

3M Scotchlite™

Reflective Material SOLAS Grade Products

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Reflective Sheeting SOLAS Grade Series 3150-A for Life Saving Appliances

Product Information and Application Instruction

1. Description

3M™ Scotchlite™ Reflective Material – SOLAS Grade 3150-A is a white flexible sheeting.

It has an encapsulated lens optical design that provides high retroreflectivity over a wide range of extreme angles, and performs well in marine applications whether wet or dry.

3M™ Scotchlite™ SOLAS Grade 3150-A consists of optical lens elements adhered to synthetic resin and encapsulated by a flexible transparent plastic that has a smooth outer surface. Both layers are durably connected and show a honeycomb pattern.

The reflective system of 3M™ Scotchlite™ SOLAS Grade 3150-A is fitted with a pressure sensitive adhesive.

3M™ Scotchlite™ SOLAS Grade 3150-A shows a SOLAS-A symbol in a repeat pattern to identify it as material designed for use in SOLAS applications according to IMO (International Maritime Organisation) Res. A 658 (16) and a steering wheel for it's MED (Marine Equipment Directive) compliance.

2. Use

3M™ Scotchlite™ Reflective Material – SOLAS Grade 3150-A is intended to reflectorize SOLAS life saving equipment and conforms to International Maritime Organisation regulation, IMO Res. A. 658 (16) and to the European Marine Equipment Directive (MED). It is used to enhance night time visibility of life saving equipment.

NOTE:

When used on equipment with heavy mechanical impact due to permanent wear or continuous outdoor exposure, it has to be considered that the life time of reflective material might be reduced. In such cases the 3M™ Scotchlite™ Reflective Material – SOLAS Grade Products may have to be inspected regularly to ensure the performance. For more information please see point 15 (Performance testing) or contact your local 3M representative.

3. Minimum coefficient of retroreflection

Determination according IMO-Resolution A.658 (16), Annex 2, Section 3.1

Entrance angle	Observation angle			
	0,2	0,5	1,0	2,0
5	175	72	14	2.5
30	135	70	12	2.0
45	85	48	9.4	1.0

Under wet conditions, 90 % of the reflective values remain.

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4. Cutting of reflective material

Hand cut or die cut sheeting to desired size according to the relevant regulation, standard or IMO-specification.

5. Substrates

In general 3M™ Scotchlite™ Reflective Material – SOLAS Grade 3150-A is suitable for a variety of substrates such as:

- Polyurethanes (esp. with smooth surfaces)
- Glass reinforced Polyester
- Rubber film (esp. with smooth surface)
- PVC-film
- Aluminium

But since life saving appliances are made of material which vary greatly in type and composition, a general recommendation can not be given.

Therefore application should be carefully evaluated in each case to determine the method of application and which additional equipment should be used to reach an optimised adhesion of the reflective sheeting to the substrate.

Application on plastics should be carefully evaluated to ensure that the bond will not be weakened by softener migration.

For silicone based substrates use 3M™ Scotchlite™ Reflective Material – SOLAS Grade 6750-I or 6755 for sew – on application.

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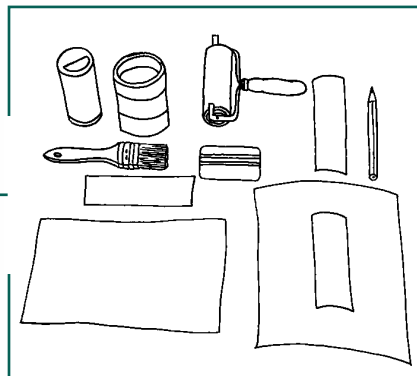
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6. Substrate preparation

- Lay cut strips of 3M™ Scotchlite™ Reflective Material – SOLAS Grade 3150-A onto the substrate and draw around material, marking the area to be reflectorized. Inflatable devices should be inflated to better localise the positioning. In general this method ensures to avoid application on crush and wrinkle sections. It has to be evaluated from case to case, if application can be done on inflated device.
- If the use of a primer should be necessary use a stencil to mark area for reflective application with primer as described in section 8 (Primer).
- Whenever possible remove flotation material or deflate equipment and place substrate on hard, flat surface, smooth out wrinkles and avoid stretching.
- The application substrate must be clean, dry, free of oil and grease. Other contamination, i.e. talcum powder has to be removed as well.
- If necessary rubber coated substrates or plastics should be slightly roughened, using fine sandpaper.
- The substrate's cleaning and preparation with mild solvents, such as isopropanol or toluene, or with acetic ester and mineral spirits can increase the adhesion of 3M™ Scotchlite™ Reflective Material – SOLAS Grade 3150-A. (Test the solvent first on a small area of the application surface to make sure that the surface is not damaged.)
- Do not make application at temperatures below 15 °C.
- Execute test applications on all substrates. The use of heat and pressure can increase the adhesion. (please see point 9.2)

