BRITISH STANDARD

BS 1751:1997
ISO 4785:1997

Laboratory glassware — Specification for straight-bore glass stopcocks for general purposes

ICS 71.040.20

National foreword

The UK participation in the preparation of this British Standard was entrusted by Technical Committee LBI/36, Laboratory glassware and related apparatus, to Subcommittee LBI/36/2, *General laboratory glass and plastics ware*. It is identical with ISO 4785:1997 *Laboratory glassware — Straight bore glass stopcocks for general purposes* published by the International Organization for Standardization (ISO). It supersedes BS 1751:1985 which is withdrawn.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled "International Standards Correspondence Index", or using the "Find" facility of the BSI Standards Electronic Catalogue.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the ISO title page, pages ii to iv, pages 1 to 4, 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.

This British Standard, having been prepared under the direction of the Sector Board for Materials and Chemicals, was published under the authority of the Standards Board and comes into effect on 15 August 1997

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ISO 4785

First edition
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Laboratory glassware — Straight-bore glass stopcocks for general purposes

Verrerie de laboratoire — Robinets en verre à alésage droit pour usage général

Reference number
ISO 4785:1997(E)

Contents

Descriptors: Laboratory equipment, laboratory glassware, stopcocks, specifications, dimensions, designation.

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

This International Standard ISO 4785 has been prepared by Technical Committee ISO/TC 48, *Laboratory glassware and related apparatus*, Subcommittee SC 2, *General laboratory glassware (other than measuring apparatus)*.

Annex A of this International Standard is for information only.

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1 Scope

This International Standard specifies requirements and dimensions for two series of glass straight-bore stopcocks for general-purpose use. The stopcocks are defined by their nominal (bore) diameter and large end diameter and length of the ground zone. It is recommended that, in national standards, only one of the series should be specified.

NOTE Annex A lists additional International Standards for other general-purpose laboratory glassware.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 719:1985, *Glass — Hydrolytic resistance of glass grains at 98 °C — Method of test and classification.*

ISO 3585:1991, *Borosilicate glass 3.3 — Properties.*

ISO 4803:1978, *Laboratory glassware — Borosilicate glass tubing.*

3 Ground zone

3.1 The taper of the ground zone shall be such as to give one increment on the diameter for ten increments on the axial length, with a tolerance of ± 0,006 on the diameter increment i.e. a taper of (1 ± 0,006)/10.

NOTE 1 This tolerance is in agreement with the relevant requirement of ISO 383. Annex B in ISO 383:1976 describes a leakage test with air which may be used to check the tightness of the ground zone.

NOTE 2 Actual manufacturing techniques normally result in a tighter tolerance than that given above, but owing to the lack of experimental evidence it is not yet possible to reduce the specified value.

3.2 The centreline average height of the ground surface shall not exceed 1 μm and should preferably be less than 0,5 μm.

NOTE The "centreline average height" of the ground surface is the average value R_a of the surface roughness as defined in ISO 468.

4 Dimensions and series of sizes

4.1 The nominal diameters of series I stopcocks shall be as follows (given in millimetres):

1 – 1,5 – 2,5 – 4 – 6 – 10

NOTE This is the R 5 series of preferred numbers.

4.2 The nominal diameters of series II stopcocks shall be as follows (given in millimetres):

1 – 1,5 – 2 – 3 – 4 – 5 – 6 – 8 – 10

4.3 The dimensions and tolerances of the ground zone shall be as shown in Table 1 and Figure 1.

4.4 The allocation of bore diameters to key and barrel dimensions shall be as shown in Table 2.

5 Side arms

The side arms shall be fused to the barrel so as to enable a pin of thickness 0,8 times the nominal bore to fit at least to the middle of the length of the bore. See Figure 2 for details.

Recommended dimensions for the side arms are given in Table 3. In the case of stopcocks made from borosilicate glass 3.3, tubes in accordance with ISO 4803 should be used.

6 Material

6.1 Stopcocks should preferably be made from borosilicate glass 3.3 in accordance with ISO 3585. When tested according to the procedure and classification given in ISO 719, the glass shall comply with the requirements of class HGB3 or better.

The glass should be as free as possible from visible defects and reasonably free from internal stress which would impair the performance of the stopcock.

6.2 Both the key and barrel of a stopcock should preferably be fabricated from the same type of glass.

7 Construction

The key may be solid or hollow at the manufacturer's discretion. The key may project slightly beyond the base of the ground zone and can be fitted with a suitable retaining device (see Figure 3).

The rims of the barrel should be suitably strengthened, in order to avoid chipping. The construction should be sufficiently robust to withstand normal usage.

