

Australian/New Zealand Standard™

**Retroreflective materials and devices for  
road traffic control purposes**

**Part 4: High-visibility materials for  
safety garments**



## **AS/NZS 1906.4:2010**

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee MS-049, Retroreflective Devices. It was approved on behalf of the Council of Standards Australia on 28 June 2010 and on behalf of the Council of Standards New Zealand on 23 July 2010.

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The following are represented on Committee MS-049:

Australian Chamber of Commerce and Industry  
Australian Industry Group  
Austroads  
AWTA Textile Testing  
CSIRO Textile and Fibre Technology  
Department of Transport, Energy and Infrastructure, SA  
New Zealand Transport Agency  
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# Australian/New Zealand Standard™

## **Retroreflective materials and devices for road traffic control purposes**

### **Part 4: High-visibility materials for safety garments**

Originated in New Zealand as NZS 5839:1986.  
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## PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee MS-049, Retroreflective Devices and supersedes AS/NZS 1906.4:1997, *Retroreflective materials and devices for road traffic control purposes*, Part 4: *High visibility materials for safety garments*. It is one of a series of four Standards as follows:

## AS

- 1906 Retroreflective materials and devices for road traffic control purposes
- 1906.3 Part 3: Raised pavement markers (retroreflective and non-retroreflective)

## AS/NZS

- 1906 Retroreflective materials and devices for road traffic control purposes
- 1906.1 Part 1: Retroreflective sheeting
- 1906.2 Part 2: Retroreflective devices (non-pavement application)
- 1906.4 Part 4: High visibility materials for safety garments (this Standard)

This Standard covers only high-visibility materials to be used in the manufacture of safety garments, rather than the garments themselves. Requirements for high-visibility garments are specified in AS/NZS 4602.1, *High visibility safety garments*, Part 1: *Garments for general use*.

The principal changes from the 1997 edition of this Standard are as follows:

- (a) The photometric performance required of Class RF combined performance retroreflective/fluorescent material has been raised to the same level as other retroreflective materials.
- (b) The testing of daylight colour and luminance factor of fluorescent materials has been refined and now makes provision for use of the double monochromator method where warranted.
- (c) The test for daylight colour retention in fluorescent materials when wet, has been made optional.
- (d) A clause relating to the acceptance of background material supplied from overseas has been deleted.

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

The term 'normative' has been used in this Standard to define the application of the appendix to which it applies. A 'normative' appendix is an integral part of a Standard.

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## FOREWORD

High daytime visibility for safety garments is normally achieved through the use of fluorescent materials. Fluorescent materials of recent manufacture have a very much longer life than could be achieved previously. However, they will fade over extended time periods. This loss of fluorescence can be measured by use of the test method described under colourfastness after UV exposure (Clause 2.5.1). This method also lends itself to measurements of samples that have been subjected to natural daylight for varying periods so that the ultimate in-service durability of the fluorescent effect in a sample of material, rather than simply its ability to meet the minimum requirements of this Standard, can be assessed.

The tolerances on the colour of high daytime visibility materials specified in this Standard are based on EN 471, *High-visibility warning clothing for professional use—Test methods and requirements*, but have been extended to include colours at both ends of the orange spectrum and at the lower end of the yellow spectrum.

Provision is made in the Standard for high-visibility non-fluorescent colours for use in those situations where, for safety reasons in a particular industry, natural fibres that will not adequately retain fluorescent colour must be used in safety garments. However, users are warned that such colours will rarely be as effective visually by day as fluorescent colours, and their use should be restricted to those situations where synthetic fabrics carrying fluorescent colour cannot be used.

Retroreflected colour is not specified for retroreflective materials. In line with the philosophy on which EN 471 is based, the essential night-visibility requirement for high-visibility garment material is an absolute retroreflective performance regardless of colour. Although, in practice, materials that reflect either white or yellow are more likely to meet the higher retroreflective performance specified, other colours are not precluded if they are capable of meeting that performance.

## STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

**Australian/New Zealand Standard****Retroreflective materials and devices for road traffic control purposes****Part 4: High-visibility materials for safety garments**

## SECTION 1 SCOPE AND GENERAL

**1.1 SCOPE**

This Standard specifies the photometric, colorimetric and physical property requirements for high-visibility materials for outdoor daytime use, or retroreflective materials for use at night or in other dark conditions to be used for the manufacture of, or for incorporation into industrial safety garments designed to be worn in situations where the wearer needs to be highly visible. Immersible water safety materials such as those used on personal flotation devices are not included.

NOTE: This Standard does not include requirements for the integrity or performance of materials under extremes of temperature, atmospheric conditions, abrasive conditions or any other abnormal use of the material.

**1.2 REFERENCED DOCUMENTS**

The following documents are referred to in this Standard:

## AS

- |             |  |
|-------------|--|
| 1441        | Methods of test for coated fabrics   |
| 1441.14     | Part 14: Method for determination of resistance to cold cracking   |
|             | NOTE: This Standard has been withdrawn but may continue to be used pending publication of a replacement Standard.                              |
| 2001        | Methods of test for textiles   |
| 2001.2.25.1 | Part 2.25.1: Physical tests—Determination of the abrasion resistance of fabrics by the Martindale method—Martindale abrasion testing apparatus |
| 2001.4.1    | Part 4.1: Colourfastness tests—Definitions and general requirements  |
| 2001.4.B02  | Part 4.B02: Colourfastness tests—Colourfastness to artificial light: Xenon arc fading lamp test (ISO 105-B02:1994, MOD)                        |
| 2001.4.E04  | Part 4.E04: Colourfastness tests—Determination of colourfastness to perspiration   |
| 2001.4.15   | Part 4.15: Colourfastness tests—Determination of colourfastness to washing   |
| 2001.5.4    | Part 5.4: Dimensional change—Domestic washing and drying procedures for textile testing (ISO 6330:2000, MOD)                                   |
| 4004        | Lighting booths for visual assessment of colour and colour matching  |
| 4878        | Methods of test for coated fabrics   |
| 4878.9      | Part 9: Determination of resistance to damage by flexing   |
| AS/NZS      |  |
| 1906        | Retroreflective materials and devices for road traffic control purposes  |
| 1906.1      | Part 1: Retroreflective sheeting   |
| 1957        | Textiles—Care labelling  |