7. Equipment required

1. Solvents, sandpaper
2. Handroller or plastic squeegee
3. Heat gun, if needed and / or
4. Primer, if necessary



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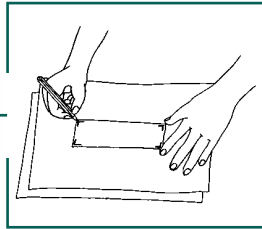
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8. Primer

On request the manufacturer offers suitable primer, i.e. 3M™ Scotch Grip 2141. If another primer is used, sufficient bonding and suitability of the primer should be evaluated before series production. In case of application problems please contact your local 3M™ representative.

8.1 Marking of contact area

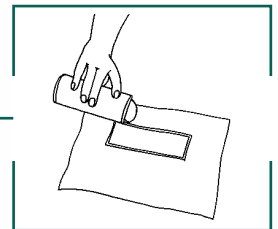
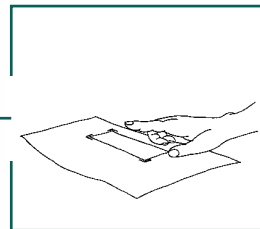
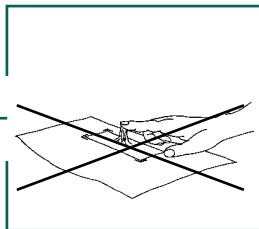
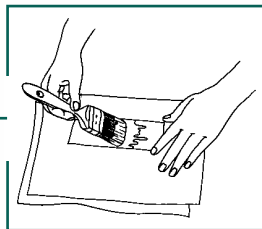
Use a stencil to mark the area to be primed, allowing for a narrow border (2 mm) of primer to extend beyond the edges of the marked area.



8.2 Primer application

Read all application, health and safety instructions of primer.

- Premix primer well.
- Thin down if necessary.
- Brush on a uniform coat of primer on the inside of the marked area, using the stencil to achieve clean adhesive borders.
- Let dry completely. Air drying time (10 minutes minimum) will depend on temperature and thickness of primer coat. To ensure that primer is completely dry, test by touching with finger. No adhesive “strings” should be noticeable. Primer may be applied well in advance of reflective material application.
- Use talcum powder around edges after sheeting application to prevent tackiness.



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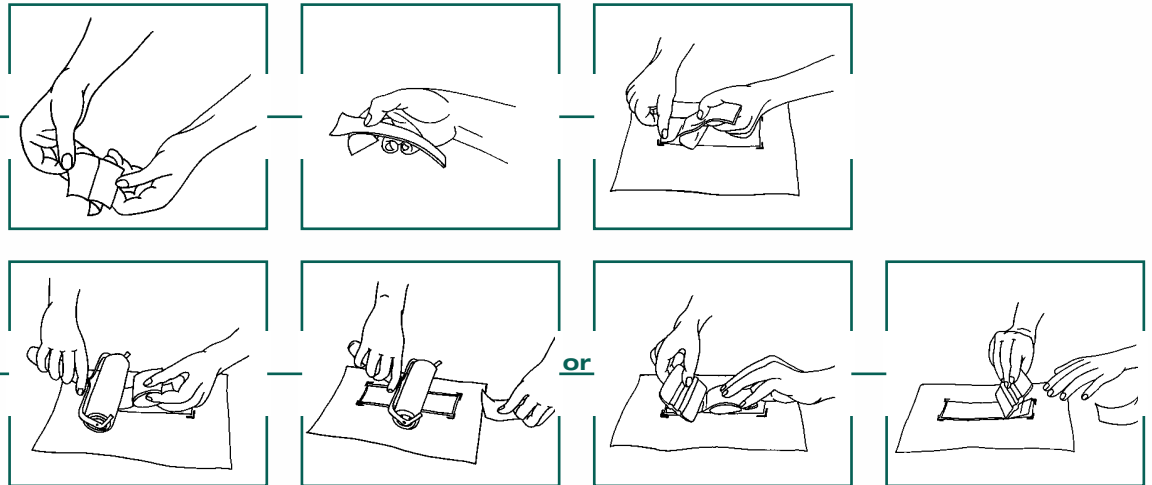
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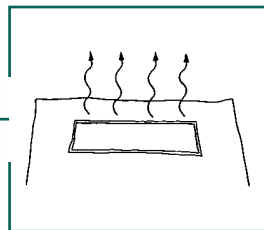
9. Reflective material application

