

Technical Sheet

VizLite[™] Dual Technology Photoluminescent and Silver Reflective Material

Product Information

VizLite[™] DT Photoluminescent and Silver Reflective Material is intended for use in the PPE market for the inclusion in High Visibility Warning clothing such as EN ISO 20471:2013 and ANSI 107:2010 Jackets and Waistcoats to enhance visibility in low light and night time conditions.

Design Features

The fabric is constructed of a layer of Photoluminescent and microscopic retro reflective glass beads bonded onto a 65% Poly/ 35% Cotton fabric backing

When a beam of light from an oncoming vehicle meets the reflective material, the light reflects back to the light source and enhances the visibility of the wearer to the vehicle driver.

The Photoluminescent material absorbs UV natural or artificial light through electron excitation which it then emits as an afterglow in low light or zero light, which lasts up to 8 hours.

Product Performance and Certification

VizLite[™] DT Photoluminescent and Silver Reflective Material is certified by Centro Tessile Cotoniero e Abbigliamento Laboratory in Italy and SATRA in the UK to the following standards.

Reflective material elements are tested to

EN ISO 20471:2013 (High Visibility Warning Clothing)
ANSI/ISEA 107-2010 (High Visibility Safety Apparel)

Photoluminescent Resin are tested to

ASTM D3648-2004, Standard Practices for the Measurement of Radioactivity
Bombardier SMP 800-C (2000), Toxic Gas Generation Test

Retro-reflective Performance

VizLite[™] DT Silver Reflective Element;

- Meets and exceeds the levels of brightness required under EN ISO 20471:2013 and ANSI /ISEA 107
- Is non-orientation sensitive
- Offers excellent feel and smoothness
- Is washable to 60°C Domestic wash up to 50 wash cycles including Tumble Dry maximum temperature 60°C
- Is Dry cleanable up to 10 times with perchlorethylene

Ecological Performance

VizLite[™] DT has been certified by Shirley Technologies in the England to Oeko-Tex Standard 100, product class II have shown that the above mentioned goods meet the human-ecological requirements of the standard presently established for products with direct contact with skin.

The certified articles fulfil the requirements of Annexe XVII of REACH (incl. the use of azo-dyes, nickel, etc) as well as the American requirement regarding total content of lead in children's articles (CPSIA)

Product Application

Retro reflective warning garments are mainly used in environments where the wearer is working alongside vehicles. These garments improve visibility of the wearer and thus reduce the risk of being struck by a vehicle. VizLite[™] DT Photoluminescent and Silver Reflective Material is recommended for use in garments where the wearer is working in low light or no light conditions such as Mining, Tunnelling, Traffic Management and Emergency Services.

VizLite[™] DT Photoluminescent and reflective material is a durable material tested to wash a minimum of 50 washes in a domestic environment so is also suitable for non-occupational applications such as sportswear and clothing for cyclists, children, pets and pedestrians.

Technical Sheet

VizLite[™] Dual Technology Photoluminescent and Silver Reflective Material

VizLite[™] DT is not recommended for use in garments used in heavy wear environments and is not suitable for industrial laundry.

Product Usage

Cutting

- Suitable for cutting by hand (using very sharp cutting tools) or by guillotine
- Cuts should be made from the reflective surface.

Recommended Fabrics

- Polyester or Polyester mix products either woven or knitted with a weight between 150 and 200g/SQM.
- Not suitable for stretchy fabrics such as Lycra or those containing Lycra as results can be poor.
- All substrate materials should be chosen based on suitability for intended use and laundry properties

Sewing

- VizLite[™] DT Fabric can be applied direct to fabric panels before a garment is sewn together.
- Stitching should be at a distance of 2mm from the edge of Photoluminescent resin to avoid fraying or curling of the material.
- Where separate pieces of material meet on a garment, care should be taken to match the visible appearance.
- Any variations in appearance however will not affect the Photoluminescent and retro-reflective properties of the reflective material.

Stitching

- A double lock stitch with a maximum 5 stitches per cm is recommended.
- For substrates up to 250g/m² needle size NM80-90 is recommended. For substrates greater than 250g/m² a larger needle size would be required.
- A Teflon[™] coated needle and Pressure foot is

recommended to enable a smooth fabric transition.

- Thread tension should be kept to a minimum.
- Tension on both upper and lower threads must be matched to ensure there is no puckering.
- Thread should be matched to the substrate i.e. Flame retardant.
- All threads should be shrink proof and be suitable for sewing at higher speeds.
- The guide on 2-Needle machines should be set at 2-3 mm above the width of the reflective fabric. This will decrease the chance of Puckering caused by a difference in tension between the reflective fabric and the substrate.