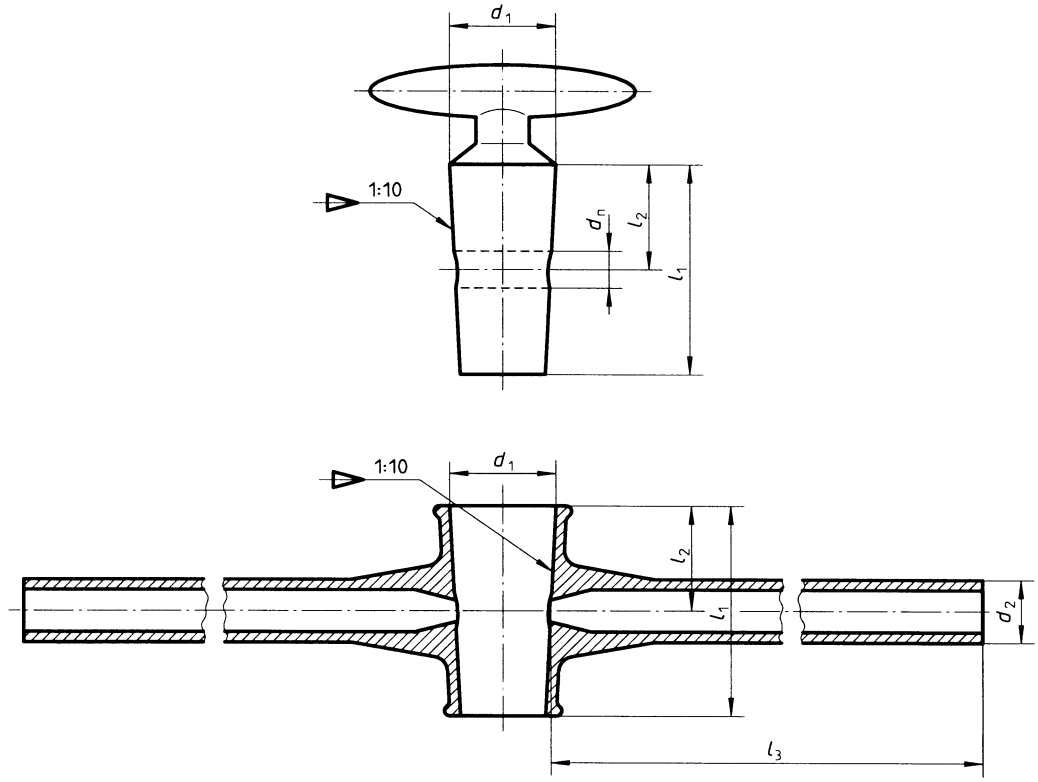

Figure 1 — Straight-bore stopcock, general appearence

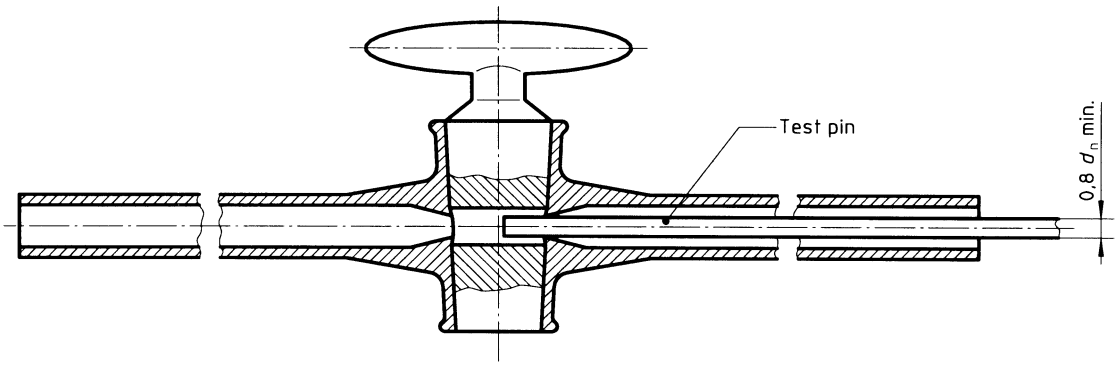

Figure 2 — Test according to clause 5

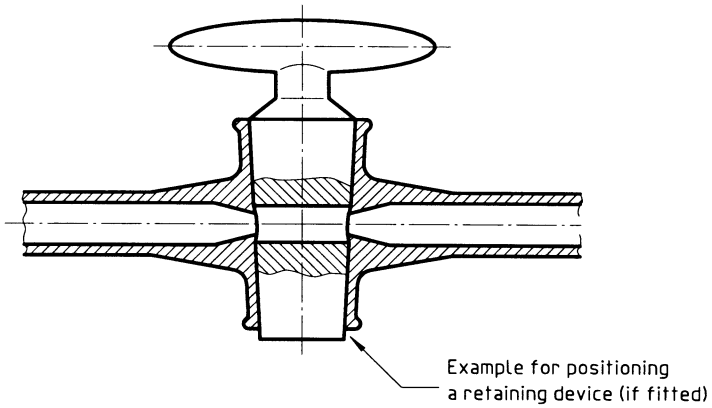

Figure 3 — Assembled stopcock

8 Dimensions

The dimensions shall be as given in Table 1 to Table 3.

9 Designation

For convenience of reference to stopcocks complying with the requirements of this International Standard, the use of a designation is recommended, consisting of the following dimensions, expressed in millimetres:

— nominal bore diameter (e.g. 4), and

— large end diameter of the ground zone (e.g. 18,8), and

— the number of this International Standard.

EXAMPLE: Stopcock ISO 4785, 4 – 18,8

10 Marking

The size of the large end diameter of the ground zone according to Table 2 shall be marked on the barrel of each stopcock in such a way as to be permanent under normal conditions of use:

EXAMPLE: 18,8

Table 1 — Dimensions and tolerances of the ground zone

Dimensions in millimetres

d_1[a]	l_1[b]	l_2
7,5 ± 0,008	22	11 ± 0,215
8 ± 0,008	20	10 ± 0,215
10 ± 0,008	25	12,5 ± 0,215
12,5 ± 0,01	28	14 ± 0,215
13,5 ± 0,01	30	15 ± 0,215
14,5 ± 0,01	30	15 ± 0,215
18,8 ± 0,015	38	19 ± 0,26
19 ± 0,015	40	20 ± 0,26
21,5 ± 0,015	44	22 ± 0,26
22,2 ± 0,015	44	22 ± 0,26
27,6 ± 0,015	52	26 ± 0,26
29,2 ± 0,015	58	29 ± 0,26
37,8 ± 0,015	56	28 ± 0,26

[a] The tolerances are in agreement with the relevant requirements of ISO 383.
[b] As l_2 is the essential dimension, l_1 is left without tolerances.

Table 2 — Nominal dimensions of ground zone and bore diameter

Dimensions in millimetres

