भारतीय मानक

Indian Standard

IS 1590 : 2018
ISO 6556 : 2012

प्रयोगशाला ग्लासवेयर — कांच फिल्टर फ्लास्क — विशिष्टि

(दूसरा पुनरीक्षण)

Laboratory Glassware — Glass Filter Flasks — Specification

(Second Revision)

ICS 71.040.20

भारतीय मानक ब्यूरो
BUREAUOFINDIANSTANDARDS
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May 2018 **Price Group 5**

Glass, Glassware and Laboratoryware Sectional Committee, CHD 10

FOREWORD

This Indian Standards (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Glass, Glassware and Laboratoryware Sectional Committee had been approved by the Chemical Division Council.

This standard was first published in 1960, based on IND/S/MED/5808, issued by Ministry of Defence, Government of India, and MED/TDES/843, issued by British Standards Institution, UK. However, to bring it at par with the prevailing International Standard, the standard was revised in 2000. In the first revision, the capacities of the flasks had been modified. For simplicity of manufacture, pear-shaped flasks had been removed. More varieties in the shape and size of side-arms were introduced.

In this revision, the Committee observed that in ISO 6556 : 2012 almost all the viewpoints provided by India at different stages of documents have been incorporated. Therefore, the Committee felt that this standard be revised by adoption of ISO 6556 : 2012 on dual number basis.

The text of ISO standard has been proposed to be approved as suitable for publication as Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

a) Wherever the words ‘International Standard’ appear referring to this standard, they should be read as ‘Indian Standard’
b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

In this adopted standard reference appears to certain International Standards where the Standard Atmospheric Conditions to be observed are stipulated which are not applicable to Tropical/Subtropical countries. The applicable Standard Atmospheric Conditions for Indian conditions are 27± 2°C and 65 ± 5% RH and shall be observed while using this standard.

In this adopted standard, reference appears to the following International Standard for which Indian Standard also exists. The corresponding Indian Standard which is to be substituted in its place, is listed below along with its degree of equivalence for the edition indicated:

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 718 : 1990 Laboratory glassware — Thermal shock and thermal shock endurance — Test methods	IS/ISO 718 : 1990 Laboratory glassware — Thermal Shock and thermal Shock Endurance — Test Methods	Identical with ISO 718

The technical committee has reviewed the provisions of the following International Standard referred in this adopted standard and has decided that it is acceptable for use in conjunction with this standard:

International Standard	*Title*
ISO 3585	Borosilicate glass 3.3 — Properties

This standard also makes reference to the BIS Certification Marking of the product and Sampling, details of which are given in National Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS 2 : 1960 ‘Rules for rounding off numerical values (*revised)*’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

LABORATORY GLASSWARE — GLASS FILTER FLASKS

(Second Revision)

1 Scope

This International Standard specifies requirements to filter flasks with conical or cylindrical shape for general laboratory purposes.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 718, *Laboratory glassware — Thermal shock and thermal shock endurance — Test methods*

ISO 3585, *Borosilicate glass 3.3 — Properties*

3 Series and capacities

Two series of filter flasks are specified.

Series A filter flasks have either

— a conical shape (see Figure 1) with nominal capacities of 100 ml, 250 ml, 500 ml, 1 000 ml and 2 000 ml, or

— a cylindrical shape (see Figure 2) with nominal capacities of 3 l, 5 l, 10 l, 15 l and 20 l.

Series B filter flasks have a conical shape and a different choice of vacuum connections compared to Series A filter flasks and have nominal capacities of 25 ml, 50 ml, 125 ml, 250 ml, 500 ml, 1 000 ml, 2 000 ml and 4 000 ml.

4 Material

Filter flasks shall be made of borosilicate glass 3.3 conforming with ISO 3585; the glass shall be reasonably free from residual strain and from glass defects which might impair safety, durability or appearance.

5 Construction

5.1 Pressure strength

Filter flasks shall be constructed so as to withstand a pressure differential (external-internal) of 2 bar (1 bar = 10^5 Pa), i.e. twice the pressure in normal use, when tested in accordance with the test method specified in Annex A.

For this purpose, the dimensions given for wall thickness and radius of curvature given in Tables 1 to 3 shall be observed.

5.2 Shape

Filter flasks shall be conical or cylindrical. The base of the flasks shall be so constructed that they stand vertically without rocking or spinning when placed on a level surface.

5.3 Radius of curvature of base

The base of the flask shall have a suitable radius of curvature in order to provide a smooth transition between the base and the side. The radius shall be not less than that given in Tables 1 to 3.

5.4 Wall thickness

The flask shall be blown so as to achieve a good distribution of glass in the mould without sudden changes in wall thickness. In order to meet the requirements of 5.1, the thinnest areas shall have a thickness not less than the minimum values specified in Tables 1 to 3.