- Separate approximately 2 cm of liner paper from reflective material. Bend liner back on to itself.
- Position reflective sheeting with liner in place over marked area. When primer is used, avoid exposed adhesive touching the primed area.
- If everything is properly aligned, press down the exposed adhesive area by using a squeegee or handroller starting from the inside and working towards the end.
- Slowly remove the rest of the liner as squeegee/handroller application is made, keeping sheeting away from substrate until pressure is applied. Squeegee/roll down entire reflective strip in this manner.
- Avoid stretching, bending or wrinkling of reflective sheeting during application process.
- After application squeegee or handroll the sheeting again with stronger pressure especially on borders and edges.



9.1 Adhesion build-up

Leave for 24 to 48 hours in well ventilated rooms before handling, inflating, or packaging equipment. Allow at least 4 days between application and water immersion to allow adhesive or primer to develop maximum bond.



9.2 Heat / pressure application

The use of heat / pressure to aid in adhesion must be evaluated to ensure sheeting is not damaged. Applied temperature should not exceed 65° C.

For more information please contact your local 3M™ representative.

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10. Screenprinting

3M™ Scotchlite™ Reflective Material – SOLAS Grade products can be screenprinted with 3M™ Process Colours 700 or 990 series.
For printing instructions please contact your local 3M representative.

11. Cleaning of reflective sheeting

- Flush the entire surface with clean water to remove loose dirt particles. Wash the sheeting with a soft brush, rag or sponge, thoroughly from the top down using a mild detergent. Rinse with clean water again.
- If tar, oil, diesel smut, bituminous material still remains on the sheeting clean the area with benzene or mild solvents, as isopropanol, using a soft cloth. Avoid contact of solvents with product edges. Following solvent wipe repeat normal cleaning procedure.

NOTE:

Suitability of used detergents, solvents etc. should be evaluated on a piece of reflective material before starting cleaning procedure. 3M™ Scotchlite™ Reflective Material – SOLAS Grade products are not machine washable; dry cleaning and aggressive solvents damage the sheeting.

12. Storage

3M™ Scotchlite™ Reflective Material – SOLAS Grade 3150-A should be stored in a cool, dry area and used within one year after day of receipt.

13. General performance considerations

The durability of 3M™ Scotchlite™ Reflective Material – SOLAS Grade 3150-A will depend upon actual use, exposure conditions, and maintenance. Maximum durability can be obtained when applied on life saving equipment which is not continuously subjected to extreme outdoor exposure. Reduction in durability will occur where the usage requirements are particularly severe, i.e.

- offshore industry
- work life jackets and rubber rafts that are used to maintain harbour facilities, coastal waterways and industrial equipment in the water or on docks;
- life saving appliances with continuous outdoor exposure; heavy wear and tear, and chemical exposure.

14. Product inspection

3M™ Scotchlite™ Reflective Material – SOLAS Grade 3150-A should be inspected on a regular basis to ensure adequate reflective performance and adhesion to substrate.
For performance testing please see point 15 (Performance testing).

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15. Performance testing

All retroreflective material, that is cracked, delaminated or otherwise mechanically damaged must be replaced. A simplified visual performance test should be conducted in regular intervals. These intervals should be specified by the user depending upon actual use of life saving appliance. Tests can also be done during regular service, if service intervals are determined by the manufacturer of the respective live saving appliance.

- Place a new piece of the same retroreflective material adjacent to and on the same plane as a representative piece of material fitted to the appliance.
- Pour water over both pieces of material.
- Avoid testing in bright sunshine or during influence of interfering light.
- Using a powerful torch held at eye level and compare the performance of the two pieces of material from a distance of 10 meters.
- If a noticeable deterioration in performance is observed the reflective material should be replaced.
- Remove test piece.
- Check proper bonding / attachment. If not sufficient, please replace material.
- If the entire performance of reflective material is sufficient so that replacement isn't necessary, dry off appliance before packing.

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Before using, user must determine the suitability of the product for its intended use, and user 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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