

# Staying safe and seen -

## Hi-Vis Hazardwear

### EN Standards for Hi-Vis Clothing

#### EN ISO 20471:2013 – High-Visibility Clothing – Test Methods and Requirements

Professional clothing must withstand the tough environments in which they are used. High-visibility garments can be manufactured from different types of materials and these materials must be sufficiently robust to withstand real life working conditions. The test for the above standard includes six main areas:

- Colour Fastness
- Dimensional Stability
- Garment Assessment
- Colour Measurement
- Tape Testing
- Chemistry Testing



Whereas EN 471 comprised two values (X: risk class and Y: quality of the reflective strip), the new standard only considers the X value. As only the highest quality of reflective strip is permitted, the Y value does not appear on the ISO 20471 pictogram. EN 471 only prescribed the number of times the reflective material could be washed; ISO 20471 also does this for the fluorescent material.

#### EN 471 – High Visibility Clothing

EN 471 sets the minimum standards of visual performance and durability needed for high visibility clothing worn in the workplace. Compliance with BS EN 471 ensures that the wearer is as visible as possible against varying backgrounds in all weather and lighting conditions (bright daylight as well as rain, mist, dusk and night-time) and that a garment's conspicuity and structural integrity are retained over a reasonable service life in a workwear application.

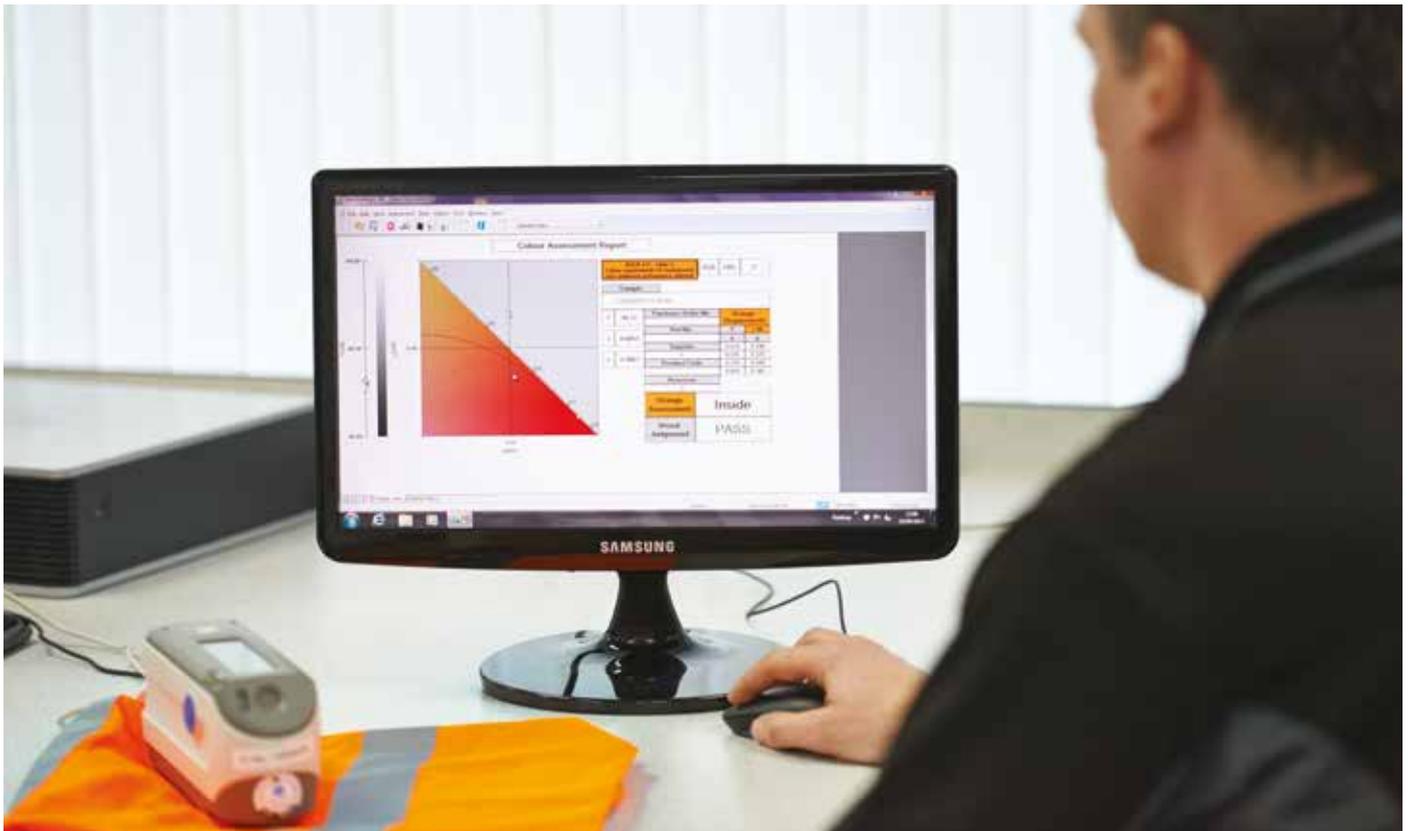
There are three classes of garment based on the conspicuity levels they provide. All garments must have reflective tape not less than 50mm.

