BRITISH STANDARD

BS 5922:1980
ISO 4799:1978

Specification for

Glass condensers for laboratory use

[ISO title: Laboratory glassware — Condensers]

UDC 542.231:542.482.8:666.172.7

Cooperating organizations

The Laboratory Apparatus Standards Committee, under whose direction this British Standard was prepared, consists of representatives from the following Government departments and scientific and industrial organizations:

Agricultural Research Council
Association for Science Education
British Educational Equipment Association
British Laboratory Ware Association*
British Lampblown Scientific Glassware Manufacturers' Association Ltd*
British Pharmacopoeia Commission
Chemical Industries Association
Chemical Society
Chemical Society, Analytical Division*
Department of Health and Social Security*
Department of Industry (Laboratory of the Government Chemist)*
Glass Manufacturers' Federation*
Institute of Petroleum
Ministry of Defence
Pharmaceutical Society of Great Britain
Scientific Instrument Manufacturers' Association
Society of Chemical Industry
Society of Glass Technology*
Standardization of Tar Products Tests Committee

The organizations marked with an asterisk in the above list, together with the following, were directly represented on the committee entrusted with the preparation of this British Standard:

Institute of Medical Laboratory Sciences

This British Standard, having been prepared under the direction of the Laboratory Apparatus Standards Committee, was published under the authority of the Executive Board and comes into effect on 31 March 1980

The following BSI references relate to the work on this standard:
Committee reference LBC/25
Draft for comment 73/50397 DC

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Amendments issued since publication

Amd. No.	Date of issue	Comments

Contents

National foreword

This British Standard is identical with ISO 4799:1978 "*Laboratory glassware — Condensers*" published by the International Organization for Standardization (ISO). It supersedes BS 1848:1952 "*Glass condensers*" and BS 3787:1964 "*Glass condensers with standard joints*" both of which are now withdrawn.

BS 1848 was prepared as a British Standard for condensers without standard joints, and followed closely a selection made by the British Laboratory Ware Association of types that had been found to be satisfactory. BS 3787 was prepared to provide for glass condensers in general use in laboratories, and reference was made to BS 1848, although the range was smaller, because at that time there was insufficient demand for some of the condensers fitted with standard joints to justify inclusion in the British Standard.

BS 1848 and BS 3787 both included requirements for an air condenser, but these have been omitted from the present revision on the grounds that, consisting as it does of little more than a straight glass tube, the condenser is of such simple design that standardization in unnecessary.

In this standard the requirements for the Liebig condenser have been replaced by those for the West condenser, although the name "Liebig" is given as an alternative, because this general form of condenser is still known by the traditional name of "Liebig". The classical Liebig condenser with the wide water jacket is now regarded as largely obsolete. The Davies (double surface) condenser has also been omitted.

As in BS 1848 and BS 3787, the dimensions included in this British Standard are not mandatory and are recommended for the guidance of the manufacturer.

Terminology and conventions. The text of the International Standard has been approved as suitable for publication, without deviation, as a British Standard. Some terminology and certain conventions are not identical with those used in British Standards; attention is especially drawn to the following.

The comma has been used in **8.3** as a decimal marker. In British Standards it is current practice to use a full point on the baseline as the decimal marker.

Wherever the words "International Standard" appear, referring to this standard, they should be read as "British Standard".

Related British Standards for ISO 383 and ISO 641 are BS 572 (with Amendment PD 4491) and BS 2761 respectively.

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.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 6, 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 and field of application

This International Standard specifies details for an internationally acceptable series of glass condensers suitable for general use in laboratories.

2 References

ISO 383, *Laboratory glassware — Interchangeable conical ground joints.*

ISO 641, *Laboratory glassware — Interchangeable spherical ground joints.*

3 Definition

For the purposes of this International Standard, the following definition applies:

condenser

a piece of laboratory apparatus designed for the exchange of heat between two fluids

it is used for condensing vapours or for cooling or heating a liquid

4 Classification and types

Five types of condenser, of three classes, according to design and the relative position of the cooling medium, are specified, with the nominal jacket lengths shown:

— **water jacketed condensers:**

a) Liebig–West condenser (see **8.1**), 100 – 160 – 250 – 400 – 630 and 1 000 mm;

b) Allihn condenser (see **8.2**), 160 – 250 – 400 and 630 mm;

c) coiled distillate condenser (see **8.3**), 160 – 250 – 400 and 630 mm;

— **coolant-tube condensers:**

d) Graham condenser (see **8.4**), 160 – 250 and 400 mm;

— **double-action condensers:**

e) jacketed coil condenser (see **8.5**), 160 – 250 and 400 mm.

