

In vitro diagnostic medical devices — Measurement of quantities in samples of biological origin — Presentation of reference measurement procedures

The European Standard EN 12286:1998, with the incorporation of amendment A1:2000 has the status of a British Standard

ICS 11.100

National foreword

This British Standard is the English language version of EN 12286:1998, including amendment A1:2000.

The UK participation in its preparation was entrusted to Technical Committee CH/69, In vitro diagnostic systems, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this committee can be obtained on request to its secretary.

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue.

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, the EN title page, pages 2 to 14, an inside back cover and a back cover.

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English version

In vitro diagnostic medical devices — Measurement of quantities in samples of biological origin — Presentation of reference measurement procedures

(includes amendment A1:2000)

Dispositifs médicaux de diagnostic in vitro —
Mesure des grandeurs dans des échantillons
d'origine biologique — Présentation des modes
opératoires de mesure de référence
(inclut l'amendement A1:2000)

In-Vitro-Diagnostika — Messung von Größen in
Proben biologischen Ursprungs — Darstellung von
Referenzmeßverfahren
(enthält Änderung A1:2000)

This European Standard was approved by CEN on 14 October 1998. Amendment A1 was approved by CEN on 9 April 2000.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 140, In vitro diagnostic medical devices, the Secretariat of which is held by DIN.

The International Federation of Clinical Chemistry and Laboratory Medicine (IFCC) and the European Confederation of Laboratory Medicine (ECLM) have contributed to its preparation.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 1999, and conflicting national standards shall be withdrawn at the latest by May 1999.

This European Standard is based on ISO/DIS 78-2 with special consideration of the requirements for biological materials and for reference measurement procedures. prEN 12287 *In vitro diagnostic medical devices — Measurement of quantities in samples of biological origin — Description of reference materials* specifies requirements of importance to the calibration and quality assurance of reference measurement procedures.

Annexes A and B are for information only.
According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Foreword to amendment A1

This amendment EN 12286:1998/A1:2000 to the EN 12286:1998 has been prepared by Technical Committee CEN/TC 140, In vitro diagnostic medical devices, the Secretariat of which is held by DIN.

This amendment to the European Standard EN 12286:1998 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by November 2000, and conflicting national standards shall be withdrawn at the latest by November 2000.

This amendment to the European Standard EN 12286:1998 has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative annex ZA, which is an integral part of this standard.
According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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Introduction

Reference measurement systems are needed for producing useful and reliable results of measurement, whether in science, technology, or routine service so as to be comparable and ultimately traceable to measurement standards of the highest metrological level. Analytical reference measurement procedures play a crucial role in this metrological system because they can be used

- in assessing performance characteristics of measuring systems — comprising measuring instruments, auxiliary equipment as well as reagents;
- in demonstrating the functional interchangeability of different routine measurement procedures purporting to measure the same quantity;
- in assigning values to reference materials that are then used for purposes of calibration or control of routine measurement procedures; and
- in detecting analytical influence quantities in patient samples.

For clinical laboratory measurements, in particular, it is vitally important to acute and continuous patient care that the results reported to the physicians and patients are adequately comparable, reproducible, and accurate. In some cases, a reference measurement procedure should be given in the form of a (written) standard, namely when it is related to technical requirements

- specified in standards, technical specifications, or technical regulations, etc.;
- for which values are to be stated by the supplier;
- that have a direct relationship to the performance of a product or process.

The advantages of having such a standard are listed in the ISO/IEC Guide 15.

1 Scope

This European Standard specifies requirements for the drafting of a reference measurement procedure.

NOTE It is intended that an experienced laboratory worker, following a measurement procedure written in accordance with this European Standard can be expected to produce results with an uncertainty of measurement not exceeding the stipulated range.

This European Standard is applicable to any person, body, or institution, involved in one of the various branches of laboratory medicine, intending to write a document to serve as a reference measurement procedure.

2 Normative references

This European Standard incorporates by dated or undated reference provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to, or revisions of, any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN ISO 3696, *Water for analytical laboratory use — Specification and test methods*.
(ISO 3696:1987)

ISO 6353-2, *Reagents for chemical analysis — Part 2: Specifications — First series*.

