

Australian/New Zealand Standard™

High visibility safety garments



AS/NZS 4602:1999

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee SF/4, Occupational Protective Clothing. It was approved on behalf of the Council of Standards Australia on 31 July 1999 and on behalf of the Council of Standards New Zealand on 2 August 1999.

This Standard was published on 5 September 1999.

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This Standard was issued in draft form for comment as DR 96029.

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First published as AS/NZS 4602:1999

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ISBN 0 7337 2909 6

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Subcommittee SF/4/3, Light Reflective Protective Clothing for Committee SF/4, Occupational Protective Clothing.

BS EN 471:1994, *Specification for high-visibility warning clothing* was consulted in the preparation of this Standard. The style of garments and the patterns of retroreflective material to be used on them have been changed from BS EN 471 in some minor respects to more accurately reflect Australian/New Zealand practice.

This Standard supersedes in part NZS 5839:1986, *Specification for high visibility garments and accessories for road users*.

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 without reference to particular types or styles. This has been done so as to give the designer or purchaser 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.

Consideration was given initially to preparing a Standard which would encompass requirements for high visibility garments in a large variety of industrial settings, including environments such as yards and factories. The decision to restrict the scope to situations where the wearer was exposed to the hazard of moving traffic, plant or equipment was reached after concern was expressed that a Standard catering for the widely varying levels of performance needed to suit different industrial environments and hazard situations could lead to a confusing series of differing garment standards and performance levels. This could compromise what is seen as the most important safety issue, the protection of workers exposed to traffic. It was further considered that in any case, other industries would still have the option of either adopting this Standard if they consider the level of hazard warrants it, preparing their own industry standards after due consideration of the types of hazard they have to deal with, or if necessary, seeking preparation of a separate Australian/New Zealand Standard specific to their industry.

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

- (a) *Fluorescent material* is impregnated with a pigment which has the property of converting light in the UV spectrum to light in the visible spectrum, hence noticeably increasing the amount of visible light reflected from its surface. It will therefore only work where there is an appreciable amount of UV light, i.e. daylight, falling on the material. Artificial night-time light sources contain little UV light. Two important points to note are firstly that in the process of UV light conversion the pigment particles undergo change, often leading to fairly rapid fading of the colour. Secondly, the pigments 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 conditions as natural fibres.
- (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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1 SCOPE This Standard specifies the visual requirements for high visibility safety garments to be worn by people in situations where they may be exposed to hazard from moving traffic or from moving plant or equipment in the charge of an on-board controller. 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.

NOTE: This Standard covers only the visual requirements of garments. It does not cover their physical integrity or fitness for use in adverse physical environments.

2 OBJECTIVE The objective of this Standard is to provide both manufacturers of garments and persons responsible for workers and others 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 apply.

5 CLASSIFICATION OF GARMENTS The garments specified in this Standard are classified as follows:

- (a) *Class D*—a garment designed for outdoor **daytime use only**, comprising fluorescent or other non-retroreflective high visibility material.
- (b) *Class N*—a garment designed for **night-time use only**, comprising retroreflective elements on an unspecified background.
- (c) *Class D/N*—a garment designed for **both day and night use**, comprising retroreflective elements on a fluorescent or other non-retroreflective high visibility background material.

6 CLASS D GARMENTS

6.1 General Class D garments are intended to provide the wearer with high visibility under daylight viewing conditions* in outdoor situations.

NOTE: Users should take care that these garments are not mistakenly worn at night in situations that put the wearer at risk. Fluorescent materials are generally not effective when viewed under artificial light.

* An account of the mechanism by which fluorescent and retroreflective materials achieve high visibility is given in the Foreword.

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