5.5 Neck

The top of the neck shall be formed to provide suitable strength. The neck may be slightly tapered or cylindrical; alternatively, it may be manufactured with an interchangeable joint of appropriate size selected from ISO 383.

5.6 Protective coating

For protection against mechanical damage (impact or shock), filter flasks may have an external plastic coating.

6 Series A filter flasks

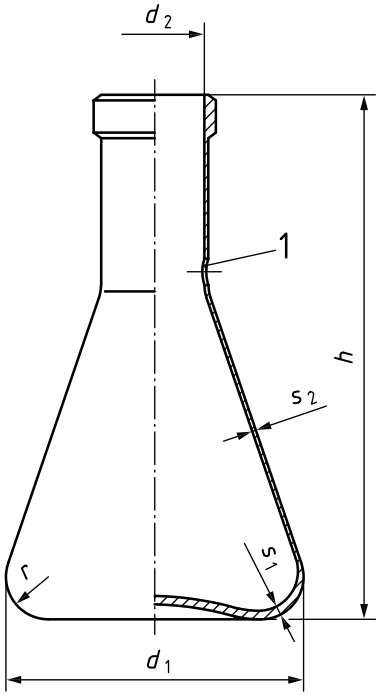
6.1 Vacuum connection (side-arm)

The vacuum connection shall be placed just at, or below, the cylindrical part of the neck (see Figure 1 and Figure 2). Three types of vacuum connection are described:

a) a tubular side-arm as shown in Figure 3 with a taper of 1:5 to 1:10;

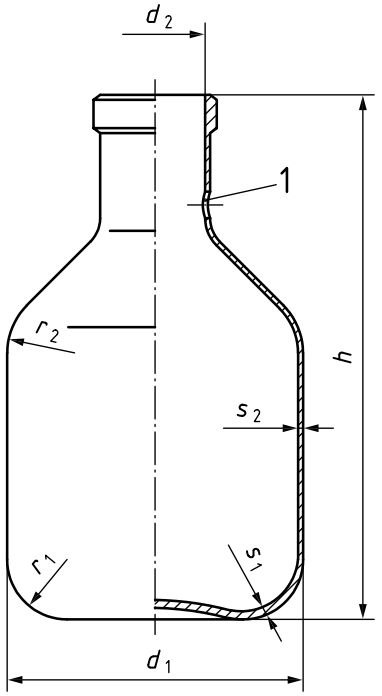
b) an integral side-arm with a glass round thread as shown in Figure 4;

c) a detachable side-arm; a typical arrangement with a resilient grommet is shown in Figure 5. A detachable side-arm may also be provided with an appropriate glass round thread.



Key
1 vacuum connection

Figure 1 — Conical shape



Key
1 vacuum connection

Figure 2 — Cylindrical shape

6.2 Dimensions

Series A filter flasks of conical shape shall comply with the dimensions given in Table 1. Series A filter flasks of cylindrical shape shall comply with the dimensions in Table 2.

Table 1 — Dimensions for Series A conical shapes

Dimensions in millimetres

Nominal size ml	d_1 ±3	d_2 ±1,5	h ±3	r min.	s_1 min.	s_2 min.
100	70	24	105	12	1,7	1,2
250	85	35	155	12	2,4	1,3
500	105	35	185	15	3	1,4
1 000	135	45	230	20	3,8	1,6
2 000	165	60	255	35	4,2	1,8

Table 2 — Dimensions for Series A cylindrical shapes

Dimensions in millimetres

Nominal size l	d_1 ±5	d_2 ±1,5	h ±5	r_1 ≈	r_2 ≈	s_1 min.	s_2 min.
3	170	70	295	28	40	4,7	4
5	185	80	360	30	48	5,1	4
10	237	80	420	48	54	6,4	4
15	257	85	500	48	58	7,0	4
20	287	85	535	60	79	7,7	4

7 Series B filter flasks

7.1 Vacuum connection (side-arm)

The vacuum connection shall be placed near the neck-to-body junction, and sufficiently below the top of the neck that a potential blockage of the vacuum inlet by neck closures is avoided.

The following types of vacuum connection are described:

a) plain, without provision for direct connection to vacuum tubing;

b) with integral side-arm:

   1) tubular side-arm with corrugated outside surface for interfacing with the inside of vacuum tubing;

   2) tubular side-arm with tapered cone for interfacing with the outside of vacuum tubing;

   3) tubular side-arm with glass round thread for interfacing with a matching connector;

c) with replaceable side-arm of glass or plastic material:

   1) straight;

   2) angled;

   3) multiple replaceable side-arms.

7.2 Dimensions

Series B filter flasks shall comply with the dimensions given in Table 3.

Table 3 — Dimensions for Series B filter flasks

Dimensions in millimetres

Nominal size ml	d_1 max.	h max.	r min.	s_1 min.
25	41	77	6	1,0
50	52	85	6	1,5
125	71	115	12	1,5
250	86	160	12	1,8
500	108	190	15	2,0
1 000	138	245	20	2,0
2 000	170	305	23	2,5
4 000	210	385	26	3,0

8 Thermal shock endurance

Filter flasks shall be type tested to comply with a thermal shock endurance of 75 °C in accordance with ISO 718.

