

Reflective Material

8986 NFPA Fluorescent red-orange Flame Resistant Fabric
 8987 NFPA Fluorescent lime-yellow Flame Resistant Fabric

We make people visible

Technical Data Sheet April 2004

Description

3M™ Scotchlite™ Reflective Material – 8986 NFPA Fluorescent red-orange Flame Resistant Fabric and 3M™ Scotchlite™ Reflective Material – 8987 NFPA Fluorescent lime-yellow Flame Resistant Fabric consist of exposed, wide angle retroreflective lenses bonded to a durable flame-resistant 100% cotton backing.

Retroreflective Performance

The coefficient of retroreflection (R_A , in $cd/lux/m^2$) is measured by methods traceable to either of the following retroreflective intensity testing procedures:

- ASTM E809 and E810 (R_A)
- CIE 54: 1982 (R')

The R_A values were measured at the listed specific entrance and observation angles.

Entrance Angle	Observation Angle	Typical R_A	Minimum R_A
-4.0°	0.2°	175	138

Color

Product Number	Daytime Color	Reflected Color
8986 NFPA	Fluorescent red-orange	White
8987 NFPA	Fluorescent lime-yellow	White

Physical Performance

Scotchlite reflective material – 8986 NFPA fluorescent red-orange flame resistant fabric and Scotchlite reflective material – 8987 NFPA fluorescent lime-yellow flame resistant fabric meet or exceed the following performance tests for trim as specified in NFPA Standard, 2000 Edition:

- Retroreflectivity:Section 6-46 for test method, section 5-1.22 for requirements
- Fluorescence:Section 6-46 for test method, section 5-1.22 for requirements
- Flame Resistance:Sections 5-1.4 and 6-2 (Federal Test Method Standard 191A, Method 5903.1, 4" char length 2 seconds after flame)
- Convective Heat:Sections 6-1.5, 6-6 and 6-46
- Heat Resistance:Sections 5-1.6, 6-6 and 6-46
- Wet Reflectivity:Section 6-46 and 5-1.22



Performance

While use of 3M™ Scotchlite™ Reflective Material enhances visibility, no reflective material can guarantee absolute visibility, particularly in adverse weather conditions. Performance will vary depending upon actual use, exposure conditions and maintenance. Users should test reflective material to satisfy conformance to their own requirements.

Application Instructions

Whenever two or more pieces of 3M™ Scotchlite™ Reflective Material – 8986 NFPA Fluorescent red-orange Flame Resistant Fabric and 3M™ Scotchlite™ Reflective Material – 8987 NFPA Fluorescent lime-yellow Flame Resistant Fabric are used together on a single surface or as a set, they should be matched to ensure uniform daytime color and nighttime or low-light reflectivity. Recommended for application on medium to heavy weight fabrics. Do not apply to stretchable materials.

Cutting: Hand-cut, die-cut or guillotine.

Sewing: Sew in place using a lockstitch with no more than 12 stitches per inch (2.54 cm), and not less than 5/64" (2 mm) from the edge of the reflective fabric. Use appropriate thread for flame resistant applications.

Care and Maintenance Instructions

Important: It is critical to follow appropriate cleaning procedures when the trim is applied to firefighting turnout clothing. Failure to follow care instructions will shorten the useful life of the trim. Refer to NFPA 1851 Standard, 2001 Edition. Care label recommendations:

Do not presoak



Wash:
Machine wash warm,
40°C (105°F)



Bleach:
Do not bleach



Dry:
Tumble dry low.
On fire garments: hang to air dry,
away from direct sunlight.



Iron:
Use cool iron,
110°C (230°F)



Dry-clean:
Dry-clean, Perchloroethylene

Product Availability

Scotchlite reflective material – 8986 NFPA fluorescent red-orange flame resistant fabric and Scotchlite reflective material – 8987 NFPA fluorescent lime-yellow flame resistant fabric are available in rolls with the following standard widths and roll lengths:

Units	Width	Width Tolerance	Standard Roll Length
mm	< 150 mm	± 1 mm (std) ± .5 mm (special)	100 m
mm	150 mm ≤ w < 900 mm ≥ 900 mm	0 mm to +4 mm +3 mm to +7 mm	100 m (> 300 mm = 50 m)

Order and Product Information

To order 3M™ Scotchlite™ Reflective Material Products contact 3M Personal Safety Products Department Customer Service at 800-328-7098 Ext. 2.

Storage and Shelf Life

Store in a cool, dry area and use within two years after date of receipt. Store rolls in original shipping cartons. Return partially used rolls to the carton or suspend horizontally through the core. Cut sheets should be stored flat.

Important Notice to User

LIMITED WARRANTY: In the event any 3M™ Scotchlite™ Reflective Material is found to be defective in material, workmanship, or not in conformation with any express warranty, 3M's only obligation and your exclusive remedy shall be to replace or refund the purchase price, at 3M's option, of such product upon timely notification thereof and substantiation that the product has been stored, maintained and used in accordance with 3M's written instructions.

EXCLUSIONS TO WARRANTY: THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHER WARRANTY OF QUALITY, EXCEPT OF TITLE AND AGAINST PATENT INFRINGEMENT.

LIMITATION OF LIABILITY: Except as provided above, 3M shall not be liable in contract or tort for any loss or damage, whether direct, indirect, incidental, special or consequential, (including, without limitation, lost profits, goodwill and business opportunity) arising out of the sale, use or misuse of the product, or the user's inability to use the product. **THE REMEDIES SET FORTH HEREIN ARE EXCLUSIVE.**

Because of the unlimited variety of potential applications for these products, BEFORE production use, the user (which may be a product designer, product specifier, converter or end product manufacturer or others) must determine that the Products are suitable for the intended use and are compatible with other component materials. User is solely responsible for determining the proper amount and placement of Products. While reflective products enhance visibility, no reflective product can ensure visibility or safety under all possible conditions.

3M may change the product, specifications and availability of the product as improvements are made; therefore, user should contact 3M for latest information before specifying the product.



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