- **Class three – The highest level of conspicuity**  
Minimum background material 0.80m<sup>2</sup>  
Minimum retro reflective material 0.20m<sup>2</sup>
- **Class two – Intermediate protection**  
Minimum background material 0.50m<sup>2</sup>  
Minimum retro-reflective material 0.13m<sup>2</sup>
- **Class one – Low level protection**  
Minimum background material 0.14m<sup>2</sup>  
Minimum retro reflective material 0.10m<sup>2</sup>



#### GO/RT 3279

GO/RT 3279 is the standard produced by The Railway Group for the minimum requirements for high visibility clothing, to ensure people are conspicuous when working on or near railway tracks. The standard tries to ensure that clothing worn by workers on or near railway tracks should conform to a single standard for the colour and luminance of background material, and should conform to a single standard for the photometric and physical performance of retro reflective material to aid conspicuousness in darkness or poor visibility.



## Protection against Rain

### EN 343:2007 – Protection against Rain

Waterproofness and water vapour permeability are the main requirements for waterproof clothing materials.

- Waterproofness relates to water coming through the protective clothing materials from the outside (e.g. Due to rain, fog, snow).
- Water vapour permeability (usually called “breathability”) describes the physical capacity of the material to allow water vapour, sweat etc. to escape from the inside to the outside.

**EN 343:2007** also contains requirements concerning the tensile strength, tear strength, seam strength and dimensional change resistance of the material:

- The mechanical strength requirements, i.e. the tensile, tear and seam strengths, apply in each case to the outer layer of material used to make the protective garment – for laminated fabrics, to all layers that are firmly attached to the outer material.

### EN 14360:2004 for Protective Clothing against Rain

Suitable protection against bad weather conditions is one of the central functions of protective clothing. This European standard defines test conditions under which readymade garments are exposed to heavy rain, and it is a positive addition to EN343.

**EN 14360:2004** creates a basis on which the waterproofness of rain-protective clothing can be tested throughout the EU under appropriate practical conditions. Impermeability to rain is an important characteristic that is tested on the complete garment in order to test in particular its constructional design characteristics. To do so, a stationary test mannequin is exposed to artificial rain.

**EN 14360** applies to the testing of jackets, trousers, coats and one or two piece suits.

## Flame Resistant (FR)

### EN ISO 11612:2008 – Protective Clothing to Protect against Heat and Flame

This standard specifies performance requirements for garments made from flexible materials, which are designed to protect the wearer’s body (except the hands) from heat and/or flame.

### EN ISO 14116:2008 – Protective Clothing to Protect against Heat and Flame – Limited Flame Spread

This standard specifies the performance requirements for the limited flame spread properties of materials and protective clothing in order to reduce the possibility of the clothing burning and itself constituting a hazard.

# Arco GORE-TEX® Hazardwear

## **Total weather protection - the ultimate in performance, protection and comfort**

Arco and Gore have worked together to build world class functional products. Using two-layer GORE-TEX® Burano fabric which has been engineered to keep you dry and comfortable in the most challenging conditions and environments.

Offering the ultimate in performance, protection and comfort in extreme weather conditions. Arco and Gore have tested the GORE-TEX® product range to exceed the conditions of EN 14360:2004 with no leakage.



