High Visibility Clothing

Synopsis
This document sets out the minimum specification for high visibility warning clothing.

Submitted by

Signatures removed from electronic version

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# High Visibility Clothing

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Part A

Issue Record

This document will be updated when necessary by distribution of a complete replacement.

Amended or additional parts of revised pages will be marked by a vertical black line in the adjacent margin.

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<th>Date</th>
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<td>One</td>
<td>December 94</td>
<td>Original Document (Emergency Standard)</td>
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<tr>
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<td>April 95</td>
<td>Supersedes Issue 1</td>
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<td>October 95</td>
<td>Supersedes Issue 2 Gives limits to the background colour and alters permitted marked designations.</td>
</tr>
<tr>
<td>Four</td>
<td>August 96</td>
<td>Amended in respect of hot work and implementation statement reinstated</td>
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<tr>
<td>Five</td>
<td>December 99</td>
<td>Amended in respect of markings required for Railway Incident Officer on high visibility clothing.</td>
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Responsibilities

Railway Group Standards are mandatory on all members of the Railway Group * and apply to all relevant activities that fall into the scope of each individual's Railway Safety Case. If any of those activities are performed by a contractor, the contractor's obligation in respect of Railway Group Standards is determined by the terms of the contract between the respective parties. Where a contractor is a duty holder of a Railway Safety Case then Railway Group Standards apply directly to the activities described in the Safety Case.

* The Railway Group comprises Railtrack and the duty holders of the Railway Safety Cases accepted by Railtrack.

Compliance

The provisions in this document are mandatory and apply to high visibility clothing purchased from 5th February 2000. Existing high visibility clothing which does not conform to this document may continue to be used until life expired. High Visibility clothing worn by Railway Incident Officers shall comply with the requirements of this document from the 5th February, 2000.

Health and Safety Responsibilities

In issuing this document, Railtrack PLC makes no warranties, express or implied, that compliance with all or any documents published by the Safety & Standards Directorate is sufficient on its own to ensure safe systems of work or operation. Each user is reminded of its own responsibilities to ensure health and safety at work and its individual duties under health and safety legislation.

Supply

Controlled and uncontrolled copies of this document may be obtained from the Industry Safety Liaison Dept, Safety and Standards Directorate, Railtrack PLC, Railtrack House, DP01, Euston Square, London, NW1 2EE.
Part B

1 Purpose
The purpose of this document is to define the minimum requirements for high visibility clothing for being conspicuous on the lineside or on or near the line and for defining the special requirements in respect of high visibility clothing for Rail Incident Officers.

2 Scope
The overall scope of Railway Group Standards is as specified in Appendix A of GA/RT6001.

Specifically the contents of this document applies to all high visibility warning clothing worn by persons meeting the requirements of The Rule Book for wearing such clothing. The high visibility mini-vest described in this Standard is not intended to replace high visibility workwear clothing which will greatly exceed the minimum requirements detailed in this standard.

3 Definitions
Background Material
Coloured fluorescent material intended to be highly conspicuous, but not intended to comply with the requirements of this standard for retroreflective material.

Combined Performance Material:
Material intended to exhibit both background and retroreflective properties.

Fluorescent Material
Material that emits optical radiation at wavelengths longer than absorbed.

Lineside
Is defined as the area between the boundary fence and a line 3m. (10 feet) from the nearest rail of any line.

On or near the line:
Within a distance of 3m (10 ft.) from the nearest rail of any line with a permissible speed of 200 kph (125 mph) or less. On a platform, the term “on or near the line” applies only to the part of the platform within 1.25m. (4 ft.) from the platform edge and only when an engineering or technical activity is taking place.

Retroreflective Material:
Material which is a retroflector, but which is not intended to comply with the requirements of this standard for background material.

4 General Design
Requirements for High Visibility Clothing

4.1 Background Material
The target colour of new background material shall be fluorescent orange with chromaticity and luminance defined as follows:

<table>
<thead>
<tr>
<th>Colour</th>
<th>Chromaticity coordinates</th>
<th>Minimum Luminance factor β_min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluorescent orange</td>
<td>0.588 0.371</td>
<td>0.4</td>
</tr>
</tbody>
</table>
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The tolerance of the fluorescent orange target colour shall be within the following limits with the luminance factor of 0.4 remaining unchanged.

