

Road traffic signs and internally illuminated bollards —

Part 1: Methods of test

UDC 625.745.5/.6:628.975:656.055.969

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This British Standard, having been prepared under the direction of the Road Engineering Standards Committee, was published under the authority of the Board of BSI and comes into effect on 31 January 1983

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The following BSI references relate to the work on this standard:
Committee reference RDB/6
Drafts for comment 78/14585 DC
78/12447 DC

ISBN 0 580 13049 5

Amendments issued since publication

Amd. No.	Date of issue	Comments

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Foreword

This British Standard has been prepared under the direction of the Road Engineering Standards Committee. BS 873 was first published in 1939 in response to a request from the Association of Road Traffic Sign Makers, and was revised in 1959 and 1970. As a result of subsequent experience and the advent of new materials and methods of construction, it is being further revised to bring it up-to-date. This process will continue in future revisions.

A sign normally consists of a legend carried by a sign face which may be of sheet or other applied material (e.g. paint or print) mounted on a substrate and fixed to a frame and supported by a post or posts. Other types of signs (e.g. traffic cones) may be of more simple construction and self supporting.

Requirements for the various elements and signs are laid down in the further Parts of this British Standard, which generally refer back to the test methods described in this Part.

The revised standard is being published in the following separate Parts, relating to the various aspects of road traffic signs and internally illuminated bollards which are considered to be suitable for standardization.

- *Part 1: Methods of test. This describes test procedures for signs and components specified in the other Parts. Definitions of terms used in all Parts are included, together with guidance on the relationship between BS 873 and the various statutory provisions;*
- *Part 2: Specification for miscellaneous traffic signs. This specifies the requirements for miscellaneous road traffic signs such as portable signs, flap signs, hazard markers, cones, cylinders, crossing and refuge beacons;*
- *Part 3: Specification for internally illuminated bollards. This specifies the requirements for single- and multi-aspect bollards both partially and totally illuminated, but excluding the spring-back type;*
- *Part 4: Specification for road studs. This specifies the requirements for both reflecting and non-reflecting road studs either bonded to or anchored within the road surface;*
- *Part 5: Specification for internally illuminated signs and external lighting luminaires. This specifies luminance requirements in addition to constructional and electrical requirements;*
- *Part 6: Specification for retroreflective and non-retroreflective signs. This specifies photometric and colorimetric requirements in addition to constructional details for sign plates and frames. Material finishes are also specified;*
- *Part 7: Specification for posts and fittings. This specifies the requirements for posts and fittings for all types of signs (excluding plates and plate frames), and luminaires.*

Parts 1, 5, 6 and 7 were previously all combined in BS 873-1:1970. The new division of subjects is as follows:

- *Part 1: previously clause 1 and all appendices;*
- *Part 5: previously clauses 2 and 4;*
- *Part 6: previously clause 3;*
- *Part 7: previously clause 5.*

BS 873-1:1970 has been renumbered as BS 873-7 and superseded clauses have been deleted by amendment. However, BS 873-7 is in course of revision.

The previous clause **6** of BS 873-1:1970 is now incorporated as appropriate into the various Parts of the revised standard.

The Committee reconsidered the need for requirements for resistance to abrasion and concluded that, while perhaps desirable, it was not practicable to establish suitable conditions of test bearing in mind the wide variety of finishes available within the specification. Experience had indicated there was no need for signs of greater strength and no fundamental changes were thought necessary as regards thickness of sheet sign plate materials. Corrosion is not a problem if sign plates are protected in accordance with this specification.

Many of the components used in the construction of road traffic signs are not designed specifically for that purpose, and for any one sign they may be purchased from a number of different suppliers. For this reason this standard emphasizes the need to ensure that the various materials are compatible when brought together in the finished product. This includes the avoidance of corrosion at bimetallic contacts.

Some of the tests described in this standard are such as to necessitate a programme of routine sampling. Such a procedure should be agreed between the purchaser and manufacturer at the time of ordering. Attention is drawn to BS 2635, BS 6000, BS 6001 and BS 6002.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations. In particular, attention is drawn to the following (see Appendix A).

The Traffic Signs Regulations and General Directions

The Traffic Signs (Speed Limits) Regulations and General Directions

The Pedestrian Crossing Regulations

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 18, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

The Part of BS 873 defines general terms and describes photometric tests for internally and externally illuminated signs and for the coefficient of retroreflection for retroreflective materials. It also describes the methods of testing signs and luminaires or their components for resistance to impact, wind pressure, dirt and corrosion. Tests for bonding sheet sign face materials and for the efficiency of bond of superimposed solid glass beads are also described.

NOTE 1 Additional methods of test are described in other Parts of this standard.

NOTE 2 The titles of the standards publications referred to in this standard are listed on the inside back cover.