ISO 6353-3, *Reagents for chemical analysis — Part 3: Specifications — Second series*.

ISO/IEC Directives — *Part 2:1992 Methodology for the development of International Standards*.

International vocabulary of basic and general terms in metrology (VIM), 2nd edition, Geneva: ISO, 1993¹⁾²⁾

Guide to the expression of uncertainty in measurement, 1st edition, Geneva: ISO, 1993¹⁾

3 Definitions

For the purposes of this European Standard, the definitions given in *International Vocabulary of Basic and General Terms in Metrology* and in *Guide to the Expression of Uncertainty in Measurement* apply together with the following:

3.1

primary sample

collection of one or more parts initially taken from a system and intended to provide information about the system or to serve as a basis for a decision about the system

NOTE In some cases, the information provided also applies to a larger system or a set of systems of which the sampled system is an element.

3.2

laboratory sample

primary sample or a subsample of it as prepared for sending to or as received by the laboratory and intended for measurement

¹⁾ This document has been prepared by a joint working group consisting of experts appointed by:

BIPM	International Bureau of Weights and Measures
IEC	International Electrotechnical Commission
IFCC	International Federation of Clinical Chemistry and Laboratory Medicine
ISO	International Organization for Standardization
IUPAC	International Union of Pure and Applied Chemistry
IUPAP	International Union of Pure and Applied Physics
OIML	International Organization of Legal Metrology

²⁾ The abbreviation VIM is used in this standard.

3.3

analytical sample

sample prepared from the laboratory sample and from which analytical portions may be taken

NOTE The analytical sample can be subjected to various treatments before an analytical portion is taken.

3.4

analytical portion

portion of material taken from the analytical sample and on which the measurement or observation is actually carried out

NOTE The analytical portion is taken directly from the primary sample or laboratory sample if no preparation of these is required. The analytical portion sometimes is dissolved to give an analytical solution before being exposed to the measuring device.

3.5

analytical solution

solution prepared by dissolving, with or without reaction, an analytical portion in a gas, liquid, or solid

3.6

matrix (of a material system)

all components of a material system, except the analyte

3.7

reference measurement procedure

thoroughly investigated measurement procedure shown to yield values having an uncertainty of measurement commensurate with its intended use, especially in assessing the trueness of other measurement procedures for the same quantity and in characterizing reference materials

3.8

analytical specificity

ability of a measurement procedure to determine solely the measurable quantity it purports to measure

3.9

analytical interference

systematic error of measurement caused by an influence quantity which does not by itself produce a signal in the measuring system, but which causes an enhancement or depression of the value indicated

3.10

influence quantity

quantity that is not the measurand but that affects the result of the measurement [2.7 of VIM]

3.11

measurand

particular quantity subject to measurement [2.6 of VIM]

4 Presentation of a reference measurement procedure

4.1 Elements of a written reference measurement procedure

The presentation of a reference measurement procedure shall comprise at least the elements listed as mandatory (M) in Table 1. The order of the elements listed in Table 1 may be changed and additional elements, such as an abstract, etc. may be added as appropriate.

4.2 Warning and safety precautions

4.2.1 Attention shall be drawn to any danger associated with a type of sample, reagent, equipment or activity, and all necessary precautions shall be described, including precautions for disposal. Regional, national, and local legislation and regulations may apply.

4.2.2 This information shall be printed in capital letters or in bold type as follows:

- a) immediately after the title of the European Standard if the danger to be encountered is due to the product being analysed, e.g. native material of biological origin;
- b) in the description of the reagents, after the name of the reagent or material if the danger to be encountered is due to a particular reagent or material, e.g. a carcinogen, a radioactive material;
- c) as a cautionary statement in the first clause of the practical reference measurement procedure, e.g. for a measurement using flammable gas.

Warning notes and safety precautions shall be unnumbered.

NOTE The source text presenting the dangers to health should be quoted where appropriate.

4.3 Introduction

The introduction shall comprise the following items, as appropriate, in any order:

- a) the nature of the quantity measured by the reference measurement procedure in terms of system, component, and kind of quantity;
- b) a brief statement of its role in health care, if appropriate;
- c) method of measurement and rationale for its choice;
- d) place in a hierarchy of measurement procedures and traceability;