



Tests indicated as not accredited are outside the scope of the laboratory's accreditation

## No. 1349267.3

(Please quote this number in all correspondence)

CLIENT:  
Pan Products Ltd.  
PO Box 396  
Dargaville 0340

SAMPLE RECEIVED FROM:  
Pan Products Ltd.

Date: 9.10.20

Attn.: Nathan Cottle

SAMPLE DESCRIPTION:  
Orange hi-vis garment: Reference Code PCF1019.

Client Order No.:

Client Reference:

1 of 8

**AS 4602.1:2011 HIGH VISIBILITY SAFETY GARMENTS & AMENDMENT NO. 1: NOV 2016 & NO. 2:2020  
PART 1: GARMENTS FOR HIGH RISK APPLICATION  
RESULTS FOR GARMENT SUBMITTED: DESIGN ONLY- CONFORMANCE**

Class D – day use only  
Class DN – day or night use  
Class N – night use only

	Conformance
CL 5 Classification	Class DN
CL 6 Background material compliance AS/NZS 1906.4	Conforms (see NZWTA report no. 13/133R)
Retro-reflectivity - AS/NZS 1906.4 (this section is not covered by IANZ accreditation)	Conforms (as stated by SGS report no. SHSL1302029053TX & NZWTA report no. 1110548.3)
CL 6.1 Chest Size	Conforms
CL 6.4.1 General Description	Conforms
CL 6.4.2 Area of Background Material	Conforms
CL 6.4.3 Permitted Openings	Conforms
CL 6.4.4 Underarm Gussets	N/A
CL 7.2 / 7.3 RF Tape Width	Conforms
CL 7.3 Design – Placement of Tapes	Conforms
CL 7.3 Figure 2, 3 Dimensions	Conforms
CL 9 Attachment to Body	Not assessed in this report
CL 10 Instructions, Labelling and Marking	Not assessed in this report
CL 11 Selection and safe use	Not assessed in this report

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Signatory

  
C Judan  
Signatory

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PART 1: GARMENTS FOR HIGH RISK APPLICATION**

**Class D – day use only**

**Class DN – day or night use**

**Class N – night use only**

**Clause 6.1**

Garment compliance shall be measured on a finished garment intended to fit a body chest measurement of 100 – 105 cm. This design shall remain consistent throughout the garment size range, grading increasing or decreasing proportionately with the design integrity. It is recommended that the body chest size is included on the garment label.

**Clause 8: Minimum requirements for garments**

**6.4 Design of Garments (CL 6.4.1, 6.4.2)**

**Class D and DN**

Shall comprise a garment or combination of garments of any desired type or style which, as a minimum, encircles the upper torso. High visibility background material as specified Clause 6.2 (for fluorescent background material) or 6.3 (for non-fluorescent background materials) shall extend continuously downwards from the top of the garment and for the entire circumference of the torso, permitted openings and gussets excepted, until at least the minimum specified area of material is provided on both the front and the back of the garment. Side panels of non-conforming material other than underarm gussets are disallowed. Contrasting thread is allowable for functional or structural seam purposes.

The area of background material covering the upper torso on each of the front and back of a garment is measured for conformance with this requirement as per the standard. The area below discontinuity in full width of background material, retroreflective tapes, any areas of nonconforming material such as words, logos, pockets, underarm gussets, permitted openings and collars are deducted from the total area.

The area of background material determined in accordance with Appendix A shall be **not less than 0.2 m<sup>2</sup>** on each of the front and the back of the garment.

**Permitted Openings – CL 6.4.3** Neck and armholes, vertical openings may be provided for the purpose of donning and removing of garment. There shall not be more than one such opening visible from any viewing angle and such opening shall not be more than 50 mm wide.

**Underarm Gussets – CL 6.4.4** Underarm gussets may be provided for wearer comfort purposes. Where provided they shall comprise materials matching the colour of the high visibility background material a maximum of 100 mm wide under each arm and extending not more than 100 mm below the underarm point. The gusset material shall not qualify as background material for the purposes of Clause 6.4.2 (as above mentioned) unless it meets all of the colour specification requirements as AS/NZS 1906.4 including luminance factor.

Class RF material may be counted in the torso as background material because it is a combined performance tape meeting Class R and the daytime colour requirements.

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### AS 4602.1:2011 HIGH VISIBILITY SAFETY GARMENTS & AMENDMENT NO. 1: NOV 2016 & NO. 2:2020 PART 1: GARMENTS FOR HIGH RISK APPLICATION

#### Classes D and DN

**6.2 Fluorescent Background Material** – Except as permitted in Clause 6.3 garments shall be made from background material meeting the requirements of AS/NZS 1906.4 for Class F or a combination of Class F and Class RF material.

**6.3 Non-Fluorescent Background Materials** – Where safety requirement in a particular industry require a garment to be made from a background material that is not capable of taking a fluorescent pigment, e.g. certain natural fibres, a non-fluorescent colour Class NF as specified in AS/NZS 1906.4 may be used in lieu. Users of such garments should be warned that such colours do not have the high visibility properties of fluorescent garments and hence will provide reduced conspicuity for the wearer.

#### Class N and DN

##### 7.2 Retroreflective materials (refer to Figures 2 and 3 for design and dimensions)

Retroreflective patches, words, symbols and the like shall be regarded as addition to, and not replacing the patterns of retroreflective strips.

