

Spot on

In hazardous working conditions, high-visibility gear must meet strict safety standards. Here are four variations that fit that description.

Vehicles > 30 km/hr

TYPE 1



Type 1 – vest, shirt, or similar garment

Vertical length – 0.61 m/24 in. (minimum)

Background:

- 0.13 m²/200 in.² (minimum)
- Fluorescent lime-yellow,* yellow,* orange*

TYPE 2



Type 2 – jacket, coat, coveralls, or similar garment

Vertical length – 0.61 m/24 in. (minimum)

Background:

- 0.26 m²/400 in.² (minimum)
- Fluorescent lime-yellow,* yellow,* orange*
- Bright yellow,* orange,* red*

Type 1 and 2

Visibility-enhancing (VE) trim – distinctive pattern

Can be separate or combined performance VE trim

For both types, the fluorescent and retro-reflective portion:**

- Contrasts with the background
- Horizontal, vertical, and criss-crossed bands as shown
- Vertical bands must extend to the waist

TYPE 3



Type 3 – harness-type garment

Vertical length – 0.51 m/20 in. (minimum)

Background:

- 0.06 m² /100 in.²
- Fluorescent lime-yellow,* yellow,* orange*

Type 3 and 3 affixed

Visibility-enhancing trim – distinctive pattern

For both types, the fluorescent and retro-reflective portion must be combined performance VE trim:**

- Contrasts with the background
- Horizontal, vertical, and criss-crossed bands as shown
- Vertical bands must extend to the waist



Type 3 affixed



Type 3 affixed

- Type 3 harness garment that is permanently affixed to another garment (i.e., a vest, a shirt, or a jacket)
- Harness portion meets the Type 3 requirements, above

Compliant use of visibility-enhancing trim

	Type 1	2	3	3 affixed
Separate performance 	✓	✓	X	X
Combined performance 	✓	✓	✓	✓

*High-visibility background colours must meet chromaticity and luminance requirements of the WCB Standard.

**The combined performance consists of a single strip that is both fluorescent and retro-reflective; separate performance consists of two strips (one fluorescent and one retro-reflective).

WCB Standard: PPE 2 High Visibility Garment - Personal Protective Equipment Standard 2

This following standard outlines minimum requirements for three types of high visibility garments acceptable to the Workers' Compensation Board of British Columbia.

In this standard, the following definitions apply:

Background: The part of the garment visible either from the front or the back of the garment when the fully assembled garment is laid flat for inspection, not including the area of the VE trim.

Coefficient of Retroreflection: The fraction of incident light reflected by a retroreflective surface per unit area. The unit of measurement is candelas per foot candle per square foot as measured at 0.2 degrees observation angle and -4.0 degrees entrance angle measured in accordance with ASTM E809 - "Standard Practice for Measuring Photometric Characteristics of Retroreflectors".

Fluorescent Material: A material that absorbs ultraviolet radiation in daylight and emits it in the visible light region. This property allows the material to radiate more visible light than is incident on it. Therefore, it looks and is brighter than a non-fluorescent material which, at best, can reflect all the visible light that falls on it.

Retroreflective Material: A material that reflects light back to the same direction as the source of the light.

- Type 1: Vest, shirt or other similar garment worn on the torso with a fluorescent background and attached VE trim.
- Type 2: Jacket, coat, coverall or other garment with a bright colored background and attached VE trim.
- Type 3: A harness type garment worn on the torso, fabricated from parallel strips of contrasting colors. The harness has fluorescent and retroreflective properties.

VE Trim: Visibility enhancing trim attached to the garment. The trim has fluorescent and retroreflective properties.

Application

This standard does not apply to firefighters. High visibility garments for firefighters is provided for in the standard NFPA 1971, "Standard on Protective Clothing for Structural Firefighters".

Requirements Applying To All Types of High Visibility Garments

The background material in fluorescent or bright color in yellow, orange or red must meet the chromaticity coordinates and minimum luminance factor specified.

