

## 3M™ Scotchlite™ Reflective Material SOLAS Grade 3155 for Life-saving Appliances European Product Bulletin

### 1. Description

3M™ Scotchlite™ Reflective Material – SOLAS Grade 3155 is a silver-grey flexible sheeting.

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

3M™ Scotchlite™ SOLAS Grade 3155 consists of optical lens elements adhered to synthetic resin and encapsulated by a flexible transparent plastic film that has a smooth outer surface. Both layers are durably bonded together and show a honeycomb pattern.

On the reverse side of 3M™ Scotchlite™ SOLAS Grade 3155, there is a high-performing pressure sensitive adhesive.

The words SOLAS-A and a ship's wheel logo are printed in a repeat pattern on the surface of 3M™ Scotchlite™ SOLAS Grade 3155 to identify it as material designed for use in SOLAS applications according to IMO (International Maritime Organisation) Res. A 658 (16) and compliant with MED (Marine Equipment Directive).

### 2. Use

3M™ Scotchlite™ Reflective Material – SOLAS Grade 3155 is intended for use on 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 the night time visibility of life-saving equipment.

NOTE: When used on equipment which is subject to heavy mechanical impact, permanent wear or continuous outdoor exposure, the lifetime of the reflective material might be

reduced. In such cases, 3M™ Scotchlite™ Reflective Material – SOLAS Grade Products should be inspected regularly to ensure continued reflective performance. For more information please see chapter 13 "Performance Testing" or contact your local 3M representative.

### 3. Cutting of Reflective Material

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

### 4. Substrates

In general 3M™ Scotchlite™ Reflective Material – SOLAS Grade 3155 is suitable for application to a wide variety of substrates without the use of a primer such as:

- Rubber film
- Nylon
- Glass reinforced polyester
- Polyurethanes
- PVC-film
- Polyester film
- Rubber coated cloth
- Aluminium

It is impossible to test all substrates to which 3M™ Scotchlite™ Reflective Material - SOLAS Grade 3155 may be applied by the end user. Some substrates not listed above, such as nylons, are difficult to adhere to. It is important that the manufacturer evaluates the adhesion and performance of this product when applied to the chosen substrate to ensure that it conforms to the required standards or specifications.

Since life-saving appliances are made of material which vary greatly in type and composition, a general recommendation cannot be given.

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

For substrates containing high levels of silicones, use 3M™ Scotchlite™ Reflective Material – SOLAS Grade 6755 (sew-on application.)

## 5. Substrate Preparation

- Lay the cut strips of 3M™ Scotchlite™ Reflective Material – SOLAS Grade 3155 onto the substrate and draw around the material to mark the area on the substrate where the reflective material will be applied. Inflatable devices should be inflated first to improve positioning and in general, to avoid application of reflective material on crushed or wrinkled sections.

It should be evaluated on a case by case basis whether application can be done on an inflated device.

- Whenever possible, remove flotation material or deflate equipment and place the substrate on a hard, flat surface, smooth out any wrinkles and avoid stretching.
- The substrate must be clean, dry and free of oil and grease. Other contamination, such as talcum powder has to be removed as well.
- If necessary, rubber coated substrates or plastics should be slightly roughened, using fine sandpaper.
- Cleaning and preparation of the substrate 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 3155.

(Test the solvent first on a small area of the application surface to make sure that the surface is not damaged.)

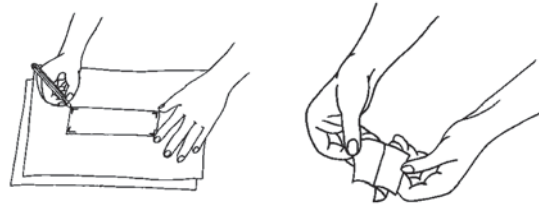
- Do not apply the reflective material at temperatures below 15°C.
- Carry out test applications on all substrates. The use of heat and pressure can increase the adhesion. (see Section 7.2)

## 6. Equipment Required

- Solvents, sandpaper.
- Hand roller or plastic squeegee.
- Heat gun, if needed.

## 7. Application of Reflective Material

- Separate approximately 2cm of liner paper from the reflective material. Bend the liner back on to itself.



- Position the reflective sheeting, with the liner in place, over the marked area.



- If everything is properly aligned, press down the area where the adhesive has been exposed, by using a squeegee or hand roller. Start from the inside and work towards the edges.



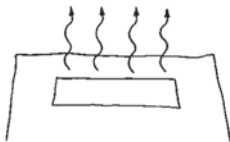
- Slowly remove the rest of the liner, keeping the adhesive on the sheeting away from the substrate until pressure is applied. Squeegee/roll down the entire reflective strip in this manner.
- Avoid stretching, bending or wrinkling of reflective sheeting during the application process.



- After initial application, squeegee or hand roll the sheeting again, applying greater pressure, especially on the ends and edges.

### 7.1 Adhesion strength

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



### 7.2 Heat/pressure application

The use of heat and/or pressure to improve adhesion must be evaluated to ensure that the reflective sheeting is not damaged; the application temperature should not exceed 65°C. For more information please contact your local 3M™ representative.

## 8. Screen-printing

3M™ Scotchlite™ Reflective Material – SOLAS Grade products can be screen-printed with 3M™ Process Colours 700 or 990 series.

For printing instructions please contact your local 3M representative.

## 9. Cleaning of Reflective Sheeting

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

NOTE: The suitability of the chosen detergent or solvent should be evaluated on a small piece of reflective material before starting the full cleaning procedure. 3M™ Scotchlite™ Reflective Material – SOLAS Grade products are not machine-washable; dry cleaning and aggressive solvents will damage the reflective material.

## 10. Storage

3M™ Scotchlite™ Reflective Material – SOLAS Grade 3155 should be stored in a cool, dry area and used within 1 year of receipt.

## 11. General Performance Considerations

The durability of 3M™ Scotchlite™ Reflective Material – SOLAS Grade 3155 will depend upon the actual use, exposure conditions, and maintenance procedures. The maximum lifetime will be achieved when it is applied on life-saving equipment that is not continuously subjected to extreme outdoor exposure.

Reduced lifetime can be expected where the product is used in particularly severe environments, such as:

- the offshore oil and gas industry
- life jackets and rubber rafts that are used by personnel maintaining harbour facilities, coastal waterways and industrial equipment in the water or in docks
- life-saving appliances with continuous outdoor exposure, heavy wear and tear, and chemical exposure.

## 12. Product Inspection

3M™ Scotchlite™ Reflective Material – SOLAS Grade 3155 should be inspected on a regular basis to ensure adequate reflective performance and adhesion to the substrate.

For performance testing please see chapter 13 “Performance Testing”.

## 13. Performance Testing

All reflective material that is cracked, delaminated or otherwise damaged must be replaced. A simplified visual performance test should be conducted at regular intervals. These intervals should be determined by the user, depending upon the actual use of the life-saving appliance.

Tests can also be conducted during regular service, if service intervals are determined by the manufacturer of the respective life-saving appliance.

- Place a new piece of the same reflective 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 other bright light sources.
- Using a powerful torch held at eye level, compare the performance of the two pieces of material from a distance of 10 metres.

- If a noticeable deterioration in performance is observed the reflective material should be replaced.
- Remove the test piece.
- Check proper bonding and adhesion of the reflective material to the substrate. If not sufficient, please replace the material.
- If the performance of the reflective material is sufficient so that replacement isn't necessary, dry off the life-saving appliance before repacking.

### 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.