5 Material

Condensers shall be constructed of clear glass of suitable chemical and thermal properties.

Internal stress and visible defects in the glass shall be reduced to a level sufficient to minimize the possibility of fracture due to thermal or mechanical shock.

6 Construction

6.1 The extremities may be plain (see **6.4**) or fitted with conical or spherical interchangeable ground glass joints (see **6.3**).

6.2 Water connections, for example olives, should preferably face towards the same side of the condenser, except in the case of type e) condensers, where this configuration may cause an increased risk of fracture.

6.3 Ground glass joints

6.3.1 Conical ground glass joints shall comply with the requirements of ISO 383, the sizes being chosen from the *k*6 series.

6.3.2 Spherical ground glass joints shall comply with the requirements of ISO 641.

6.4 The wide end of plain-end condensers shall be fire-polished, and the stem shall be either ground or fire-polished.

6.5 The drip tip at the lower end of the condenser shall be cut off at an angle of not less than 30° to the plane of right angles to the longitudinal axis of the condenser.

7 Inscriptions

The following inscriptions shall be permanently marked on all condensers:

— the nominal (jacket) length;

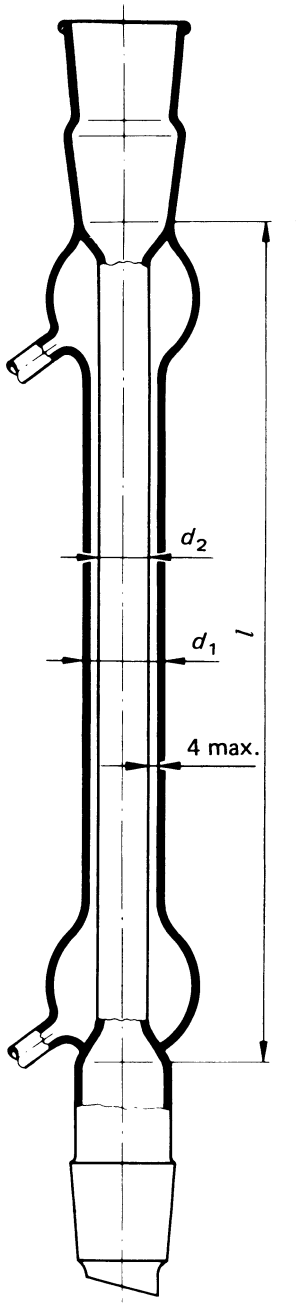
— the maker's or vendor's name or mark;

— the size of any ground joints.

8 Design and dimensions

Typical condenser designs and essential dimensions are indicated in **8.1** to **8.5**.

8.1 Liebig-West condenser



Dimensions in millimetres

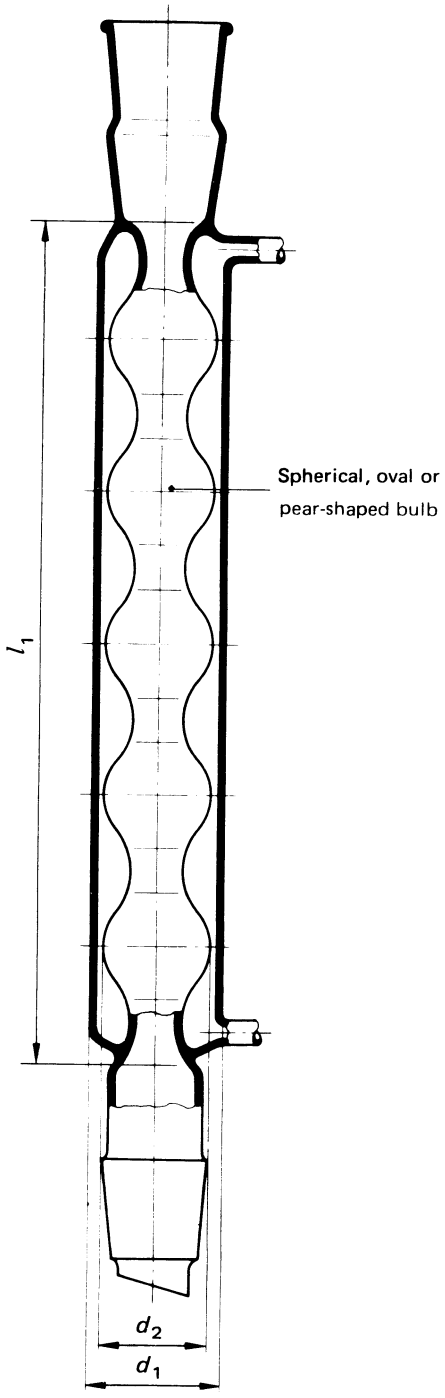
l	d_1 min.	d_2 min.
100	15	9
160	20	12
250 **400** **630** **1 000**	24	16

