Reflective safety tape for high visibility garments

Product benefits include:
- Approved to EN471:2003 + A1:2007 Level 2
- High performance reflective safety tape
- Microprismatic construction
- For sew-on application
- Washing*: 75 cycles at 60° C
- Abrasion resistant
- Reflects in all weather conditions
- Superior long distance visibility for enhanced safety
- Reflects in colour at night
- Colours: silver, white, orange and fluorescent lime
- Roll size: 50mm x 50m

*) as per ISO 6330:2000, Method 2A

Engineered to Save Lives™
To find out more information visit www.orafol.com
or email reflective@orafol.com if you have any questions.

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GENERAL INFORMATION

Reflexite® GP100/200/300/ID Garment Tapes are a tough weather and solvent resistant product designed to be sewn, heat sealed or welded to clothing. The tapes are produced with an application border clearly defined as a pair of parallel lines of seal pattern. The following measures should be taken to achieve the optimum performance from the tapes.

For more information on GP100/200/300/ID tapes, please reference Technical Product Bulletins, which are available from local ORAFOL Reflective Solutions Ireland Sales Offices.

SEWING TO GARMENT BACKGROUND FABRIC

ORAFOL Reflective Solutions Ireland garment tapes may be sewn onto high visibility garments. Always ensure that the sew line is centered between the parallel border lines or the fully sealed border, never allow the sew line to run into any of the sealed cells of the tape.

See drawing below, please sew in the border (same method for GP100/200/300/ID – see below different patterns of the different tape references).

Recommended stitches: 8 per 25 mm.
We recommend taking the following measures if the tape binds when being sewn:

1. Reduce pressure on the machine foot
2. Use a teflon coated pressure foot, if neccessary
3. Use of a silicone spray or silicon coated cloth will help to lubricate the surface of the tape

Do not stretch the tape as it is being applied.

ORAFOL Reflective Solutions Ireland recommends that the tape is turned under and sewn through the doubled over edge. This helps prevent moisture ingress. Where possible within the design of the garment the cut ends should be inside the seams of the garment.
SEALING TO GARMENT BACKGROUND FABRIC

SEALING TOOL/DIE

The sealing tool must be stippled or a diamond type patterned rule between 3 to 5 mm wide. The picture to the left, shows a typical stippled type tool.

Avoid using typical "Bar Seal" type flat tool rule, as this will encourage no direct bonding between the tape and the coated background fabric.

ACTUAL BAR

RECOMMENDED BAR

It is preferable to use two tool rules set parallel, when sealing.

However, if using a single tool rule set up, the tool must not be allowed to seal inside the inner most application border sealine (see drawing below), and encroach into the sealed cells of the tape.

The sew border width (from the tear seal to the bar seal) measures 4.3 mm. Care should be taken when sealing to ensure that the finished seal width does not take up the entire 4.3 mm width in the sew border. (See below different tape pattern of the GP100/200/300/ID series)
HIGH FREQUENCY SEALING CONDITIONS

Sealing conditions are dependent upon the type of sealing equipment used. The primary parameters and conditions to be set are as follows:

HF Power applied to sealing tool  
Applied Pressure  
Sealing and Dwell Time(s)  
Tooling Material*  
Dielectric material

The applied HF power should be set at a level such that an under or over seal does not occur. An under seal will not correctly weld the materials. An over seal will cause materials to thin out on the weld line.

Use of a brass tool is recommended.

Always ensure that the upper platen holding the tool is parallel to the lower platen to ensure a uniform seal. Poor alignment results in areas being over sealed and may lead to an arc formation.

*Brass is expensive but very durable and gives very good HF transmission.

BACKGROUND FABRIC

Reflexite has carried out compatibility checks to most of the readily available heat seal able background fabrics, we cannot guarantee that the chosen background fabric is fully compatible for heat sealing and we recommend that the manufacturers of the background fabric are consulted before proceeding with heat sealing. Reflexite cannot be held responsible for any non–compatibility of welded materials.

Do not stretch the tape as it is being applied.

Check the strength of the seal to the background fabric at regular intervals of production. Ensure that the tool / die covers the tape edge during sealing to stop an edge curling effect.

(Try to ensure that bar seal width is covers at least 80% of the sew border and the remaining 40% over the fabric, this of course will depend on seal strength, and may vary in order to increase the seal strength.)

