



## High visibility safety garments

### Part 1: Garments for high risk applications

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Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through the public comment period.

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Australian Standard®

**High visibility safety garments**

**Part 1: Garments for high risk applications**

Originally issued as AS/NZS 4602:1999.

Jointly revised and redesignated as AS/NZS 4602.1:2011.

Revised incorporating Amendment No. 1 (November 2016).

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## PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Subcommittee SF-004-03, Light Reflective Protective Clothing, for Committee SF-004, Occupational Protective Clothing, and supersedes AS/NZS 4602:1999, *High visibility safety garments*.

A2 | Amendment No. 2 to this Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee SF-050, High Visibility Clothing. As a consequence of Amendment No. 2, which is published as an Australian-only amendment, this Standard will be redesignated from AS/NZS 4602.1 to AS 4602.1.

*This Standard incorporates Amendment No. 1 (November 2016) and Amendment No. 2 (February 2020). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.*

EN 471, *High-visibility warning clothing for professional use—Test methods and requirements*, was consulted in the preparation of this Standard.

The principal change from the previous edition is the more rigorous specification of the amount of background material required on a garment for daytime visibility in high risk applications, and the way it is to be measured.

Provision is also made for separate standards for firefighters' garments and garments for general application in situations of lower risk to be developed.

Statements expressed in mandatory terms in notes to figures are deemed to be requirements of this Standard.

The term 'informative' has been used in this Standard to define the application of the appendix to which it applies. An 'informative' appendix is only for information and guidance.

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## FOREWORD

This Standard specifies high visibility safety garment requirements for use in high risk applications without reference to particular types or styles. This has been done so as to give the designer as much flexibility as possible in selecting a suitable garment design to meet differing needs as regards weather conditions, type of work and the like, and to be innovative in devising means of encouraging users to wear the garments properly. Different requirements apply to garments for fire services, which are dealt with in AS/NZS 4602.2\*.

The design of garments has been based primarily on the needs of workers in road and rail traffic situations to be seen in field situations by the operators of vehicles approaching them at speed, in time for any necessary safety action to be taken. Their use is, however, recommended in all industrial situations of similar risk level where workers need to be seen at distance, against a complex visual background, in conditions of poor visibility or where they may appear suddenly in the path of a vehicle or item of moving plant.

It is important that, in order to gain the most effective use from high visibility garments, users have some understanding of the way fluorescent and retroreflective materials achieve high visibility. These mechanisms are explained as follows:

- (a) *Fluorescent material*—is impregnated with a substance that may be a dye or pigment and has the property of converting energy at shorter wavelengths (including ultraviolet) to light in the visible spectrum, hence noticeably increasing the amount of visible light and colour reflected and emitted from its surface. It will therefore work best where this is an appreciable amount of shorter wavelengths (most notably, in this context, daylight and sunlight) falling on the material. Artificial night-time light sources (with the exception of xenon arc headlights) contain little UV radiation. Two important points to note are firstly that fluorescent materials are susceptible to fairly rapid fading. Secondly, the fluorescent substances can usually only be applied to man-made fibres. Garments made from some man-made fibres may not be as comfortable to wear under hot humid conditions as natural fibres except where the man-made fibre materials have been designed to encourage air circulation without reducing their luminance factor.
- (b) *Retroreflective materials*—as the name suggests, cause practically all of the light reflected from their surface to be directed back along the path of the incoming light beam. An observer will not gain the benefit of a retroreflective article unless he/she is observing it from a position closely aligned with, usually just behind, the light source, e.g. a motor vehicle driver sitting almost directly behind the vehicle headlights.

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\* Yet to be prepared at time of publication of this Standard.

## STANDARDS AUSTRALIA

### Australian Standard High visibility safety garments

#### Part 1: Garments for high risk applications

## 1 SCOPE

This Standard specifies the visual requirements for high visibility safety garments for occupational wear by people who may be exposed to the hazard of moving traffic, moving plant or equipment in high risk situations. The Standard covers garments suitable for daytime wear, night-time wear where they will be seen by retroreflected light or for wear under both conditions but excludes garments for use by fire services.

### NOTES:

- 1 This Standard covers only the visual requirements of garments. It does not cover their physical integrity or fitness for use in adverse physical environments.
- A1 | 2 Requirements for firefighters' garments are specified in AS/NZS 4602.2.
- 3 A Standard for garments to be used in lower risk applications was under consideration at the time of publication of this Standard.

## 2 OBJECTIVE

The objective of this Standard is to provide both manufacturers of garments and persons responsible for workers in the relevant high risk situations, with minimum requirements for high visibility safety garments.

## 3 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

### AS/NZS

- 1906 Retroreflective materials and devices for road traffic control purposes
- 1906.4 Part 4: High visibility materials for safety garments
- 1957 Textiles—Care labelling
- 4399 Sun protective clothing—Evaluation and classification

## 4 DEFINITIONS

For the purpose of this Standard, the definitions in AS/NZS 1906.4 and the following apply.

### 4.1 Background material

Material providing high daytime visibility on either a daytime-only garment or a garment designed for use both day and night.

### 4.2 Garment reference points

- A1 | (a) *Elbow reference point*

A point on the sleeve of a garment as measured not more than 400 mm below the highest shoulder point to the side seam.