

Technical Sheet

VizLite™ DT Photo luminescent and Reflective Material

Product Information

VizLite™ DT Photo luminescent material is suitable for use in the PPE market alongside retro reflective materials 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.

VizLite™ DT is used to give a garment photo luminescence properties which can increase the visibility of the wearer and is suitable for inclusion in Sportswear, Corporate Clothing, Equestrian and general PPE.

Design Features

VizLite™ DT consists of a patent pending formulation of Strontium Aluminate Photoluminescent pigments applied to a Poly/Cotton fabric backing.

The Photoluminescent material absorbs both natural and artificial UV light through electron excitation which it then emits as an afterglow in low light or zero light. This afterglow will last unto 8 hours, with the first hour being the brightest. Each time the VizLite™ DT FR material is exposed to UV light it will recharge.

UV light charging times vary depending on the type of light but typically a day light charge will take 5 minutes and a charge in overhead florescent light ten minutes.

VizLite™ DT has a top layer of reflective clear beads which gives reflective levels of approximately 70 candelas.

Product Performance and Certification

VizLite™ DT 7050 Photo luminescent is tested by VTEC laboratories, New York to the following standard,

ISO 17398:2004 “Safety Colours and Safety Signs – Classification, Performance and Durability of Safety Signs” Clause 7.11

VizLite™ DT Photo luminescent material is tested by RISE Research Institutes of Sweden to the following standard,

DIN 67510-1:2009 Measure of Photoluminescent Phosphorescent Pigments and Products - Part 1: Measurements and Marking at the producer.

According to section 4.5 of DIN 67510-1, a logarithmic parabolic extrapolation of the results was used to estimate the decay time, which is defined as the time for the luminance to reach **0.3 mcd/m²**.

VizLite DT decay time in hours **46 hours**

After 50 Domestic Wash Cycles at 40°C with low heat tumble drying decay time is **51 hours**

According to “Handbook on the Physics and Chemistry of Rare Earths” (volume 48, p 20) the value of **0.3 mcd/m²** defining the decay time as used in this report, is approximately 100 times the limit of human eye sensitivity.

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

VizLite™ DT Photo luminescent 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 Photo luminescent material is a durable material tested to wash a minimum of 50 washes in a domestic environment at 40°C with 50 tumble dry on low heat. It is also suitable for applications such as sportswear and clothing for cyclists, children, pets and pedestrians.

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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 photo luminescent 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 1mm from the edge of Photo luminescent 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 Photo luminescent properties of the reflective material.
- Full sewing guides are available on the manufacturing instructions document upon request.

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™ DT
- 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.

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Wash and Care

VizLite™ DT fabric is designed to be washed at 40°C in a Domestic wash, up to a minimum 50 cycles before the retro-reflective and photo luminescent 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 VizLite DT 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 not suitable for dry cleaning

Drying

- Line drying is the preferred method of drying
- This product can be tumble dried on a low heat setting at up to 50 times.

Maintenance issues

VizLite™ DT fabric's photo luminescent 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.

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.

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VizLite[™] DT Photo luminescent and Reflective Material

General Safety Information

Statement on Radio activity

VizLite[®] DT uses phosphorescent technology, the formulation comprises of Strontium Aluminate based pigments along with other components.

Phosphorescent materials store and re-emit light because of their unusual property of trapping electrons in a higher state of movement. As light comes in contact with the VizLite[®] DT material, light photons are transferred to the material and give some of their energy to the electrons within it, causing the electrons to move to a higher energy state around their nucleus. While most photo luminescent materials allow their excited electrons to quickly return to a ground state, phosphorescent materials trap their electrons in a higher energy state for minutes or even hours.

It is the chemical reactions within phosphorescent materials that allow the light to be stored and re-emitted as a glow. These long persistent phosphors are not radio-active and do not contain any radioactive elements.

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.