Australian Standard®

METHODS OF SAMPLING AND TESTING RETROREFLECTIVE MATERIALS AND DEVICES FOR ROAD TRAFFIC CONTROL PURPOSES

Part 2—RETROREFLECTIVE DEVICES (NON-PAVEMENT APPLICATION)

The following scientific, industrial and governmental organizations and departments were officially represented on the committee entrusted with the preparation of this standard:

Australian Federation of Construction Contractors

Australian Road Research Board

Australian Optometrical Association

CSIRO, National Measurement Laboratory

Department of Motor Transport, N.S.W.

Department of Transport

National Association of Australian State Road Authorities

Railways of Australia

University of New South Wales

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PREFACE

This standard was prepared by the Association's Committee on Retroreflective Devices. Together with AS 1906, Part 2, it replaces SAA Int. 355 (1955), and is one of a group of standards dealing with traffic control devices and materials uses in their manufacture.

Other standards in the group are as follows:

AS 1742 Manual of Uniform Traffic Control Devices
Part 1— Description and Use of Elemental Traffic Control Devices
Part 2— Application of Traffic Control Devices to Traffic Situations

AS 1743 Road Signs

AS 1744 Standard Alphabets for Road Signs

AS 1906 Retroreflective Materials and Devices for Road Traffic Control Purposes
Part 1— Retroreflective Materials
Part 2— Retroreflective Devices (Non-pavement application)

This standard sets out methods of sampling and testing for the two types of discrete retroreflective devices specified in AS 1906, Part 2.

The main test describes the procedure for measuring photometric properties of the retroreflectors. It provides for alternate means of measuring and calculating the CIL value. Other tests relate to the durability of the retroreflectors and try to simulate field conditions.

STANDARDS ASSOCIATION OF AUSTRALIA

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PART 2—RETROREFLECTIVE DEVICES (NON-PAVEMENT APPLICATION)

1 SCOPE. This standard sets out methods of sampling and testing retroreflective devices (known as 'retroreflectors') intended for use as roadside delineators or as road sign button reflectors, and specified in AS 1906, Part 2.

2 SAMPLING.

2.1 Photometric Properties. For the purpose of conducting the test for photometric performances specified in AS 1906, Part 2, a sample of 30 new clean retroreflectors of any one batch of any type/size/colour combination shall be selected at random and tested.

2.2 Other Properties. For all other properties, other than waterproofing, for which specific tests are described, a total of 5 retroreflectors from each sample selected in accordance with Clause 2.1 shall be selected at random and tested.

For the waterproofing test, all 30 retroreflectors selected in accordance with Clause 2.1 shall be tested.

3 TESTING.

3.1 Photometric Properties.

3.1.1 *Instrumentation.* In accordance with the definition given in AS 1906, Part 2, the coefficient of luminous intensity (CIL) may be determined —

(a) by using appropriately calibrated photometers to measure directly the illuminance at the test specimen and the reflected luminous intensity from the test specimen; or

(b) by using a photometer designed to measure CIL indirectly and which is calibrated in accordance with Clause 3.1.3.

3.1.2 *Components.* For both types of photometer, the components, shown diagramatically in Fig. 1, shall be as follows:

(a) A light source (X), approximately CIE standard source A, which shall be stable. A circular aperture which subtends 8 ± 3 min of arc at the test specimen, shall be used. The illuminance shall be uniform within a total tolerance of 10 percent over the area of the test specimen.

(b) A photoelectric receptor (Y), which shall either—

(i) have the relative spectral response of the CIE Standard Colorimetric Observer and a linear response to increasing illumination over the whole range likely to be encountered when testing in accordance with this standard; or

(ii) be calibrated using standard photometric procedures and correction factors applied where necessary for departures from correct spectral and linear response.

The receptor shall have a circular aperture subtending 5 ± 2 min of arc at the test piece position, and be capable of being moved so that the observation angle α can be varied from 0.2 degree to 1.0 degree.

(c) A means of locating the test specimen (Z), so that the angle subtended by the test specimen at the source is 1 degree or less.

The test specimen shall be attached to a device which allows both the entrance angle β and the rotation angle ε to be varied. A minimum photometer base length of 7.5 m is recommended (see Note 1).

NOTES:

1. The distance *d* between receptor and test specimen will be determined by the physical size of available sources and receptors and the need to arrange these so as to obtain the specified angular relationships. Short base photometry using collimating lenses to obtain equivalent geometry by optical means is not precluded.
2. With the instrument configuration specified in this clause and the measurement procedures given in Clause 3.1.3, it can be expected that errors in CIL values obtained will not exceed ± 10 percent.