Australian STANDARD

Retroreflective materials and devices for road traffic control purposes

Part 1: Retroreflective sheeting

STANDARDS Australia

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The following are represented on Committee MS-049:

- Australian Chamber of Commerce and Industry
- Australian Industry Group
- Austroads
- AWTA Product Testing (Testing interests Australia)
- CIE Australia
- Council of Textile and Fashion Industries of Australia
- Department of Planning, Transport and Infrastructure, SA
- National Association of Testing Authorities Australia
- New Zealand Road Safety Manufacturers Association
- New Zealand Transport Agency
- Roadmarking Industry Association of Australia
- University of New South Wales
- VicRoads

This Standard was issued in draft form for comment as DR AS/NZS 1906.1:2015.

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®

Retroreflective materials and devices for road traffic control purposes

Part 1: Retroreflective sheeting

Originated in Australia as SAA Int. 354—1955.
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PREFACE

This Standard was prepared by the Joint Australia/New Zealand Committee MS-049, Retroreflective Devices, to supersede AS/NZS 1906.1:2007.

This Standard incorporates Amendment No. 1 (January 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.

A1 Amendment No. 1 to this Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee MS-049, Retroreflective Devices. As a consequence of Amendment No. 1, which is published as an Australian-only amendment, this Standard will be redesignated from AS/NZS 1906.1:2017 to AS 1906.1:2017.

The objective of this Standard is to provide road authorities, manufacturers and testing authorities with a uniform supply specification for retroreflective sheeting.

The objective of this revision is to add a new class of sheeting and change the classification.

This Standard is Part 1 in a series of Standards on retroreflective devices as follows:

AS/NZS
1906 Retroreflective materials and devices for road traffic control purposes
1906.1 Part 1: Retroreflective sheeting (this Standard)
1906.2 Part 2: Retroreflective devices (non-pavement application)
1906.3 Part 3: Raised pavement markers (retroreflective and non-retroreflective)
1906.4 Part 4: High visibility materials for safety garments

Statements expressed in mandatory terms in notes and/or footnotes to figures and/or tables are deemed to be requirements of this Standard.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the appendix to which they apply. A ‘normative’ appendix is an integral part of a Standard, whereas an ‘informative’ appendix is only for information and guidance.

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FOREWORD

The five classes of retroreflective sheeting described in this Standard (Classes 1100, 900, 400, 300 and 100) are principally for use for road traffic signs. Additionally, there is a class for licence plates (Class NP090). Careful consideration should be given as to whether sheeting which conforms with this Standard is appropriate for other applications. For example, the Standard is not applicable to retroreflective sheeting for use on safety garments (refer to AS/NZS 1906.4), or for roadside delineators (refer to AS/NZS 1906.2). This Standard has been written solely as a performance specification for retroreflective sheeting and, with the exception of some advice given in Appendix B, does not give guidance on its use.

This revision of the Standard aims to harmonize its requirements with the photometric performance levels of ASTM D4956-16 *Standard Specification for Retroreflective Sheeting for Traffic Control*, so that performance classes can have improved differentiation between them and their intended uses.

The overall performances of retroreflective sheetings are a combination, and sometimes a compromise, between high performance at narrow observation angles (i.e. the observer is positioned just above the light source—such as in a sedan car) and at wider observation angles (i.e. the observer is positioned further away from the light source—such as a truck driver). This combination can be altered in manufacture by small adjustments to the characteristics of the micro-prisms thus making it possible to optimize retroreflection or sign brightness over a range that best meets the requirements of the driver. The different classes specified within this Standard each have unique performance characteristics and thus will satisfy different road user needs.

Included in this Standard are specifications which will predominately only be fulfilled by micro-prismatic sheeting (Classes 1100, 900 and 400). Users should be aware of some notable differences in the characteristics of this sheeting when compared with sheeting using glass sphere technology (Classes 300 and 100). There can be quite significant changes in photometric performance with changes in rotation angle. This highlights the need to observe manufacturers' orientation marks if sheeting is sensitive to orientation. For sheeting that has performance variation with change in orientation, marking or instructions may be necessary as to the correct orientation of the sheeting in applications such as on traffic signs and to ensure that on any one sign, all pieces of sheeting are orientated in the same direction.

STANDARDS AUSTRALIA

Australian Standard
Retroreflective materials and devices for road traffic control purposes

Part 1: Retroreflective sheeting

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies the performance requirements for retroreflective sheeting used in the manufacture of road signs and related traffic control devices. It does not apply to retroreflective pavement markings.

1.2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS
1580 Paints and related material—Methods of tests
1580.408.4 Method 408.4: Adhesion (crosscut)

1742 Manual of uniform traffic control devices
1742.1 Part 1: General introduction and index of signs

AS/NZS
1580 Paints and related materials—Methods of test
1580.403.1 Method 403.1: Scratch resistance

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

ISO
11664 Colorimetry
11664-1 Part 1: CIE standard colorimetric observers
11664-2 Part 2: CIE standard illuminants

ISO/IEC
Guide 98 Uncertainty of measurement
Guide 98-3 Part 3: Guide to the expression of uncertainty in measurement (GUM:1995)

CIE
15 Colorimetry

20 Recommendations for the Integrated Irradiance and Spectral Distribution of Simulated Solar Radiation for Testing Purposes

54.2 Retroreflection: Definition and measurement

ANSI/ISEA
107 High-visibility safety apparel and accessories