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Specification for

One-mark pipettes

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The preparation of this British Standard was entrusted by the Laboratory Apparatus Standards Committee (LBC/-) to Technical Committee LBC/27 upon which the following bodies were represented:

- Association of Clinical Biochemists
- British Laboratory Ware Association
- British Lampblown Scientific Glassware Manufacturers' Association Ltd.
- Department of Health and Social Security
- Department of Trade and Industry (Laboratory of the Government Chemist)
- Department of Trade and Industry (National Weights and Measures Laboratory)
- Glass Manufacturers' Federation
- Institute of Medical Laboratory Sciences
- Medical Sterile Products Association
- Ministry of Defence
- Society of Chemical Industry

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Foreword

This revision of this British Standard has been prepared under the direction of the Laboratory Apparatus Standards Committee. It supersedes the 1961 edition, which is withdrawn, and its main aim is to bring the requirements into line with international agreements (see under “Correspondence with international standards”).

The main changes from the previous edition are:

- a) deletion of the 3 mL, 4 mL and 15 mL sizes;
- b) slight relaxation of the permissible limits of volumetric error for the class A 1 mL pipette and for the class A and class B 50 mL, 100 mL and 200 mL pipettes;
- c) modification of certain of the dimensional requirements, in particular to delete specification of the lengths of the tapered portions forming the jets and of the external diameters of the jets, and to include dimensions related to safety bulbs (if fitted);
- d) general increases in the permissible minimum and maximum delivery times.

Correspondence with international standards. This British Standard is related to ISO 648, “*Laboratory glassware — One-mark pipettes*”, differing from its technical requirements in only two respects, as follows:

- a) the pipettes with specified waiting times are excluded;
- b) the subjective requirements for the material of construction have been replaced by an objective requirement (compliance with class 3 of BS 3473-2) and a note.

Purchasers ordering to this standard are advised to specify in their purchasing contract that the supplier operate a quality system in compliance with BS 5750-3 to ensure to their satisfaction that products claimed to comply with BS 1583 consistently achieve the required level of quality.

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 8, 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

This British Standard specifies requirements for the volumetric accuracy, capacities and construction of a range of one-mark pipettes, suitable for general laboratory use.

NOTE 1 The pipettes specified in this standard correspond (but see foreword) with those specified in ISO 648 and are acceptable internationally.

Two classes of accuracy are specified.

The requirements specified in this standard are in accordance with the principles of BS 5898.

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

2 Definitions

For the purposes of this British Standard the following definitions apply.

2.1 standard reference temperature

the temperature at which the one-mark pipette is intended to deliver its nominal volume (nominal capacity)

2.2 delivered capacity

the volume in millilitres, of water, at the standard reference temperature delivered by the one-mark pipette, when determined in accordance with BS 6696¹⁾, supplemented by the information in Appendix A

2.3 delivery time

the time occupied by the descent of the water meniscus from the graduation line to the point at which it appears to come to rest in the jet

3 Basis of adjustment

3.1 Unit of volume

The unit of volume shall be either the millilitre or the cubic centimetre.

NOTE The millilitre is commonly used as a special name for the cubic centimetre, in accordance with the International System of units (SI).

3.2 Reference temperature

The standard reference temperature shall be 20 °C, except when the one-mark pipette is required for use in a country that has adopted a standard reference temperature of 27 °C, in which case 27 °C shall be the standard reference temperature.

NOTE 27 °C is the alternative standard reference temperature recommended in BS 5898 for tropical use.

4 Volumetric accuracy

There shall be two classes of accuracy:

- class A for higher grade one-mark pipettes;
- class B for lower grade one-mark pipettes.

5 Series of capacities

The series of capacities of one-mark pipettes shall be as follows:

0.5, 1, 2, 5, 10, 20, 25, 50, 100 and 200 mL.

NOTE Capacities other than those specified are outside the scope of this standard. It is recommended that if pipettes of other capacities are required they be in accordance with clauses 6 to 8. However, it should be noted that compliance with this standard cannot be claimed for such pipettes.

6 Limits of volumetric error

Errors in the delivered capacity, when determined in accordance with BS 6696¹⁾, supplemented by Appendix A, shall not exceed the limits shown in Table 1.

NOTE 1 The relationship between limits of error and capacity for class A one-mark pipettes is given in Appendix B.

NOTE 2 The relationship between limits of error and the meniscus diameter for class A burettes is given in Appendix C.

Table 1 — Limits of error of delivered capacity

Nominal capacity	Limit of error	
	Class A	Class B
mL	mL	mL
0.5	± 0.005	± 0.01
1	± 0.008	± 0.015
2	± 0.01	± 0.02
5	± 0.015	± 0.03
10	± 0.02	± 0.04
20	± 0.03	± 0.06
25	± 0.03	± 0.06
50	± 0.05	± 0.1
100	± 0.08	± 0.15
200	± 0.1	± 0.2

7 Construction

7.1 Material

One-mark pipettes shall be manufactured from soda-lime-silica, neutral or borosilicate glass complying with the requirements of BS 3473-2, class 3 or better.

NOTE The pipettes should be as free as possible from visible defects and be reasonably free from internal stress.

7.2 Shape

Pipettes of 0.5 mL capacity shall consist of a straight tube with a jet at the lower end.

¹⁾ In preparation.