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BSI Standards Publication

Temperature recorders and thermometers for measuring the ambient or internal temperature for the transport, storage and distribution of temperature sensitive goods — Periodic verification

bsi.

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National foreword

This British Standard is the UK implementation of EN 13486:2023. It supersedes BS EN 13486:2002, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee RHE/19, Commercial refrigerated food cabinets (cold room and display cases).

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

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EUROPEAN STANDARD **EN 13486**

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2023

ICS 17.200.20; 67.260

Supersedes EN 13486:2001

English Version

Temperature recorders and thermometers for measuring the ambient or internal temperature for the transport, storage and distribution of temperature sensitive goods - Periodic verification

Enregistreurs de température et thermomètres de mesure de la température ambiante ou interne pour le transport, le stockage et la distribution des marchandises thermosensibles - Vérification périodique

Temperaturregistriergeräte und Thermometer zur Messung der Umgebungs- und Innentemperatur für den Transport, die Lagerung und die Verteilung von temperaturempfindlichen Produkten - Regelmäßige Prüfungen

This European Standard was approved by CEN on 20 November 2023.

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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

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Contents

Page

European foreword ... 3

1 Scope ... 4

2 Normative references ... 4

3 Terms, definitions and abbreviations ... 4
3.1 Terms and definitions ... 4
3.2 Abbreviations ... 5

4 Frequency and kind of verification ... 5

5 Method of verification of temperature measurement ... 7
5.1 General ... 7
5.2 Environmental conditions ... 7
5.3 Working standard ... 7
5.4 Additional equipment ... 7
5.5 Procedure ... 7
5.5.1 General ... 7
5.5.2 Preliminary operations ... 7
5.5.3 Verification measurement(s) ... 8
5.6 Condition of acceptance ... 9

6 Method of verification of duration of temperature recordings ... 9
6.1 General ... 9
6.2 Verification of recording duration by making a test recording ... 10
6.3 Verification of recording duration by other means ... 11
6.4 Conditions of acceptance of duration ... 11

7 Functional test for recorders with cloud Solution as a Service (SaaS) approach regarding storage and display ... 11

8 Expression of results ... 11

Annex A (informative) **Example of verification report** ... 12

Annex B (informative) **Life cycle sheet** ... 14

Annex C (informative) **Guidance to determine accordance with this document** ... 15

Annex D (informative) **Guidance to determine the expanded uncertainty** ... 16

Bibliography ... 18

This is a preview of BS EN 13486:2023. Click here to purchase the full version from the ANSI store.

European foreword

This document (EN 13486:2023) has been prepared by Technical Committee CEN/TC 423 “Means of measuring and/or recording temperature in the cold chain”, the secretariat of which is held by DIN.

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 June 2024, and conflicting national standards shall be withdrawn at the latest by June 2024.

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

This document supersedes EN 13486:2001.

EN 13486:2023 includes the following significant technical changes with respect to EN 13486:2001:

a) enhancement of the scope by defining adapted temperature ranges and broadening it to more temperature sensitive goods in accordance with EN 12830 and EN 13485;

b) complete revision of Clause 4;

c) addition of class 0,2 to the standard;

d) revision of 5.6;

e) addition of a new methodology to Clause 6 to account for new technologies for time synchronisation;

f) addition of Clause 7 for functional test of recorders with cloud SaaS for storage and display;

g) update and clarification of Clause 8 regarding expression of results;

h) addition of Annex C as guideline to the verification process;

i) addition of Annex D as guideline to determine the expanded uncertainty.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

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1 Scope

This document specifies the verification procedure for temperature recorders and thermometers for measuring the ambient or internal temperature of the products between −80 °C and +85 °C, which are intended to equip the means used for the transport, storage and distribution of temperature sensitive goods and which comply with standards EN 12830 and EN 13485 (measurement classes and ranges) and also others used for transport, distribution and/or storage of temperature sensitive goods.

It specifies the test methods which allow the verification of the equipment's conformity against class requirements identified in EN 12830 and EN 13485.

NOTE Examples for the transport, storage and distribution of temperature sensitive goods between −80 °C and +85 °C include chilled, frozen, deep frozen and quick-frozen food; ice cream; fresh and hot food; pharmaceuticals; blood and organs; chemicals; biologicals; electronic and mechanical devices; flowers, plants and bulbs; raw materials and liquids; animals; art and furnishings.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

EN 12830:2018, *Temperature recorders for the transport, storage and distribution of temperature sensitive goods — Tests, performance, suitability*

EN 13485, *Thermometers for measuring the ambient or internal temperature for the transport, storage and distribution of temperature sensitive goods — Tests, performance, suitability*

EN ISO 10012, *Measurement management systems — Requirements for measurement processes and measuring equipment (ISO 10012)*

JCGM 200:2012, *International Vocabulary of Metrology — Basic and general concepts and associated terms (VIM)* [1]

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12830, EN 13485, the VIM (JCGM 200:2012) and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp/

— IEC Electropedia: available at https://www.electropedia.org/

3.1.1
verification
confirmation, through the provision of objective evidence, that specified requirements have been fulfilled

Note 1 to entry: The objective evidence needed for a verification can be the result of an inspection or of other forms of determination such as performing alternative calculations or reviewing documents.

Note 2 to entry: The activities carried out for verification are sometimes called a qualification process.

[1] Available at: https://www.bipm.org/en/committees/jc/jcgm/publications