

Technical Sheet

VizLite™ 301 IW FR Silver Reflective Material

Product Information

VizLite™ 301 IW Flame Retardant Silver Reflective Material is intended for use on Flame retardant PPE clothing such as High Visibility Warning clothing and Fire Fighting clothing to enhance visibility in low light and night time conditions and to meet the requirement for heat resistance. It is also suitable for Electrostatic protective clothing.

Design Features

The fabric is constructed of a layer of microscopic retro reflective glass beads bonded onto a 100% cotton backing with a fire retardant treatment.

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

Product Performance and Certification

VizLite™ 301 IW Flame Retardant Silver Reflective Material is certified by Centro Tessile Cotoniero e Abbigliamento Laboratory in Italy and SATRA in the UK to the following standards.

EN ISO 20471:2013 (High Visibility Warning Clothing)

EN1149-5:2008 (Electrostatic properties)- Part 5: Material performance and design requirements

EN 469:2020 Protective clothing for firefighters, Performance requirements for protective clothing for firefighting

EN 15614:2007 – Protective clothing for firefighters – Laboratory test methods and performance requirements for wildland clothing

EN ISO 14116:2008 Protective clothing - Protection against heat and flame - Limited flame spread materials, material assemblies and clothing

EN ISO 11611:2016 Protective clothing for use in welding and allied processes

EN ISO 11612:2015

Protective clothing - Clothing to protect against heat and flame - Minimum performance requirements

Retro-reflective Performance

VizLite™ 301 IW Flame Retardant Silver Reflective Material;

- Meets and exceeds the levels of brightness required under EN ISO 20471:2013
- Is non-orientation sensitive
- Offers excellent feel and smoothness
- Is washable to 60°C Domestic wash - flat dry up to 50 wash cycles
- Is washable to 75°C Industrial wash ISO 15797 method 8 – Tunnel finishing at 155° up to 30 cycles.
- Dry cleaning 5 cycles with tetrachlorethylene

Flammability Performance

VizLite™ 301 IW Fabric meets and exceeds the requirement of EN469:2005+A1:2006 Resistance to heat (180°C) – Retro-reflective Performance after oven treatment, Limited flame spread (as received and after 50 cycles washing at 60°C, after 30 cycles industrial washing 75°C, after 5 cycles dry cleaning).

VizLite™ 301 IW is recommended for use in Fire Retardant garments which will be laundered at 60°C, typically used in industries where the wearer is open to risk of molten metal, flame spread, heat exposure etc.

Ecological Performance

VizLite™ 301 IW has been certified by Shirley Technologies in the England to STANDARD 100 by OEKO TEX, product class II, having 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 Annex 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)

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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 e.g., highways, railway lines, airports, warehouses, dockyards.

VizLite™ 301 IW Fabric is recommended when these garments also require flame and heat resistance such as Firefighting clothing and flame-resistant PPE. VizLite™ 301 electrostatic properties make it ideal for use on electrostatic protective clothing such as that used by the petrochemical industry.

VizLite™ 301 IW Fabric can be used in garments used in heavy wear environments and is 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

- Flame Retardant Fabrics e.g., Nomex™, Aramid
- 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™ 301 IW 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 reflective material to avoid fraying or curling of the reflective material.
- Where separate pieces of reflective material meet on a garment, care should be taken to match the visible appearance.
- Any variations in appearance however will not affect the 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 301 IW 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™ 301 IW fabric.
- During Transportation and Shipping it is best to keep an ambient condition.

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Handling

- VizLite™ 301 IW 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.

Wash and Care

VizLite™ 301 IW fabric is designed to be washed at 60°C in a Domestic wash, up to a minimum 50 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 90°C
- Recommended wash Temperature is 30-60°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™ 301 IW 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™ 301 IW material is suitable for Industrial laundry methods. Up to 30 cycles at 75°C, Tunnel finishing at 155°C.
- VizLite™ 301 IW material is suitable for dry cleaning up to a minimum of 5 times before retro-reflectivity values are affected.

Drying

- Line drying is the preferred method of drying

Maintenance issues

VizLite™ 301 IW 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.

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.



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

General Safety Information

Visibility Limits of VizLite™ 301 IW 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™ 301 IW 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.