



Technical Data Sheet

June 2016

3M™ Scotchlite™ Reflective Material SOLAS Grade Products

Description

3M™ Scotchlite™ Reflective Material – SOLAS (Safety of Life at Sea) Grade Products are intended for reflectorizing SOLAS life support equipment such as life vests, jackets, and rafts. It conforms to Marine Equipment Directive 96/98/EC and International Maritime Organization (IMO) Resolution A.658 (16) Annex 2. It is approved by the U.S. Coast Guard to meet 46 CFR part 164, Subpart 164.018 for Type I and II retroreflective material used to enhance visibility of life-saving equipment in nighttime, or low-light conditions.

3M™ Scotchlite™ Reflective Material – SOLAS Grade 3150-A is silver, flexible reflective material with an aggressive pressure sensitive adhesive. 3M™ Scotchlite™ Reflective Material – SOLAS Grade 6755 is a silver, flexible reflective material with a sewable fabric backing.

These materials utilize the principle of retroreflection and are comprised of an encapsulated lens optical design that provides high reflectivity over a wide range of entrance angles, whether dry or wet. Scotchlite reflective material – SOLAS grade products have a European mark of conformance. All products are silver in color under daytime viewing conditions and reflect bright white.

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 following table contains the minimum R_A values as measured at the listed specific entrances and observations angles. Based on tests performed by 3M in accordance with IMO procedures and verified by an outside third party, Scotchlite reflective material – SOLAS grade products meet or exceed these values.

3M™ Scotchlite™ Reflective Material				
Entrance Angle	Observation Angle			
	0.1	0.2	0.5	1.0
5	180	175	72	14
30	140	135	70	12
45	85	85	48	9.4

Color

3M™ Scotchlite™ Reflective Material		
Product Number	Daytime Color	Reflective Color
3150-A and 6755	Silver	White

Performance

While the use of 3M™ Scotchlite™ Reflective Material – SOLAS Grade Products 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 Scotchlite reflective material – SOLAS grade products to satisfy conformance to their own requirements.

Reduction in durability will occur when the usage requirements are particularly severe, such as: work-life jackets and rubber rafts that are used to maintain harbor facilities, coastal waterways and industrial equipment in the water or on decks; life-saving appliances with continuous outdoor exposure; heavy wear and tear; and chemical exposure and washing.

Application Instructions

Whenever two or more pieces of 3M™ Scotchlite™ Reflective Material are used together on a single surface or as a set, they should be matched to ensure uniform color and reflectivity.

NOTE: Because Scotchlite reflective material – SOLAS grade products do not readily stretch, attaching them to highly elastic materials could adversely affect performance and result in rips or tears. Therefore, 3M recommends not attaching these products to highly elastic materials.

Applying 3M™ Scotchlite™ Reflective Material – SOLAS Grade 3150-A

The application of 3M Scotchlite™ Reflective Material – SOLAS Grade 3150-A should be carefully evaluated for adhesion by the user to assure suitability for the intended use.

Scotchlite reflective material – SOLAS grade 3150-A has been shown to perform satisfactorily on many fabrics including the following marine market substrates: glass reinforced polyester, rubber film, PVC films, aluminum, and polyurethane films (varies with treatment).

The coated fabric must be clean, dry, and substantially free of contamination. If necessary, wipe the substrate surface with a mild solvent, such as VM & P Naphtha or mineral spirits (Test the solvent first on a small area of the fabric to make sure the surface is not damaged).

The minimum application temperature is 60 °F (15 °C). Whenever possible, remove flotation material or deflate equipment, and smooth out wrinkles.

1. Cut the reflective material to proper size.
2. Separate approximately 1" of liner paper from reflective material. Bend liner back onto itself.
3. When everything is properly aligned, press down the exposed adhesive area by using a squeegee starting from the inside and working towards end.
4. Slowly remove the rest of the liner as the squeegee application is made, keeping material away from fabric until pressure is applied. Squeegee down entire reflective area in this manner.
5. On all vinyl applications, use talcum powder around edges after material application to prevent tackiness.

It is recommended, to achieve maximum adhesion, to allow up to 48 hours (above 60 °F) before handling, inflating, or packaging.

NOTE: Since plastics vary greatly in type, composition, and manufacture, a general recommendation cannot be given for their use as application surfaces.

Many plastics contain release agents, unreacted monomers, plasticizers, dyes, oils, gasses and other migrating constituents that contaminate the adhesive and result in premature failure. In addition, colorants may bleed to the surface and cause discoloration of the reflective materials. Applications should be carefully evaluated by the user to assure that they are acceptable for intended use.

The use of heat and pressure to aid in adhesion must be evaluated to ensure the material is not damaged. For silicone-based fabrics, use 3M™ Scotchlite™ Reflective Material – SOLAS Grade 6755.

Sewing 3M™ Scotchlite™ Reflective Material – SOLAS Grade 6755

1. Hand cut, die-cut, or guillotine reflective material to desired size. Use sharp dies or blades made of steel or magnesium. To ensure smooth edges, limit the layers of SOLAS while cutting.
2. When sewing to a suitable fabric, use thread comparable to #69 nylon or an equivalent UL acceptable thread and sew to a 301 or 3/16" (4.75 mm) lockstitch using 5 to 12 stitches per inch. We do recommend that you test the sewn final product to ensure the results are acceptable for your application. Stitches averaging 7 to 9 stitches per inch would give better tear-strength results.

Screen Printing: Below are inks that can be used for printing on the surface of Scotchlite reflective material – SOLAS grade products. All inks should be continuously tested to ensure acceptable adhesion in the event of changes occurring in the manufacturing process or composition of the ink. Prior to printing, wiping the surface with a soft cloth lightly dampened with alcohol may help ink adhesion.

3M™ Scotchlite™ Reflective Material		
Ink	Ink Type	Manufacturer
3M™ Scotchlite™ Process Color Series 990	Transparent (990-05 Black is opaque)	3M Traffic Safety Services Division

Care and Maintenance Instructions

Wash by hand with a sponge or soft cloth using warm water and detergent. Rinse thoroughly. Remove oil and tar with a mild solvent, such as VM & P Naphtha or mineral spirits, followed by warm water and detergent. Rinse thoroughly.

Important: Test each application according to appropriate care instructions required for the finished product.

Actual life of Scotchlite reflective material – SOLAS grade products depends on cleaning methods and wear conditions.



Wash: Do not machine wash



Bleach: Do not bleach



Dry: Do not tumble dry



Iron: Do not iron



Dry-clean: Do not dry-clean

Product Availability

Scotchlite reflective material – SOLAS grade products are available in rolls with the following standard widths and lengths:

3M™ Scotchlite™ Reflective Material			
Product Numbers	Roll Width unless noted	Splices Allowed	Standard Roll Length
3150-A and 6755	13 mm < w < 150 mm	4 per 50 m roll	50 m
3150-A and 6755	150 mm ≤ w ≤ 1270 mm	4 per 50 m roll	50 m

Storage and Shelf Life

Store in a cool, dry area and use within one year after date of receipt. Store rolls in original shipping cartons. Return partially used rolls to the carton or suspend horizontally through the core with the lot and drum information attached to the roll.