## **Why choose GORE-TEX® products?**

**Unbeatable, durable performance**

+

**Value for money**

+

**Exceptional through life value**

+

**Trusted to perform**

+

**Ensuring concentration on the job in hand**

+

**Improved wearer safety**

+

**Tested to exceed EN standards**

[www.gore-workwear.co.uk](http://www.gore-workwear.co.uk)



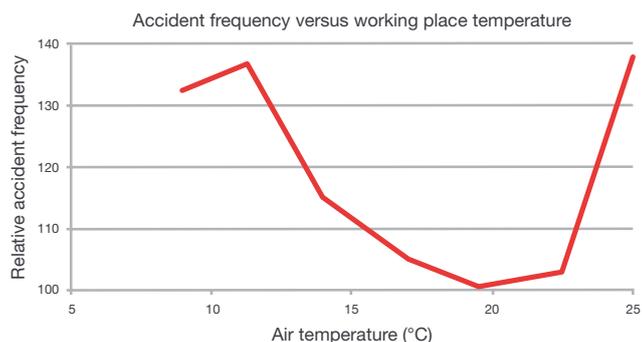


### Productivity and effectiveness studies

Studies have shown that greater comfort helps concentration and thus increased effectiveness and productivity. If a worker's body temperature gets too high or too low they will be distracted which increases the risk of accidents.

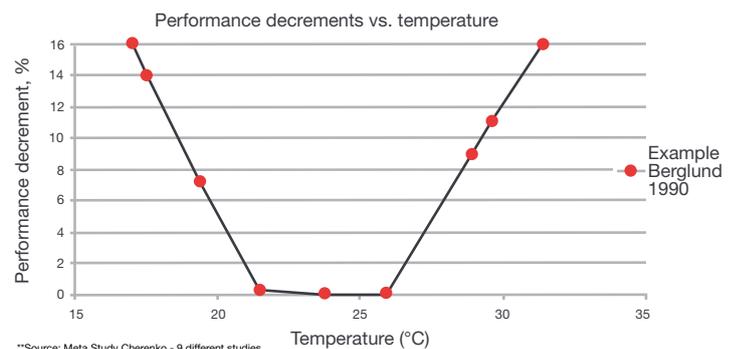
### Safety and comfort benefits\*

Relative accident frequency increases more than 35% with excessive cold and warm work place temperatures.



### Temperature Affects Performance\*\*

Performance deteriorates off if the temperature is too hot or cold.



# Maintaining long term visibility

It is essential to maintain the cleanliness of high visibility garments. If high visibility garments are dirty the visibility will be compromised therefore frequent cleaning is best to maintain high visibility.

Often hi-visibility garments are issued on a seasonal basis. These garments when first purchased will meet the standards specified, designed and certified to in accordance to the manufacturer's instruction. However, consideration should be taken to the maintenance of the garments. During the lifetime of the products dirt, oil and grease, will frequently come into contact with the fabric. If the garments are not adequately washed and cleaned there is the potential that the garments, when required to protect in low levels of light, no longer work to the desired effect. Care and attention should be paid to ensuring that wearers understand the reasons for wearing the protective clothing, and why the background conspicuous material and retro reflective tape help provide additional visibility in different lighting situations.

## Care Instructions for GORE-TEX® Garments

Arco hazardwear engineered with GORE-TEX® Fabrics can be washed at 60°C while maintaining durable waterproofness, and colour fastness. The GORE-SEAM® Tape technology has also been formulated to withstand numerous washes.

The cleaner the garment, the better it will breathe.

- Pay attention to the care instructions on your garment.
- Wash at 40 or 60 degrees with a soft detergent, do not use softener.
- Rinse it twice if possible.
- Dry the garments by tumble-drying or by ironing.
- Use low temperature when tumble drying. The heat actually helps reactivate the surface treatment.
- Do not bleach your garments.
- To remove a stubborn stain, test a small hidden area with a commercial stain remover before using it on a place that shows. You may find certain stains have to be removed professionally.
- Rinse well.

Each garment will have specific care instructions printed on the garment label: these will need to be reviewed before garments are laundered.

