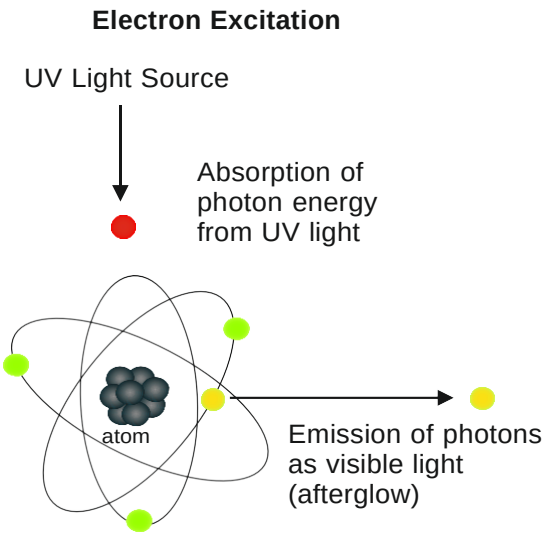
VizLite® DT
DUAL TECHNOLOGY

The Technology behind VizLite® DT

VizLite® DT combines two technologies, retro-reflectivity and photo luminescence in a single material.



Phosphorescent Technology

The phosphorescent element in VizLite® DT contains Strontium Nitrate based pigment and other chemicals formulated to meet our exact specifications for maximum glow intensity, extended decay time and laundry performance.

The formulated pigments have a high capacity for absorbing and storing light energy. The atoms in the pigments absorb photon energy from an ultra violet light source. The light source can be natural daylight or artificial UV light. These electrons act like a battery effectively storing light energy. This energy is then emitted as light, once there is no more light energy to absorb. The light that is given out is called an afterglow

The material is best charged whilst wearing the garment, charging in daylight or under daylight florescent lights are the best way to charge, other charging methods are shown below.

Light Source	Light Intensity (Lux)	Charging time (minutes)
Clear sunlight	>50,000	5
Cloudy sunlight	3,000-50,000	5
Dusk	1,000	8
Fluorescent office lamp	500	10
Fluorescent domestic lamp	200	30

Independent Testing

The light emitted is measured in millicandelas, while there is no present specification for phosphorescent safety garments VizLite DT brightness of afterglow has been tested against ISO 17398:2004 “Safety Colors and Safety Signs – Classification, Performance and Durability of Safety Signs”, clause 7.11 and has been classified as D, the highest sub-classification under ISO 17398:2004 5.5

Test results from VTEC Laboratories, New York, as shown in the table below.

Material was exposed to 1000 lux for 5 minutes and measured using a P-9710 Optometer (results show the average of three specimens tested)

Minimum Luminance (mcd/m^2)				
Classification	At decay time 2 min	At decay time 10 min	At decay time 30 min	At decay time 60 min
D	1100	260	85	35
VizLite DT results	1922	416	117	50

nb.detection limit for visible light by the human eye is 0.5 millicandellas

Patent Pending No. PCT/GB2015/052140

Viz Reflectives North America
P.O. Box 101, Lunenburg, MA 01462
Tel: 1-603-660-6033 www.vizreflectivesna.com Email: info@vizreflectivesna.com

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Retro-reflective Technology

Reflectivity is an integral part of high visibility clothing and VizLite® tape is a recognized and trusted brand which is certified to meet both EN ISO 20471:2013 and ANSI/ISEA 107:2010 specifications. Millions of meters of VizLite® tapes are consumed each year to produce specified work wear clothing.

The reflective element in VizLite® DT contains microscopic glass beads called mbeads®. The beads are bonded onto aluminum and adhered to a poly/cotton fabric backing. These reflect light back to the source which is usually vehicle headlights, as a bright white light. The returned light makes the wearer highly visible and this is measured in candelas or “candle power” Reflective tapes only work when a light source is directed onto its surface.

glass mbeads bonded onto aluminum adhered to a poly/ cotton substrate

VizLite® DT has been tested to meet the measurements as shown in the table below.

Test results taken from SATRA* Technical Report
EN ISO 20471:2013 testing of chevron pattern retro-reflective glass-bead tape mounted over a phosphorescent backing to clause 6.1 and 6.2 including domestic washing, dry cleaning, followed by photometric measurement.

Sample Reference	EN ISO 20471	
VizLite DT tape	Clause 6.1 Retro-reflective Performance of new materials	PASS
	Clause 6.1 Retro-reflective Performance after pre-treatments	PASS
	Clause 6.1 Retro-reflective Performance in rainfall	PASS
	Clause 6.1 Retro-reflective after washing 50 cycles at 40°C	PASS

Technical Summary

- **Reflectivity certified to EN ISO 20471:2013 and ANSI/ISEA 107:2010 specifications**

Ÿ **Phosphorescent exceeds the highest luminescent measurement for Safety Signs** Ÿ

Phosphorescent charges fully in UV light in 5 to 10 minutes

- **Initial afterglow after 2 minutes when externally tested measures 1922 mini candelas**
- **Fully charged garments will have a visible afterglow for eight hours**
- **Garments can be laundered for 50 washes at 40°C without effecting reflectivity performance**

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