Storage and shipping

- Rolls should be stored in the packaging they are supplied in.
- Cut pieces should be stored flat
- Opened rolls should either be stored in their original packaging or suspended by the use of a rod through the middle of the roll.
- VizLite[™] DT fabric should be stored in an area that is cool, dry and with low humidity.
- Precautions should be taken to protect the material from coming into contact with perspiration, strong acids, or compounds containing high levels of sulphur or chlorine. Contamination by these substances may affect the aesthetic appearance of the VizLite[™] fabric.
- During Transportation and Shipping it is best to keep an ambient condition.

Handling

- VizLite[™] DT fabric should be handled carefully in hot and humid conditions.
- The area in which the materials are handled may need the need of cooling or dehumidifying equipment to keep the area cool and dry.
- Avoid the contamination of the product with dirt, grease or solvents as this could produce staining that will affect the retro-reflective qualities of the fabric.

Technical Sheet

VizLite™ Dual Technology Photoluminescent and Silver Reflective Material

Wash and Care

VizLite™ DT fabric is designed to be washed at 40°C in a Domestic wash, up to a minimum 25 cycles before the retro-reflective qualities are affected. However the following domestic washing instructions should be closely followed;

- Do not pre-soak
- Do not use a pre-wash program
- Recommended wash program is for coloured clothing wash
- Do not wash at a higher temperature than 40°C
- Recommended wash Temperature is 30-40°C
- Maximum Program time 50 minutes
- Maximum wash time at highest wash temperature 12 minutes
- Domestic washing powders for delicate and coloured fabrics are recommended

Stain removal

- VizLite™ DT material should be tested for wash conditions before using the material. This can be achieved by mixing a solution of detergent and water and applying with a sponge or cloth to the material. For stain removal of grease or mineral oils, use a clean cloth dipped into white spirits. Wipe clean with water afterwards.
- Chemical splashes should be removed with a clean dry cloth.
- Neutralise splashes of strong acid or alkalis immediately with plenty of clean water
- Dispose any material that comes into contact with toxic or harmful substances in a safe and responsible manner.

Do not use the following types of products to clean/treat stains on this garment;

- Heavy duty products or stain removal products with a high alkaline content.
- Micro-emulsions or high pH-products
- Bleaches
- Aromatic solvents

The use of the above will affect the lifespan of the retro-reflective material.

Ironing

- Iron on reverse of material if possible
- Iron using medium heat setting.
- Do not use steam

Specialist cleaning and dry cleaning

- VizLite™ DT fabric is not suitable for Industrial laundry methods
- VizLite™ DT material is suitable for dry cleaning up to 10 times

Drying

- Line drying is the preferred method of drying
- This product can be tumble dried at a maximum temperature of 60°C up to 50 times.

Maintenance issues

VizLite™ DT fabric's retro-reflective properties will be affected by any of the following treatments;

- Coating or Spraying the garment with oils, protective waxes, paints or inks.
- Application of products such as leather spray or waxes.
- Harsh physical application of abrasive wire brushes or sand paper.

Technical Sheet

VizLite[™] Dual Technology Photoluminescent and Silver Reflective Material

High Visibility Warning clothes should be inspected regularly and maintained in good condition. Any signs of wear and tear may affect the performance of the garment in relation to EN ISO 20471:2013 or ANSI/ISA 107:2010.

If the performance of the retro reflective material falls below $R = 100 \text{ cd/lx/m}^2$ the garment should be replaced.

Product Disposal

VizLite[™] DT fabric can be disposed of on the garment. The product can be incinerated in a commercial or industrial facility or sent to a landfill site.

General Safety Information

Visibility Limits of VizLite[™] DT fabrics

There are various uncontrollable environmental factors that will affect visibility; these include smoke, hail, snow, mist, dust and fog. Fog, smoke, mist, and dust can all affect the dispersal of light from headlights and retro reflective performance.

The VizLite[™] DT fabric is tested for performance during exposure to rainfall, and exceeds the requirements of EN ISO 20471:2013 and ANSI/ISA. Brightness levels will return after the material dries out.

The retro-reflective qualities can also be diminished by the wearer depending on issues such as the line of sight, other equipment and obstacles in the working environment, and not wearing the garment fastened. The wearer should be aware of these limitations and take the necessary action.

Important notice to Purchaser / Converter / Wearer

Because of the unlimited variety of potential applications for products, BEFORE product use the converter and/ or product manufacturer must determine that the products are suitable for the intended use and are compatible with other component materials. The Purchaser is solely responsible for determining the proper amount and placement of products. While reflective products enhance visibility, no reflective product can ensure visibility on safety under all possible conditions. Neither Viz Reflectives or any Viz Reflectives authorised converter shall be liable for any incidental, special or consequential damages relating to the use or inability to use the products regardless of legal theory used.