IMPORTANT NOTICE

All Reflexite® and ORALITE® products are subject to careful quality control throughout the manufacturing process and are warranted to be of merchantable quality and free from manufacturing defects. Published information concerning Reflexite® and ORALITE® products is based upon research which the Company believes to be reliable although such information does not constitute a warranty. Because of the variety of uses of Reflexite and ORALITE® products and the continuing development of new applications, the purchaser should carefully consider the suitability and performance of the product for each intended use, and the purchaser shall assume all risks regarding such use. All specifications are subject to change without prior notice.

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Product
Reflexite® GP340 is a tough weather and solvent resistant product designed to be sewn or H.F. welded on to high visibility garments. The reflectivity exceeds the highest performance level of EN471 (Level 2), and an approved testing laboratory has certified the tapes. The fluorescent lime is in addition certified to EN471 Combined Performance.

Construction
Reflexite® GP340 tapes are composed of cube corner (microprism) retroreflective elements integrally bonded to a flexible, smooth-surfaced tough and weather resistant UV stabilized polymeric film. The reflective material is welded to a UV stabilized polymeric film to protect the prism surfaces from dirt and moisture.

Colour
GP340 is available in Silver, White, Orange and Fluorescent Lime.

Reflexite® GP340 series tapes conform to the colour requirements in Table 1, when measured in accordance with CIE Publication No.15.2. The four pairs of coordinates determine the acceptable colour when measured with standard illuminant D65 using a Hunter labscan.

Reflectivity
Reflexite® GP340 tapes comply with the minimum reflectivity requirements of EN471 separate performance level 2, table 5, when tested in accordance with the procedures in EN471. Typical coefficients of retroreflection (R' or R A, cd/lux/m²) for Reflexite® GP340 tapes are provided in Table 2 and Table 3.

Care Instructions
Reflexite® GP340 tape, when washed in accordance with EN471 section 7.4.5.1. will withstand a minimum of 75 washings at 60°C when attached to a variety of background materials.

Application Instructions
Please refer to application form APP-01 for full instructions.

Film Logo Pattern

Visual Appearance

Roll Size
Standard rolls are 50mm (+ 1mm / - 0 mm) x 50m.

Product Approval(s)
The product is fully compliant with specification(s):
EN471: 2003
EN532: 1995
EN1150: 1999

Test certificates for garment CE mark acquisition are available upon request.

Shelf Life
Store in a cool, dry area and use within one year of receipt.


Table 1
Colour

<table>
<thead>
<tr>
<th>Colour</th>
<th>Chromaticity Coordinates*</th>
<th>Min Luminance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td>Y</td>
</tr>
<tr>
<td>15 Silver</td>
<td>0.303</td>
<td>0.300</td>
</tr>
<tr>
<td>20 Fl Lime</td>
<td>0.387</td>
<td>0.610</td>
</tr>
<tr>
<td>07 Orange</td>
<td>0.610</td>
<td>0.390</td>
</tr>
</tbody>
</table>

*The four pairs of chromaticity coordinates determine the acceptable chromaticity on the CIE diagram.

The minimum luminance data is required for combined fluorescent performance tapes only.

Table 2
Coefficient of Retroreflection* (R’ or R_A)

<table>
<thead>
<tr>
<th>Observation Angle</th>
<th>Entrance Angle (β1,β2=0)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5°</td>
</tr>
<tr>
<td>0,20°</td>
<td>580</td>
</tr>
<tr>
<td>0,33°</td>
<td>370</td>
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<tr>
<td>1,00°</td>
<td>100</td>
</tr>
<tr>
<td>1,50°</td>
<td>25</td>
</tr>
</tbody>
</table>

*The coefficient of retroreflection (R’ or R_A) has units of cd/lux/m^2

Table 3
Coefficient of Retroreflection* (Orange # 07) (R’ or R_A)

<table>
<thead>
<tr>
<th>Observation Angle</th>
<th>Entrance Angle (β1,β2=0)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5°</td>
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<tr>
<td>0,20°</td>
<td>330</td>
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<tr>
<td>0,33°</td>
<td>250</td>
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<tr>
<td>1,00°</td>
<td>25</td>
</tr>
<tr>
<td>1,50°</td>
<td>10</td>
</tr>
</tbody>
</table>

*The coefficient of retroreflection (R’ or R_A) has units of cd/lux/m^2

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