9 Inscriptions

The following inscriptions shall be permanently and legibly marked on all filter flasks:

a) the nominal capacity of the flask, for example “100 ml”;

b) the maker’s and/or vendor’s name or mark;

c) the type of glass from which the flask is made, if not identified by the maker’s name or mark.

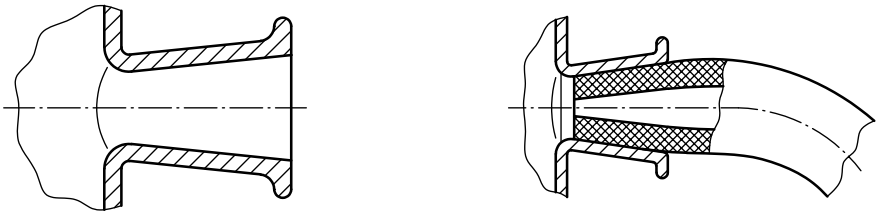


Figure 3 — Tubular side-arm and inserted vacuum rubber tube

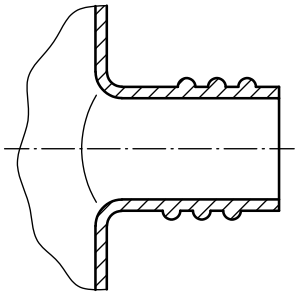


Figure 4 — Integral side-arm with glass round thread

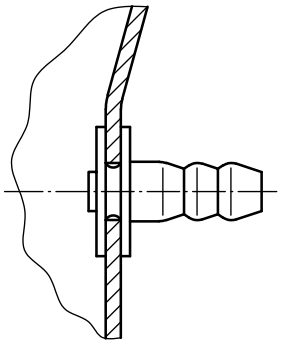


Figure 5 — Detachable side-arm

Annex A
(normative)

Type test for pressure strength

A.1 General

The filter flask is tested in a pressure vessel by subjecting it to a hydraulic external pressure of 2 bar for 1 min.

A.2 Apparatus

A.2.1 Pressure vessel, provided with a pressure gauge and connected to a water reservoir fitted with a ram pump and a release valve discharging back into the reservoir. The lid of the pressure vessel can be fastened to the vessel by means of wing-nuts for ease of operation.

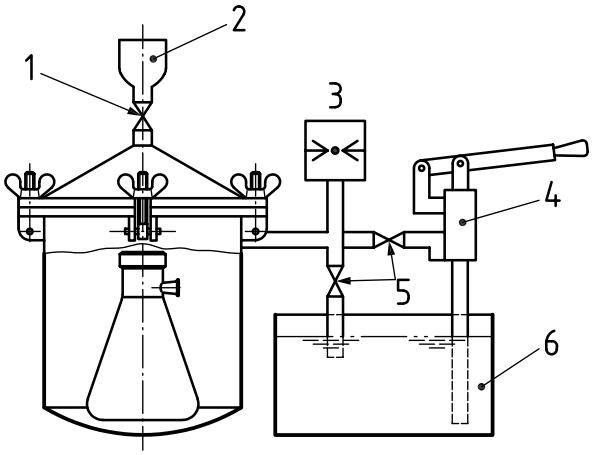
The recommended apparatus is illustrated in Figure A.1.

A.3 Procedure

Close the filter flask by appropriate means, for example stoppers, the interior of the filter flask being under atmospheric pressure (about 1 bar). To ensure submersion, hold the filter flask in the pressure vessel in some holding device; alternatively, place weights wrapped in paper or cloth inside it. Having placed the filter flask in position and fastened the lid, fill the pressure vessel with water and bring up the gauge pressure to 2 bar by working the ram pump and release it immediately after 1 min.

A.4 Result

The filter flask shall be taken to have satisfied the requirement of the test if it withstands the hydraulic external pressure of 2 bar for 1 min.



Key

1 pressure relief valve
2 funnel
3 pressure gauge
4 pump
5 valves
6 reservoir

Figure A.1 — Test rig for pressure strength

Bibliography

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

NATIONAL ANNEX A

(*National Foreword*)

A-1 BIS CERTIFICATION MARKING

A-1.1 The product may also be marked with the Standard Mark.

A-1.2 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act,* 1986 and the Rules and Regulations made there under. The details of conditions under which the licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

A-2 SAMPLING AND CRITERIA FOR CONFORMITY

Representative samples of filter flasks shall be drawn and adjudged for criteria for conformity as prescribed in IS 4426 Methods of sampling laboratory glassware (*first revision).*

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act*, 2016 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards : Monthly Additions'.

This Indian Standard has been developed from Doc No.: CHD 10 (2041).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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