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## Laboratory glassware — Single-volume pipettes

*Verrerie de laboratoire — Pipettes à un volume*



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## 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.

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The main task of technical committees is to prepare International Standards. 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 648 was prepared by Technical Committee ISO/TC 48, *Laboratory equipment*, Subcommittee SC 6, *Laboratory and volumetric ware*.

This second edition cancels and replaces the first edition (ISO 648:1977), which has been technically revised to incorporate the following modifications:

- a) single-volume pipettes with two marks have been added;
- b) the waiting time for pipettes Class AS has been reduced to 5 s;
- c) dimensions have been modified;
- d) the nominal volume of 200 ml has been deleted.

# Laboratory glassware — Single-volume pipettes

## 1 Scope

This International Standard specifies metrological and constructional requirements for volumetric pipettes with one mark (total delivery) and for volumetric pipettes with two marks, both of which are adequate for general laboratory purposes.

The details specified are in conformity with the principles of design and construction of volumetric glassware given in ISO 384.

NOTE For graduated pipettes, see ISO 835. For piston-operated pipettes, see ISO 8655-2.

## 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 384:1978, *Laboratory glassware — Principles of design and construction of volumetric glassware*

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

ISO 1769, *Laboratory glassware — Pipettes — Colour coding*

ISO 3696, *Water for analytical laboratory use — Specification and test methods*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

### 3.1

#### **delivery volume**

volume of liquid discharged from the pipette

NOTE Due to retention of liquid on the inner surface of the volumetric instrument, the volume of liquid delivered is not identical with the volume of liquid contained by the volumetric instrument.

### 3.2

#### **delivery time**

time required for the descent of the liquid meniscus from the graduation line to the point at which the meniscus appears to come to rest in the jet for one-mark pipettes and from the upper graduation line to the lower graduation line for two-mark pipettes

### 3.3

#### **waiting time**

time to be observed after apparent completion of the liquid delivery of the volumetric instrument

NOTE A waiting time applies for Class AS single-volume pipettes (see Clause 5 and 7.8).