

INTERNATIONAL STANDARD

**ISO
4142**

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Laboratory glassware — Test tubes and culture tubes

Verrerie de laboratoire — Tubes à essais et tubes à culture

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ISO 4142:1997(E)

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.

International Standard ISO 4142 was 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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Laboratory glassware — Test tubes and culture tubes

1 Scope

This International Standard specifies requirements and dimensions for reusable and disposable test tubes and culture tubes suitable for general laboratory purposes.

NOTE 1: Annex A lists additional International Standards for other general purpose laboratory glassware.

2 Normative references

The following standards contain provisions which, through references 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 Definitions

For the purposes of this International Standard, the following definitions apply.

3.1 reusable: Adjective used to describe test tubes and culture tubes which are intended to be cleaned after use and used again.

3.2 disposable: Adjective used to describe test tubes and culture tubes which are intended to be used once only and then discarded.

NOTE 2: Such tubes will only be expected to provide their specified performance during the original operation.

4 Material

4.1 Unless otherwise specified, the glass, when tested according to the procedure and classification given in ISO 719, shall comply with the requirements of class HGB3 or better.

It shall be free from visible defects and shall be free from internal stress which would impair the performance of the tubes.

4.2 At the manufacturer's discretion, test tubes may be manufactured from borosilicate glass 3.3 in accordance with ISO 3585.

4.3 The tubes shall be clean, dry and reasonably free from foreign materials, loose or embedded, lint or stains when viewed under normal room lighting with the unaided eye.

5 Construction

5.1 The cross-section of the tubes shall preferably be circular.

5.2 The top or open end of the tubes shall be smoothly finished at right angles to the tube, either with a rim or with a plain fire-polished end.

5.3 The bottom of the tubes shall be essentially hemispherical. The maximum deviation from hemispherical shall not exceed 18 % of the outside diameter. The wall thickness at the bottom shall be at least 66,7 %, but not more than 166,7 %, of the average side wall thickness.

6 Dimensions

6.1 Two series of tubes are provided, the dimensions of which shall be as shown in table 1. Intermediate sizes may be included in national standards.

Table 1 - Diameters and lengths of tubes

Dimensions in millimetres

Nominal size	External diameter	Length
	$\pm 0,5$	± 4
10 x 75	10	75
12 x 75	12	75
16 x 100	16	100
16 x 125	16	125
18 x 150	18	150
20 x 150	20	150
24 x 150	24	150
25 x 150	25	150 ¹⁾
6 x 50	6	50
10 x 100	10	100
12 x 100	12	100
16 x 150	16	150
20 x 180	20	180
20 x 200	20	200

¹⁾ Not from borosilicate glass 3.3.

6.2 The wall thickness of tubes not made from borosilicate glass are at the manufacturer's discretion. The wall thickness of test tubes made from borosilicate glass 3.3 shall comply with the requirements of ISO 4803.

7 Packaging

The inner and outer packaging container and/or material shall not contribute to any contamination of the tubes during storage or transport.

8 Marking and designation

Each inner carton and outer shipping container shall be clearly marked with the following information:

- a) manufacturer's name and/or vendor's private label name and registered trademark;
- b) product designation, e.g. Test tubes, 16 x 150, soda-lime glass;
- c) the number of tubes in the inner or outer package, as applicable.

The following are optional:

- the number of this International Standard;
- if compliance with this International Standard is claimed, the actual wall thickness of the tubes.

Example:

Test tubes ISO 4142, 20 x 180 - 1,8, borosilicate glass.

Annex A
(informative)

Bibliography

ISO 383:1976	Laboratory glassware - Interchangeable conical ground joints
ISO 384:1978	Laboratory glassware - Principles of design and construction of volumetric glassware
ISO 641:1975	Laboratory glassware - Interchangeable spherical ground joints
ISO 1773:1996	Laboratory glassware - Narrow-necked boiling flasks
ISO 3819:1985	Laboratory glassware - Beakers
ISO 4785:1996	Laboratory glassware - General purpose glass stopcocks
ISO 4796:1977	Laboratory glassware - Bottles
ISO 4797:1981	Laboratory glassware - Flasks with conical ground joints
ISO 4798:1996	Laboratory glassware - Filter funnels
ISO 4799:1978	Laboratory glassware - Condensers
ISO 4800:1977	Laboratory glassware - Separating funnels and dropping funnels
ISO 6556:1981	Laboratory glassware - Filter flasks