M™ Scotchlite™ Reflective Material – 8906 Silver Fabric Trim Product Bulletin carefully.

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

- Verify the suitability of 3M™ Scotchlite™ Reflective Material – 8906 Silver Fabric Trim 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 9 “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.

3M™ Scotchlite™ Reflective Material – 8906 Silver Fabric Trim is recommended for garments not suffering from harsh wear impact and being subjected to domestic wash care procedures up to 30 wash cycles only.

Occupational Application

- Clothing for road work, track maintenance, sanitation, utility companies, transportation etc.

5. Product Converting

5.1 Cutting

3M™ Scotchlite™ Reflective Material – 8906 Silver Fabric Trim can be hand cut or guillotined.

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

5.2 Sewing

3M™ Scotchlite™ Reflective Material – 8906 Silver Fabric Trim can be applied directly to a fabric. It is best suited for polyester fabrics with a weight of 150 to 200g/m². There are, though, less appropriate substrates, e.g. highly elastic or very thin fabrics. Sewing onto stretchable substrates often leads to sewing faults resulting in puckering. Furthermore, features such as shrinkage might lead to poor aesthetic, e.g. puckering.

Typically, the 3M™ Scotchlite™ Reflective Material – 8906 Silver Fabric Trim is applied to the pre-cuts before the garment is sewn together.

Stitch lines should be positioned at a nominal distance of 2mm from the edge of the reflective material. Sewing too close to the edge will introduce the potential of fraying, whilst anything above 2mm may lead to curling of the reflective material.

Prior to production, it is recommended to verify suitability for the respective substrate, intended use and care procedure.

Note: Whenever two or more pieces of reflective fabric are used together on a single surface or as a set, they should be matched to ensure uniform day time colour appearance.

Production dependent colour deviations of new retroreflective material do not affect the suitability of 3M™ Scotchlite™ Reflective Material – 8906 Fabric Trim according to the performance requirements laid down in ISO 20471 for retroreflective material.

5.3 Needle Size

The following needle size is recommended:
Substrate weight up to 250g/m² = Nm 80 – 90
The needle size must be compatible with the sewing thread.
For some fabrics, it may be helpful to use coated needles.

5.4 Sewing Thread

Depending on substrate, a polyester or polyester/cotton thread should be used. The thread should be shrink proof. The thread must have good sliding properties and good abrasion resistance for sewing at higher speed.

5.5 Thread Tension

The tension should be kept as low as possible. It is important that both threads (upper and lower) are well matched to avoid puckering.

5.6 Pressure Foot

The use of a coated pressure foot is recommended to guarantee a smooth fabric transport. Maintain a low sewing foot pressure to avoid stretching of both the reflective material and the substrate.

5.7 Stitch Size

A double lock stitch is recommended with a maximum of 5 stitches/cm.

5.8 Guides for 2-Needle-Machines

The guide used for the retroreflective stripe should be marginally above the nominal size of the roll width (1-2mm). Too narrow a guide may promote differential tension between the base fabric and the retroreflective material, causing puckering, whilst too wide a guide will create the potential of stitch lines running too close to the edge of the retroreflective stripe.

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 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 handling 3M™ Scotchlite™ Reflective Material – 8906 Silver Fabric Trim 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. Knowing the individual situation, the user may contact 3M for further advice is needed.

7. Product Cleaning



7.1 Caution

Washing/cleaning conditions harsher than those recommended below could diminish the brilliance of the product and shorten its lifetime significantly. The following instructions therefore must be strictly followed.

- No presoaking.
- No application of high alkaline products (e.g. heavy duty products or stain removal products).
- No application of solvenated detergents or micro-emulsions.
- No additional bleaches.
- Do not overdry. Reflective film temperature should not exceed 70°C at any time during drying.

Before use, the suitability of the intended care process for 3M™ Scotchlite™ Reflective Material – 8906 Silver Fabric Trim must be determined. Test duration should mirror the anticipated maximum number of care cycles in use.



7.2 Homewash

7.2.1 Washing Conditions

A colored clothing wash program without pre-wash should be used.

Recommendation:

Wash temperature range:	30°C to 60°C
Max. wash time at highest wash temperature:	12 minutes
Max. program time:	50 minutes

Detergent: A recognised brand, powdered household detergent should be used. Recommended are detergents for delicate or coloured laundry. Refer to the detergent manufacturer's recommendations for dosage in areas of high water hardness and for various degrees of garment soiling.

Wash temperatures higher than 60°C and industrial laundering processes are not recommended.

The use of bleach or detergents containing organic solvent will result in a reduction in retroreflective performance. Use of temperatures lower than 60°C will increase the lifetime of the reflective fabric. Actual lifetime will be dependent upon the detergent system and its dosage level.



7.2.2 Do not use additional bleach.

- No chlorine bleach.
 - No bleaches on oxygen basis (e.g. sodium perborate).
- Do not pre-soak laundry even in a low concentration of bleach.



7.2.3 Drying Conditions

Tumble Dryer:

Tumble drying should be performed in a commercially available household dryer using the medium dry setting.

Exhaust temperature should not exceed 70°C.

Do not overdry. Damp dry only.

Air Drying: Line drying is recommended where possible.



7.3 Dry Cleaning Conditions

- Dry Cleaning is not recommended.



7.4 Ironing Conditions

- Use medium setting, use press cloth.
- Do not apply steam.

8. Product Maintenance

8.1 Maintenance Misuse

3M™ Scotchlite™ Reflective Material – 8906 Silver Fabric Trim is an optical system. Coating of the fabric with material of high refractive index, such as oil, will greatly diminish reflective performance of the central silver stripe.

- 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.

8.2 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 should be considered, if the retroreflective performance of the central silver reflective stripe falls below $R' = 100 \text{ cd/lx/m}^2$ (refer to ISO 20471).

For specific guidance contact your local 3M representative.

8.3 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.

9. 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 traffic situations.

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

The brightness of 3M™ Scotchlite™ Reflective Material – 8906 Silver Fabric Trim can also be diminished in extreme weather conditions.

- Test results show, that 3M™ Scotchlite™ Reflective Material – 8906 Silver Fabric Trim exceeds the retroreflective performance requirements in rainfall conditions as defined in ISO 20471. Initial brightness levels return as the material dries.
- Fog, mist, smoke and dust can scatter the light from headlights, the wearer must be aware that detection distance 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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