NOTE In the case of condensers not provided with conical ground joints, the wide end and the stem shall have the following dimensions:

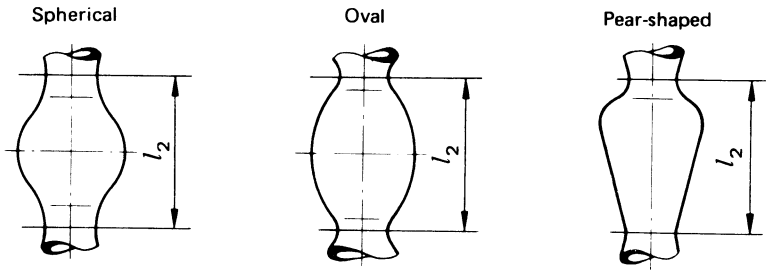
— wide end : length 75
diameter 22

— stem : length 115
diameter 13

8.2 Allihn condenser



Shapes of enlargement



Dimensions in millimetres

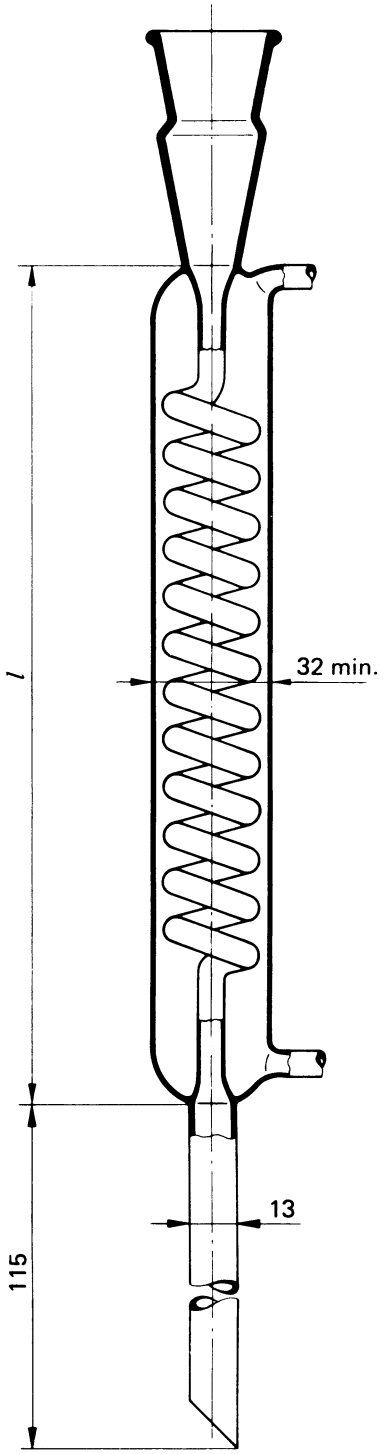
l_1	l_2 min.	d_1 min.	d_2 min.
160	25	29	21
250 **400** **630**	40	32	25

NOTE In the case of condensers not provided with conical ground joints, the wide end and the stem shall have the following dimensions:

— wide end : length 75
diameter 22

— stem : length 115
diameter 13

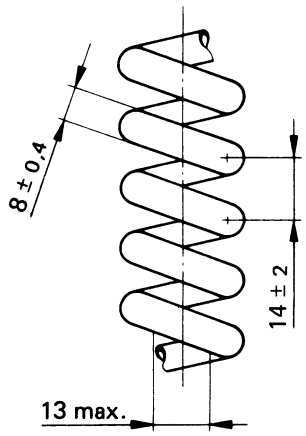
8.3 Coiled distillate condenser with socket only