d_1	l_1	d_n	
		Series I	**Series II**
7,5	22	1	—
8	20	—	1
10	25	1	—
12,5	28	1,5	—
13,5	30	—	1
13,5	30	—	1,5
13,5	30	—	2
14,5	30	2,5	—
18,8	38	4	—
19	40	—	3
19	40	—	4
21,5	44	6	—
22,2	44	—	5
22,2	44	—	6
27,6	52	—	8
29,2	58	10	—
37,8	56	—	10

Table 3 — Recommended dimensions for side arms

Dimensions in millimetres

d_2	l_3	d_n	
± 0,4	min.	**Series I**	**Series II**
7	115	—	1
7	100	1	—
8	100	1,5	—
7	115	—	1
8	115	—	1,5
8	115	—	2
9	100	2,5	—
10	110	4	—
10	115	—	3
10	115	—	4
13	120	6	—
12	115	—	5
12	130	—	6
14	130	—	8
18	120	10	—
17	140	—	10

Annex A (informative)
Bibliography

[1] ISO 383:1976, *Laboratory glassware — Interchangeable conical ground joints.*

[2] ISO 384:1978, *Laboratory glassware — Principles of design and construction of volumetric glassware.*

[3] ISO 468:1982, *Surface roughness — Parameters, their values and general rules for specifying requirements.*

[4] ISO 641:1975, *Laboratory glassware — Interchangeable spherical ground joints.*

[5] ISO 1773:1997, *Laboratory glassware — Narrow-necked boiling flasks.*

[6] ISO 3819:1985, *Laboratory glassware — Beakers.*

[7] ISO 4142:1997, *Laboratory glassware — Test tubes and culture tubes.*

[8] ISO 4796:1977, *Laboratory glassware — Bottles.*

[9] ISO 4797:1981, *Laboratory glassware — Flasks with conical ground joints.*

[10] ISO 4798:1997, *Laboratory glassware — Filter funnels.*

[11] ISO 4799:1978, *Laboratory glassware — Condensers.*

[12] ISO 4800:1977, *Laboratory glassware — Separating funnels and dropping funnels.*

[13] ISO 6556:1981, *Laboratory glassware — Filter flasks.*

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