<table>
<thead>
<tr>
<th>Chromaticity co-ordinates</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
</tr>
<tr>
<td>0.610</td>
</tr>
<tr>
<td>0.640</td>
</tr>
<tr>
<td>0.585</td>
</tr>
<tr>
<td>0.560</td>
</tr>
</tbody>
</table>

The change in chromaticity after light exposure and colour fastness shall conform to the requirements of BS EN 471:1994.

4.2 Retroreflective Material

The photometric and physical performance requirements for the retroreflective material shall conform to the requirements stipulated in BS EN 471:1994 class 2 (table 5).

4.3 Marking

Except in the case of the high visibility clothing worn by a Rail Incident Officer, the background material shall not be obscured by the addition of any other features unless provision has been allowed for in the specification such that the minimum areas of background and retroreflective material have been preserved. Such features shall only be employer’s names or logos and shall not include titles or designations other than “Rail Incident Officer”, “Press Officer”, “Recovery Engineer” or “ROLO” (Rail Operations Liaison Officer).

In the case of the high visibility clothing worn by a Rail Incident Officer the visible background material area of the class 2 jacket shall accommodate the special markings illustrated in Figure 4.1.

![Figure 4.1](image)

The special markings consist of 50mm wide Reflexite fluorescent lime high brightness garment tape (e.g. Reflexite GP220 Plain) either sewn or high frequency (H.F.) welded to the garment with “orange peel” clear laminate H.F. welded to top surface. “Orange peel” laminate is to be overprinted, in black opaque ink, with design of diamond pattern across the surface consisting of one full diamond and one half diamond as detailed in figure 4.1.
5 Application

The minimum requirements for high visibility warning clothing worn by those persons who require it when working, as part of their personal protective equipment, shall be in accordance with the requirements of BS EN471(1994) and to class 2 specification in respect of the minimum area of visible materials with a background material and retroreflective material as described in paragraphs 4.1 and 4.2 of this Standard.

The configuration of the retroreflective markings will consist of “belt and braces” type as specified in BS EN471 Clause 4.2.3 section (c).

The foregoing requirement may be relaxed for those persons whose duties require the use of high visibility clothing in situations where the nature of their work does not involve the possible obscuring of the high visibility warning clothing. Such persons shall as a minimum wear a high visibility mini-vest as defined in this standard.

The requirements of paragraphs 4.1 and 4.2 may be relaxed for those persons engaged in hot work processes on or near the line or on the lineside, as long as they are provided with a coverall garment which:-

• is made of orange fabric (e.g. “Securitex”) with retroreflective taping
• has been designed to meet the requirements of BS EN 470-1 :1995.

6 Design of High Visibility Mini-vests

6.1 General:

The design of the High Visibility Mini-vests (HVMV) shall conform to the class 1 requirements of BS EN 471: 1994, but shall exceed those requirements in respect of areas of background material and retroreflective material. The detailed requirements are listed below.

6.2 Style

The HVMV shall consist of background material and retroreflective material (i.e. combined performance material will not be used). Figure 6.1 shows an example of the general arrangement of the HVMV illustrating the disposition of background and retroreflective material.

6.3 Construction

High Visibility Mini-vests shall conform to the following minimum areas of visible material

<table>
<thead>
<tr>
<th>Material</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Background material</td>
<td>0.26 sq. m.</td>
</tr>
<tr>
<td>Retroreflective material</td>
<td>0.12 sq. m.</td>
</tr>
</tbody>
</table>
The background material shall encircle the torso and any markings shall be in accordance with section 4.3 of this standard.

Bands of retroreflective material shall be not less than 50 mm. wide.

High Visibility Mini-vests shall have one horizontal band of retroreflective material around the torso. The bottom of the band shall not be less than 50 mm. above the bottom edge of the mini-vests. High Visibility Mini-vests shall have bands of retroreflective material joining the horizontal torso band from the front to the back over each shoulder.

6.4 Background Material
The material shall conform to the requirements of section 4.1 of this Standard.

6.5 Retroreflective Material
The material shall conform to the requirements of section 4.2 of this Standard.

6.6 Fasteners
The HVMV shall quickly part at the shoulders and sides by means of touch and close or press stud fastenings or other suitable methods if caught by an external object.
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References

GA/RT6001  Railway Group Standards Change Procedures
GO/RT3000  Rule Book
BS EN 471:1994  Specification for - High Visibility Warning Clothing