2 Definitions

For the purposes of this Part of BS 873 the following definitions apply.

2.1 Bollards

2.1.1 bollard

a device placed on a refuge or traffic island to warn drivers of those obstructions. It may contain a prescribed traffic sign

2.1.2 base

that part of a bollard that is fixed to the refuge or traffic island by means of holding-down bolts and in which the incoming electrical supply is terminated

2.1.3 body

that part of a bollard situated below the head

NOTE The head and the body may be combined into one structure.

2.1.4 depth of body

the horizontal dimension of the body on the side or sides of the bollard having no sign or plain white circle

2.1.5 head

that part of the bollard containing the sign

2.1.6 housing

the structural part of the bollard

2.1.7 manufacturer's stated ground line

the horizontal line marked on the bollard that should be level with the surrounding surface of the refuge or traffic island when the bollard has been correctly installed

2.1.8 one-aspect bollard

a bollard designed to display a sign or a plain white circle in one direction only

2.1.9 width of body

the horizontal dimension of the body on the side or sides of the bollard having a sign or plain white circle

2.2 entrance angle

an angle characterizing the angular position of a retroreflector with respect to the direction of its illumination

NOTE For test purposes it is the angle between the projector's beam and a line normal to the test surface where the projector, receiver and the line normal to the test surface are all contained within a common horizontal plane (see 5.3). The angle is positive if the line normal to the test surface lies to the right of the projector beam; otherwise it is negative.

2.3 hazard marker

a retroreflector erected at the edge of a carriageway to indicate a hazard or the alignment of a carriageway

2.4 luminaire face panel

the light transmitting part of the luminaire, i.e. the lighting cover as defined in BS 4533-1.1

2.5 Luminance

2.5.1 luminance

see BS 4727-4:Group 01

2.5.2 mean luminance

the arithmetic mean of the luminance values of all points in the inner area of the sign face (see 4.3)

2.6 observation angle

the angle by which the direction of observation of a retroreflector departs from the direction of its illumination

NOTE For test purposes it is the angle between the projector's beam and the return beam to the receiver where the projector and receiver are in the same horizontal plane and the test surface is vertical (see 5.3).

**2.7
retroreflector¹⁾**

a material or device capable of reflecting light in the general direction of the light source

2.8 Road studs**2.8.1
anchorage**

that part of a road stud that is below the road surface when the road stud is fixed in position in the road

**2.8.2
head**

that part of a road stud that is above the road surface when the road stud is fixed in position in the road

**2.8.3
non-reflecting road stud**

a device that is bonded to or anchored within the road surface in order to warn, guide or inform road users

**2.8.4
reflecting road stud**

a device that is bonded to or anchored within the road surface in order to warn, guide or inform road users. It reflects incident light in directions close to the direction from which it came. The reflecting portion may be either depressible or non-depressible and the stud may be constructed in either one or more integral parts

**2.8.5
upper surface**

that part of the external surface of a road stud that is visible when the road stud is fixed in position in the road

**2.9
sign face**

that part of a sign that bears the legend and/or symbols, background and border

**2.10
sign face materials**

paints, pastes, inks or dyes used in the production of a non-retroreflective or retroreflective sign face

**2.11
sign face sheet materials**

prefabricated retroreflective or non-retroreflective sheet materials used in the production of the sign face

**2.12
sign panel**

a transparent or translucent substrate to which the sign face is applied, on which it is mounted or into which it is incorporated

**2.13
sign plate**

an opaque substrate to which the sign face is applied, on which it is mounted or into which it is incorporated

**2.14
traffic cone**

a device, conical in shape, used to delineate the edge of a route for traffic through or past a temporary obstruction

**2.15
traffic cylinder**

a device, cylindrical in shape, used to delineate the edge of a route for traffic

**2.16
traffic sign**

an object or device either fixed or portable, for warning, regulating, guiding or informing road users

3 Test samples of sign face sheet materials or sign face materials

3.1 Unmounted samples. Unmounted samples shall be taken at random following the procedures laid down in BS 2635, BS 6001 or BS 6002, and shall be representative of the normal production of the material to be tested.

3.2 Mounted samples. If it is necessary for the material under test to be mounted on a substrate the material to be tested shall be sampled in accordance with **3.1**, and unless otherwise agreed it shall be applied to 3 mm aluminium NS4 (half hard) grade complying with BS 1470 in accordance with the manufacturer's instructions. Any protective coats required by the manufacturer shall be applied in accordance with his instructions.

3.3 Dimensions of samples. The dimensions of test samples shall be as specified under each particular method of test.

4 Photometric properties

4.1 Principle. To measure the luminance and luminance gradient of an internally illuminated sign, or of a reference panel simulating a sign and illuminated by an external lighting luminaire.

¹⁾ "reflex reflector" was formerly used but use of this term is deprecated.