

3M™ Scotchlite™ Reflective Material High Gloss Series 7100 (EN 471 certified products) European Product Bulletin

1. Product Information

3M™ Scotchlite™ Reflective Material - 7160 White, 7180 Silver Grey and 7187 Fluorescent lime-yellow High Gloss Trims are intended for use on occupational workwear, consumer garments and accessories to enhance the visibility of the wearer during darkness and low light conditions (functionality). The trims will appear brilliant white (3M™ Scotchlite™ Reflective Material - 7160 and 7180 High Gloss Trims) and brilliant yellow (3M™ Scotchlite™ Reflective Material - 7187 High Gloss Trim), 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 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 - 7160, 7180 and 7187 High Gloss Trims consist of highly retroreflective microprisms formed on flexible, glossy and UV-stabilised polymeric film. A white (grey for 7180) flexible film sealed on the backside of the trim encapsulates the microprisms and protects the reflective product from dirt and moisture penetration.

2.2 High Performance acc. to EN 471 (High Visibility Warning Clothing)

3M™ Scotchlite™ Reflective Material - 7160, 7180 and 7187 High Gloss Trims:

- Exceed the highest brightness requirements (level 2) for retroreflective material.

- Offer 60°C domestic wash durability: 75 cycles per EN 471.
- 3M™ Scotchlite™ Reflective Material - 7187 Fluorescent lime-yellow High Gloss Trim is especially conspicuous in low light and night time conditions.
- Are offered with a special polyurethane coating to reduce dye migration.
- Are ready to be sewn on.
- Provide a shiny glossy appearance.
- Can be printed.

3. General Safety Information

Read 3M™ Scotchlite™ Reflective Material - Series 7100 High Gloss Product Bulletin carefully.

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

- Verify the suitability of 3M™ Scotchlite™ Reflective Material - 7160, 7180 and 7187 High Gloss Trims 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 7 “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 - Series 7100 High Gloss Trims are durable materials for garments not suffering from harsh wear impact and being intended for domestic wash care procedures.

Occupational Application

- Clothing for road work, 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, belts and back packs.

5. Product Converting

5.1 Cutting

The 3M™ Scotchlite™ Reflective Material - 7160, 7180 and 7187 High Gloss Trims can be handcut, die-cut or guillotined.

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

5.2 Sewing

3M™ Scotchlite™ Reflective Material - 7160, 7180 and 7187 High Gloss Trims can be applied directly to a substrate. Sewing should be done in the “sewing channels” (between the outer welding lines) to avoid puncturing of the centre part. The reflective trim should be sewn with a Teflon* coated brand circular top needle, using a polyester thread. It is essential to sew in the sewing channel to avoid damaging of the reflective area by needle punching. Sew in place using a lockstitch of 3mm stitch length. Speed of feed gripper needs to be adjusted.

Note: Cells with holes from stitching for example, might collect liquid/water during washes. In these areas, the retroreflective properties might be diminished until the liquid is removed.

- Whenever two or more pieces of reflective trim are used together on a single surface or as a set, they should be matched to ensure uniform day time appearance.
- For detailed sewing information, contact your 3M local representative.

5.3 Printing

3M™ Scotchlite™ Reflective Material - 7160, 7180 and 7187 High Gloss Trims are coated with a special polyurethane coating.

Choice of ink will depend upon printing conditions and care procedures. We recommend the use of e.g. 3M™ 990 inks or an ink suitable for PU surfaces.

User should make test applications and select the appropriate care instruction for the finished product to ensure adequate adhesion of the ink, because the adhesion to the reflective material may be affected by repeated machine laundering/cleaning.

It is always important to test the ink adhesion on the actual product being used before production.

Opaque printing inks will appear black when viewed as reflected light in low light conditions and transparent inks will decrease the reflective performance of the product.

For more information please refer to 3M Technical Information “**Screenprinting guideline for 3M™ Scotchlite™ Reflective Material - High Gloss Films**”.

*Teflon is a trademark of DuPont Company

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

6.2 Colour fading due to UV light exposure

3M™ Scotchlite™ Reflective Material - 7187 Fluorescent lime-yellow High Gloss Trim might show colour fading in extreme UV light exposures.

7. Product Maintenance

High Gloss materials 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 clothing depends on the degree of soiling, expected in the respective working environment.

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

Do not dry clean.

Washing condition harsher than those recommended shorten the product's lifetime significantly.

7.2 Colour alteration from bleeding fabrics

Due to the product nature, 3M™ Scotchlite™ Reflective Material - High Gloss Trims might pick-up colour from bleeding fabrics (e.g. during washing).

Product might pick up colour from other surfaces e.g. vinyls. To avoid dye migration it is recommended to store trims separately by colour.

7.3 Special Cleaning Instructions

- Chemical splashes should be removed with a soft dry cloth. Return the garment for cleaning the same day.
- Splashes of strong acids or bases should immediately be neutralised with plenty of water.
- Application of high alkaline products, high pH products bleaches, etc. is not recommended.
- Do not overdry. The temperature of the material should not exceed 60°C at any time during drying.

7.4 Maintenance Misuse

3M™ Scotchlite™ Reflective Material - 7160, 7180 and 7187 High Gloss Trims are optical reflective systems. Please mind the following:

- 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.

7.5 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. For specific guidance contact your 3M representative.

Replacement of the reflective material must be considered, if the retroreflective performance is below $R' = 100 \text{ cd/lx/m}^2$.

7.6 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 should 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 - 7160, 7180 and 7187 High Gloss Trims can also be diminished in extreme weather conditions.

- Test results show, that 3M™ Scotchlite™ Reflective Material - 7160, 7180 and 7187 High Gloss Trims exceed the retroreflective performance requirements in rainfall conditions as defined in EN 471.
- Fog, mist, smoke and dust can scatter the light from headlights. The 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.