

Specification for

**Sub-normal range,
ovulation and
dual-scale clinical
maximum
thermometers
(mercury-in-glass, solid
stem)**

ICS 11.040.50

Committees responsible for this British Standard

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- British Laboratory Ware Association
- British Lampblown Scientific Glassware Manufacturers Association Ltd
- British Medical Association
- Department of Health and Social Security
- Department of Trade and Industry, National Physical Laboratory
- Institute of Petroleum
- Medical Sterile Products Association
- Ministry of Defence

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Foreword

This British Standard has been prepared under the direction of the Laboratory Apparatus Standards Committee and supersedes BS 691:1979 which is withdrawn. It was first published in 1936, and was intended to specify requirements for a first grade clinical thermometer for general use. Experience showed, however, that certain of the provisions regarding dimensions and markings were too restrictive to be generally acceptable, although the specification undoubtedly played an important part in improving the quality of clinical thermometers generally.

A revised edition was issued in 1953 containing a simplified specification while at the same time retaining sufficient dimensional and other provisions to ensure a good quality instrument. Three types of cylindrical bulbs were specified, the thermometers being designated “quick”, “medium” and “stubby” respectively.

Another revision was issued in 1961 in which the requirements were further simplified and the less essential ones were recommended for the guidance of manufacturers instead of being mandatory. The “medium” type of bulb was omitted as being no longer required, and the term “long” was preferred for the “quick” type, in keeping with the policy of avoiding any designation relating to measuring period (see below). A “pear-shaped” bulb was also included, this being mainly for rectal use.

Another revision was issued in 1966 in which the “pear-shaped” bulb thermometer was omitted owing to lack of demand, leaving only two types of bulb for ordinary range thermometers, namely the “long” and “stubby” types, the latter being suitable for both oral and rectal use. For rectal applications a bulb of blue glass was specified.

A subnormal range thermometer was added to this edition to cover the medical requirements associated with cases of accidental hypothermia. The British Medical Association recommended the inclusion of this type of thermometer and a specification was evolved as a result of consultation with that association and the thermometer manufacturers. Only the “stubby” type of bulb was specified for the subnormal range thermometer.

A further change in that revision was that the “lens-front” stem was specified, for ease of reading, and for the same reason the wording of the clause that specified graduation and the figuring was modified to ensure that the scale lines, the numbers, and the magnified image of the mercury column were all readily visible at the same time. Considerable attention was given to the test for the permanence of pigment, in view of the many different sterilizing solutions used in hospitals for disinfecting and storing thermometers. The phenol solution which was specified, while unlikely to be used for this purpose in practice, was shown to provide a rapid test which indicated satisfactorily the performance of the markings under most conditions of use.

Amendments to the 1966 edition were issued in 1967, 1968, 1973 and 1974.

With the publication by the International Organization of Legal Metrology (OIML) of International Recommendation No. 7 and its subsequent implementation in an EEC Directive relating to clinical maximum thermometers (76/764/EEC)¹⁾ it was decided to align BS 691 with that Directive, and a revision to that effect dividing the specification into the following three sections, was published in 1979.

- Section 1: Thermometers for general use;
- Section 2: Subnormal range thermometers;
- Section 3: Ovulation thermometers.

¹⁾ Council Directive of 27 July 1976 on the approximation of the laws of the Member States on clinical mercury-in-glass maximum reading thermometers, which was repealed by Council Directive 93/42/EEC of 14 June 1993 concerning medical devices.

Technical differences between the 1966 and 1979 editions included the addition of the ovulation thermometers, an increase in the recommended overall length from 100 mm to 110 mm, the addition of a requirement for the response interval, a tightening of the accuracy requirements, and withdrawal of thermometers with Fahrenheit scales.

The 1987 edition reflected the continuous demand for clinical thermometers graduated also with the Fahrenheit scale. This edition introduces a dual-scale (Celsius and Fahrenheit) thermometer deemed not to conflict with the Council Directive 93/42/EEC of 14 June 1993.

The EEC Directive gives requirements for solid-stem and enclosed-scale types of clinical maximum reading thermometers. Requirements for the solid-stem type of clinical maximum reading thermometers, excluding the normal thermometer for general use, are given in this British Standard as amended by Amendment No. 2. Requirements for normal thermometers for general use are given in BS EN 12470-1. Requirements for the enclosed-scale clinical maximum reading thermometers are the subject of BS 6985.

Measuring period. The term “½ min” or “1 min” are sometimes used to distinguish the different sizes of bulbs of clinical thermometers not made in accordance with this British Standard. Experience has shown that these terms bear no relation to the actual time required for the thermometer to take up the deep body temperature; this time depends on the physical condition of the patient, the skill with which the thermometer is placed in position, the initial temperature of the thermometer and other factors.

For this reason, no “measuring period” indication is permitted on British Standard clinical thermometers. To avoid possible misunderstanding on this point, it is specified that a printed slip which includes the explanatory wording given in clause 13 shall accompany every British Standard clinical thermometer (except those supplied in bulk to hospitals and similar institutions).

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.

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Summary of pages

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