Dimensions in millimetres

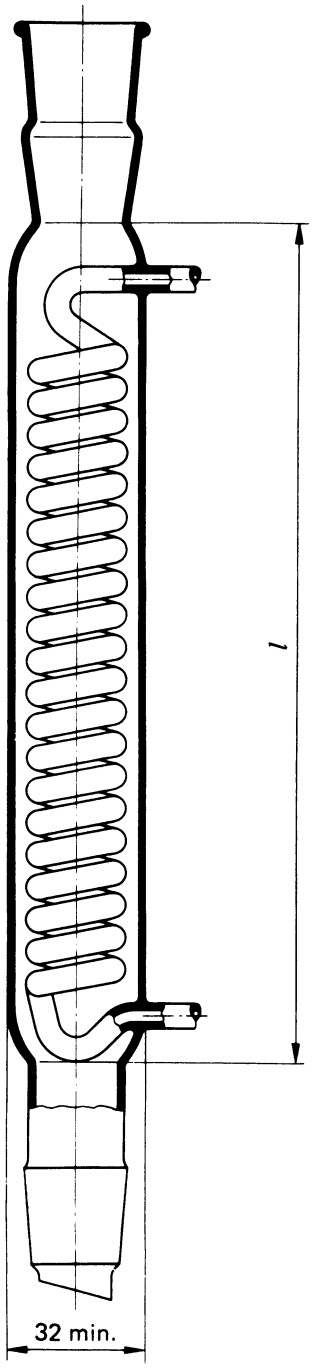
l	**160**	**250**	**400**	**630**
Minimum number of turns in coil	10	16	25	40

NOTE If the condenser is provided with a cone, this shall be selected from the *k*6 series of ISO 383.



Coil dimensions

8.4 Graham condenser

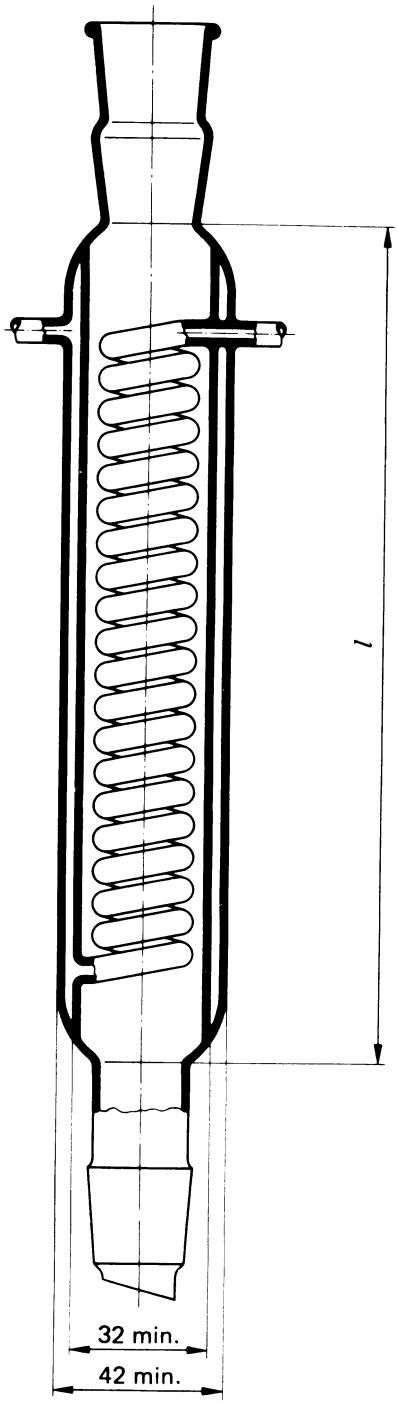


Dimensions in millimetres

l	**160**	**250**	**400**
Minimum number of turns in coil	10	16	25

For coil dimensions, see **8.3**.

8.5 Jacketed coil condenser with cone and socket



Dimensions in millimetres

l	**160**	**250**	**400**
Minimum number of turns in coil	8	14	23

For coil dimensions, see **8.3**.

Alternative design of the lower part of the coolant tube

Publications referred to

See national foreword.

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