



INTERNATIONAL STANDARD ISO 386-1977 (E)/ERRATUM

Published 1978-08-01

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Liquid-in-glass laboratory thermometers — Principles of design, construction and use

ERRATUM

Page 2

In sub-clause 8.3, replace the first line by the following :

“For solid-stem thermometers, the stem may incorporate”

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386

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Liquid-in-glass laboratory thermometers — Principles of design, construction and use

Thermomètres de laboratoire à dilatation de liquide dans une gaine de verre — Principes de conception, de construction et d'utilisation

First edition — 1977-12-01

UDC 536.513

Ref. No. ISO 386-1977 (E)

Descriptors: laboratory equipment, laboratory glassware, temperature measuring instruments, thermometers, specifications, equipment specifications, utilization.

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 386 was developed by Technical Committee ISO/TC 48, *Laboratory glassware and related apparatus*, and was circulated to the member bodies in May 1976.

It has been approved by the member bodies of the following countries :

Australia	Ireland	Romania
Austria	Israel	South Africa, Rep. of
Belgium	Italy	Spain
Canada	Korea, Rep. of	Turkey
Chile	Mexico	United Kingdom
France	Netherlands	U.S.A.
Germany	Philippines	U.S.S.R.
Hungary	Poland	

The member body of the following country expressed disapproval of the document on technical grounds :

Czechoslovakia

This International Standard cancels and replaces ISO Recommendation R 386-1964, of which it constitutes a technical revision.

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Liquid-in-glass laboratory thermometers – Principles of design, construction and use

1 SCOPE AND FIELD OF APPLICATION

This International Standard sets out principles for the design, construction and use of liquid-in-glass laboratory thermometers.

Each thermometer consists of a glass bulb filled with liquid and connected with a glass capillary tube. A scale is associated with the tube in such a way that the temperature can be read from the position of the liquid surface in the tube.

2 TYPES OF THERMOMETER

Two types of liquid-in-glass thermometer are described :

2.1 Solid-stem thermometer

Thermometer having a thick-walled capillary stem, on which the scale is etched or marked.

2.2 Enclosed-scale thermometer

Thermometer having a capillary stem adjacent to a separate strip bearing the scale, both being enclosed in a protective sheath. There are other types of thermometer with separate but external scales; these however do not fall within the scope of this International Standard.

3 TEMPERATURE SCALE

The thermometers shall be graduated in accordance with the Celsius scale as defined in the current definition of the International Practical Temperature Scale (IPTS) adopted by the Conférence générale des poids et mesures, and in accordance with the International System of Units (SI).

4 CONDITIONS OF IMMERSION

In measuring the temperature of a medium by means of

liquid-in-glass thermometers, the following methods are used.

4.1 Partial immersion

4.1.1 The thermometer is immersed to a prescribed depth in the medium so that not all the liquid column is immersed in the medium.

4.1.2 The emergent liquid column is that in the part of the capillary tube which is filled with liquid but not immersed in the medium.

4.1.3 The adopted value of the mean temperature of the emergent liquid column shall be specified to provide reference for graduation, calibration and use of the thermometer. Either this temperature may be the same for all scale readings, or different temperatures may be specified applicable to different points of the scale.

4.2 Total column immersion (total immersion)

The entire liquid column is immersed in the medium so that the top of the liquid column is in the same plane as the surface of the medium. (For practical considerations, see annex B, clause B.2.)

4.3 Complete immersion

The entire thermometer is immersed in the medium.

5 GLASS

The thermometer shall be made of suitable thermometric glass selected and processed so that the finished thermometer shows the following characteristics.

5.1 Stress in the glass of the bulb, capillary stem and, where appropriate, the protective sheath shall be reduced to a level sufficient to minimize the possibility of fracture due to thermal or mechanical shock.