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3M™ Scotchlite™ Reflective Material 9687 Fluorescent lime-yellow Fire Coat Trim European Product Bulletin

1. Product Information

3M™ Scotchlite™ Reflective Material - 9687 Fluorescent lime-yellow Fire Coat Trim is intended to enhance the visibility of the wearer, when applied to fire fighting apparel and flame resistant occupational work wear. It is most appropriate where enhanced visibility of the wearer during day time, and in low-light night time conditions, in combination with heat resistance and wear durability, is required.

The reflective part of 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, but will not affect the reflective properties, and therefore, the defined functionality.

2. Product Features

2.1 Product Design

3M™ Scotchlite™ Reflective Material - 9687 Fluorescent lime-yellow Fire Coat Trim consists of exposed high performance glass lenses bonded to a special polymer layer and a flame resistant aramid backing. It is a fluorescent lime-yellow trim with a centred silver retroreflective stripe.

2.2 High Performance according to EN 471: 2003 (High-Visibility Warning Clothing)

Note: The product is not for use on EN 471: 2003 High Visibility Garments, which would require the retroreflective part to be a minimum of 50mm wide.

3M™ Scotchlite™ Reflective Material - 9687 Fluorescent lime-yellow Fire Coat Trim:

- Centred silver retroreflective stripe exceeds the brightness requirements (table 5, level 2) when new and requirements after test exposure for retroreflective material (clause 6.2.2).

- Typical width of silver centre stripe: 1.9cm for 5cm wide material and 2.5cm for 7.5cm wide material.

- Is non-orientation sensitive.

- Offers 60°C domestic wash durability (clause 6.2.2), 50 cycles per EN 471.

- Offers 90°C domestic wash durability (clause 6.2.2), 25 cycles per EN 471.

- Offers dry-cleaning durability (clause 6.2.2), 30 cycles per EN 471.

- Meets the requirements for fluorescent yellow background material when new (clause 5.1), after Xenon (clause 5.2) and after being subjected to convective heat test at 180°C for 5 minutes for the fluorescent lime-yellow parts.

- Meets the requirements for fluorescent yellow background material (clause 5.1) after being subjected to 50 cycles washing at 60°C per EN 471 or after 25 cycles at 90°C per EN 471 or after 30 cycles dry cleaning per EN 471.

2.3 High Performance according to EN 469: 1995 (Protective Clothing for Fire Fighter)

3M™ Scotchlite™ Reflective Material - 9687 Fluorescent lime-yellow Fire Coat Trim:

- Provides limited flame spread properties acc to EN 469 (clause 6.1) new and after 5 cycles at 60°C.

- Fulfills requirements for flammability acc to EN 533 (Index 3) when new and after 50 wash cycles in accordance to ISO 6330 (2A) or after 25 cycles in accordance to ISO 6330 (1A) or after 30 cycles dry cleaning in accordance to ISO 3175-2.

- The central silver retroreflective stripe exceeds the minimum retroreflective performance requirements acc to EN 471 after exposure to EN 366, method B (radiant heat at 10kW/m²).

- The central silver retroreflective stripe exceeds the minimum retroreflective performance requirements of EN 471 after convective heat exposure at 180°C for 5 minutes new and after 5 cycles washing acc to ISO 6330 2A (EN 469, Annex A).

- The central silver retroreflective stripe exceeds the minimum retroreflective performance requirements of EN 471 after convective heat exposure to 260°C for 5 minutes.

2.4 High Performance according to NFPA 1971, 2000 (Protective Ensemble for Structural Fire Fighting)

3M™ Scotchlite™ Reflective Material - 9687 Fluorescent lime-yellow Fire Coat Trim meets or exceeds the performance tests for trim as specified in NFPA 1971 Standard, 2000 Edition.

2.5 Special Feature

To ensure consistency of performance, 3M™ Scotchlite™ Reflective Materials are manufactured within an ISO 9001:2000 controlled manufacturing environment.

3. General Safety Information

Read 3M™ Scotchlite™ Reflective Material - 9687 Fluorescent lime-yellow Fire Coat Trim Product Bulletin carefully.

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

- Verify the suitability of 3M™ Scotchlite™ Reflective Material - 9687 Fluorescent lime-yellow Fire Coat 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 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. 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 - 9687 Fluorescent lime-yellow Fire Coat Trim is a high durable material recommended for garments subjected to domestic or central wash care procedures.

Occupational Application

- Fire fighting clothing and flame resistant occupational work wear, where an enhanced flame and heat resistance as well as high wear durability is required, such as: fire coats, turnout coats, trousers, coveralls, coats, jackets, waistcoats and trousers, uniforms, rainwear.

Accessories

- Head-, arm-, legbands, belts and gloves.

5. Product Converting

5.1 Cutting

3M™ Scotchlite™ Reflective Material - 9687 Fluorescent lime-yellow Fire Coat Trim 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 - 9687 Fluorescent lime-yellow Fire Coat Trim can be applied directly to a fabric. It is best suited for flame resistant fabrics with a weight of 230 – 350 g/m².

The reflective fabric trim should be sewn with a non-stick coated circular top needle, using a flame retardent thread (e.g. aramid). To minimise edge fraying, sew in place using a lockstitch of 3mm stitch length, placed at least 3mm from the edge of the reflective fabric trim.

Note: Whenever two or more pieces of reflective fabric trim 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 according to the performance requirements laid down in EN 471 for retroreflective material.

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 alkalis may affect the aesthetic appearance of 3M™ Scotchlite™ 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™ 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.

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.

Aggressive chemicals (e.g. hydrochloric acid) might attack the central silver reflective stripe.

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.

It is recommended to clean the garment after every intervention.

Before usage, the user shall determine the suitability of the intended care process for 3M™ Scotchlite™ Reflective Material - 9687 Fluorescent lime-yellow Fire Coat Trim. 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 - 9687 Fluorescent lime-yellow Fire Coat Trim 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 Colour alteration from bleeding fabrics

3M™ Scotchlite™ Reflective Material - 9687 Fluorescent lime-yellow Fire Coat Trim might pick up colour during cleaning processes from bleeding fabrics, for example.

7.3 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 90°C at any time during drying.

7.4 Maintenance Misuse

3M™ Scotchlite™ Reflective Material - 9687 Fluorescent lime-yellow Fire Coat 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.

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.

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 EN 471).

For specific guidance contact your local 3M representative.

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 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 - 9687 Fluorescent lime-yellow Fire Coat Trim can also be diminished in extreme weather conditions.

- Test results show, that the central silver reflective stripe of 3M™ Scotchlite™ Reflective Material - 9687 Fluorescent lime-yellow Fire Coat Trim 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. 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.