**8 (c) The minimum requirements for both the material and layout patterns for retroreflective strips (meeting the requirements of AS/NZS 1906.4 Class R and RF) shall be as specified for Class N and Class DN garments in Clause 7.3.**

**7.3 Class N and Class DN shall comprise a garment or combination of garments of any desired type or style that, as a minimum, encircles the entire upper torso down to waist level (permitted openings excepted, see Clause 6.4). Strips of retroreflective material shall be applied as specified in Item (a) or (b) as follows:**

- (a) A strip over the shoulder, placed symmetrically over the centre top of the shoulder, and a minimum length of 400 mm, plus a complete horizontal hoop at approximately waist level plus either of the following:**
- (i) Approximately vertical strips connecting the shoulder strips to the waist hoop in the front located and either the same at the back or crossed.**
  - (ii) A second horizontal hoop at approximately mid chest level located if the vertical or crossed strips in Item (i) are likely to create confusing visual patterns in a particular situation.**
- In Australia:** each 50 mm wide strip may be replaced by a pair of strips at least 25 mm with a maximum 30 mm gap between them.
- In New Zealand:** at least 50 mm wide strips are used in all cases.

**(b) Omit up to 400 mm length of strip from the shoulder area on each shoulder of the strip patterns specified in Item (a) and replace it with a hoop around each sleeve above the elbow.**

A break in horizontal hoops not more than 50 mm in width, shall be permitted at the sides of garments. If such a break is to be provided at an underarm gusset (see Clause 6.4 – Underarm Gussets) it may be up to 100 mm wide but if more than 50 mm wide, sleeve hoops at the same level shall be provided.

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4 of 8

### AS 4602.1:2011 HIGH VISIBILITY SAFETY GARMENTS & AMENDMENT NO. 1: NOV 2016 & NO. 2:2020 PART 1: GARMENTS FOR HIGH RISK APPLICATION

**APPENDIX B recommended** use of retroreflective strips on sleeves and legs of garments.

As per figure B1

**Sleeves** - a 50 mm wide hoop of material around each sleeve just above the elbow (defined as not more than 400 mm below the underarm point) and around each wrist.

On this garment there is a hoop on each sleeve above the elbow and between the elbow and wrist.

#### **Chest Diameter – CL 6.1**

Stated Size: 100-105 cm

Actual Size: 136 cm (measured from the underarm point)

#### **Placement of background material - CL 6.4.1**

The material extends continuously from the top of the garment, for the entire circumference of the torso, permitted openings and gussets excepted.

#### **Amount of background material on the front- CL 6.4.2 (measured as per Appendix A – the waist is defined as being 530 +20 / -70mm from the highest point of the shoulder as per CL 4.2 (c))**

Measured from the top of the rectangle to 520mm excluding the reflective tapes and orange zips, the area is 0.29 m<sup>2</sup>.

#### **Amount of background material on the back -CL 6.4.2**

Measured from the top of the rectangle to 520mm excluding the reflective tapes, the area is 0.28 m<sup>2</sup>.

**Permitted Openings – CL 6.4.3** Neck and armholes, vertical openings may be provided for the purpose of donning and removing of garment.

The garment has an orange zip front opening that is 20mm wide. The opening is down to the mid chest front of the garment.

#### **Tape - CL 7.3**

The tape placement design is the same as Figure 2 (b).

Top and bottom of cross configuration is aligned vertically.

The tape width is 50mm.

There is a complete horizontal hoop placed at approximately waist level.

**Figure 2 (a), (b), (c) and (d)** - Length from the highest point of the shoulder to the waist hoop is 520mm (front & back).

There are breaks at the sides when the garment is laid flat of length: left – 7mm / right – 10mm.

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PART 1: GARMENTS FOR HIGH RISK APPLICATION**

**RESULTS FOR GARMENT SUBMITTED: DESIGN ONLY- CONFORMANCE**

**Description:-**

**CL 6.1** Chest size – garment compliance shall be measured on a finished garment intended to fit a body chest measured of 100-105 cm.

The garment measured is over this dimension.

**CL 6.4.1** The material extends continuously from the top of the garment, for the entire circumference of the torso, permitted openings and gussets excepted.

This garment **complies** with this requirement.

**CL 6.4.2** Background material on this garment must cover an area greater than 0.2 m<sup>2</sup> on both the front and back. This garment **complies** with this requirement.

**CL 6.4.3 Permitted Openings** – Neck and armholes, vertical openings may be provided for the purpose of donning and removing of garment. There shall not be more than one such opening visible from any viewing angle and such opening shall not be more than 50 mm wide.

This garment **complies** with this requirement.

**CL 8 (c) & 7.3** The width of the retroreflective strip for both Australia and New Zealand is at least 50 mm wide. This garment **complies** with this requirement.

**CL 7.3** The application of the retroreflective strips must comply with the minimum requirements of 7.3 Item (a) (i) / (a) (ii) / (b).

The attachment of the strips and the design of this garment **meet** the requirements of AS 4602.1, 7.3 Item (a) (i).

**CL 7.3 Figure 2 (a) (b) (c) and (d)** - The diagrams state that the length from the highest point of the garment to the waist tape must be 530 +20 / -70mm.

This garment **complies** with this requirement.


**CL 10.2 Labelling:** recommends that the sewn in label includes the intended wearer's chest measurement.

This garment does not have a sewn in label that has the chest measurement. However, the client submitted a label layout that has the chest measurement.

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**PLEASE NOTE:**-This report only assesses this garment for the design requirements of AS 4602.1:2011. The Chromaticity, luminance and colourfastness tests on the background material required by AS 4602 (as per AS/NZS 1906.4 Class F or non-fluorescent materials clause 2.4) and the requirements for the retroreflective tape (as per AS/NZS 1906.4 Class R) are not reported.

**Appendix C of AS 4602.1:2011** contains guidance on the selection and safe use of the garments. We advise that Section C4 be included in any care claim and advice given to the user.

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## Front



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**Back**



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