No part of the garment may melt, separate or ignite when subjected to 500 degrees Fahrenheit air temperature for 5 minutes for high visibility garment used in environments where exposure to elevated temperatures or open flames is possible.

Where a worker is engaged in welding or burning operations, the high visibility garment must be made from flame retardant materials.

In an environment where loose fitting clothing may be caught by moving equipment or other stationary objects, high visibility garments must have "tear away" properties. An example of this is the use of Velcro™ strips for the fastening of the garment.

Where high visibility garments are used in potentially explosive environments, Velcro™ strips must not be used due to static electricity concerns.

All high visibility garments must be worn outside of all other clothing and must be fully fastened closed.

If the background material is of open weave construction the largest dimension in the openings of the background material must not exceed 3.2 mm (1/8 inch).

VE trim must not be of open weave construction.

VE trim must:

1. Have a smooth flat exterior finish.
2. Be securely attached to the garment.
3. Be applied so that it is visible on the side of the garment when worn.
 1. There must be a minimum of 77 square centimeters (12 square inches) of VE trim within a defined area below the arm hole. The defined area below the arm hole consists of a 152 mm (6 inch) wide vertical strip centered about the center line of the arm hole.

2. In lieu of side VE trim, a band of 50 mm (2 inches) wide VE trim may be placed around the sleeve at the wrist or upper arm area of the garment.
4. Be applied to form one vertical stripe on either side on the front of the garment and an "X" pattern on the back of the garment.
5. Be at least 50 mm (2 inches) wide.
6. Be made either from; combined performance material that exhibits both fluorescent and retroreflective properties, or separate fluorescent and retroreflective materials.
 - The fluorescent portion of the trim must be fluorescent lime yellow if the background color is fluorescent orange, orange or red and must be fluorescent orange if the background color is fluorescent lime yellow, fluorescent yellow or bright yellow.
 - The retroreflective portion of the VE trim must be continuous along the entire length of the trim and have a minimum Coefficient of Retroreflection = 240 divided by the width in inches of the retroreflective portion of the VE trim.(e.g. if the width of the retroreflective portion is 1/2 inch, the minimum Coefficient of Retroreflection is 480)

Type 1 Garments

The garment background must be fluorescent lime yellow, fluorescent yellow, or fluorescent orange colored.

The minimum vertical length for both front and back of the garment is 0.61 metres (24 inches).

The minimum background area for either the front or the back of the garment is 0.13 square metres (200 square inches).

The fluorescent portion of the VE trim for either the front or the back of the garment must have a minimum area of 0.05 square metres (80 square inches).

Type 2 Garments

The background of the garment must be either fluorescent lime yellow, fluorescent yellow, bright yellow, fluorescent orange, bright orange or bright red.

The minimum vertical length for both front and back of the garment is 0.61 metres (24 inches).

The minimum background area for either the front or the back of the garment is 0.258 square metres (400 square inches).

The fluorescent portion of the VE trim for either the front or the back of the garment must have a minimum area of 0.05 square metres (80 square inches).

Type 3 Garments

The garment background must be fluorescent lime yellow, fluorescent yellow, or fluorescent orange colored.

The minimum background area for either the front or the back of the garment is 0.064 square metres (100 square inches).

The minimum vertical length for both front and back of the garment is 0.51 metres (20 inches).

The fluorescent portion of the VE trim for either the front or the back of the garment must have a minimum area of 0.064 square metres (100 square inches).

The garment must be designed so that there is color contrast along the entire length of at least one side of the VE trim.

Police Forces and Other Emergency Response Personnel

It is anticipated that police forces and other emergency response personnel may require greater protection in the hours after dark due to the nature of their job function. In lieu of requirements 4, 5 and 6 above on the pattern, width and color of the VE trim specified, the VE trim used by these personnel for all garment types must:

1. Have a minimum area of 0.05 square metres (80 square inches) for either the front or the back of the garment.
2. Be entirely retroreflective and at least 25 mm (1 inch) wide.
3. Have a minimum Coefficient of Retroreflection of 240.