

EN471: 2003 High-visibility warning clothing

EN471 High Visibility Garments

Class 2

Intermediate Level of Protection



Sleeveless waistcoats, tabards, bib and brace trousers

0.5m² fluorescent material

0.13m² retroreflective material

Class 3

Highest Level of Protection



Coats and jackets with sleeves, coveralls, two piece suits

0.8m² fluorescent material

0.2m² retroreflective material

In-use Test Requirements

Retroreflective materials Fluorescent materials

Brightness after: -

- Rainfall Performance
- Temperature Variation
- Abrasion
- Cold Folding
- Flexing
- Washing
- Dry cleaning

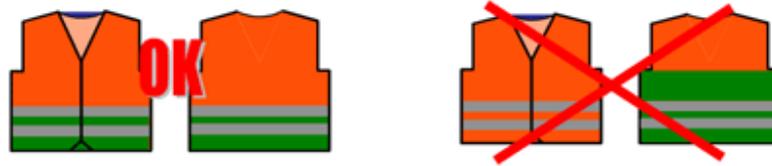
Why has EN471 been revised?

- All EN standards can be revised every 5 years, if this is considered necessary.
- EN471 was first published in 1994 and the European Technical Committee decided to start the EN471 revision process in 1999.
- Revision was based on requests from test houses and committee members asking for minor changes to be made to the standard, mainly in the area of increased design freedom.
- The revision work has now been finished, and the new standard – **EN471:2003** - was made official in April 2004.

What has changed?

1. Fluorescent Background Materials

- The garment must have similar quantities of fluorescent material on the front and back of the garment.



- The colour box for fluorescent red and red-orange background materials has been made slightly larger.
- The colour box for fluorescent yellow stays the same, but minimum luminance factor (brightness) is slightly lower.
- Minimum tensile strength is now related to the weight of the fabric.
- The requirement for bursting strength is reduced.
- Harnesses, tabards and non-breathable waistcoats do not need to be tested for water vapour resistance
- Any non-fluorescent materials in the garment should be tested for colour fastness.

2. Retroreflective Materials

- Retroreflective bands can have an inclination of a maximum of 20°
- Retroreflective bands on the sleeves do not need to correspond to the stripes on the torso (Clause 4.2.4)
- Retroreflective bands on the legs can be freely positioned from the bottom of the leg.
- For garments that are expected to be commercially laundered, retroreflective material must be tested according to ISO15797 Industrial Laundering Wash Test Method for 5 cycles.

Design: some new possibilities



What next?

- EN 471: 2003 is now the valid version of the standard.
- Any new garment designs manufactured from now onwards must be certified to this new version of EN471.
- Existing garment designs with EC Type certification do not need re-certification, provided that EN471:1994 is clearly referenced on the label (advice from MTL).
- Concerns from background coated fabric manufacturers re. reference to a new breathability test method within EN471 for waterproof garments.
- UK version of EN471:2003 contains a national foreword describing these objections.
- Due to expressed concerns from background materials manufacturers and some additional imprecision noted by the Benelux regions, an amendment process has been started. (An amendment is like a revision of a standard, but strictly limited to only a few discussion points.) Modifications to the standard have been drafted and are now in the approval phase. The amended standard might be published already in 2007, if European agreement is immediately reached. Main proposed changes are in the colour fastness requirements of background materials.
- Buyers advised to check with suppliers to make sure that their specification still allows them to use their preferred fabric.

Provided by 3M Solutions