



BSI Standards Publication

Biological evaluation of medical devices

Part 12: Sample preparation and reference materials

National foreword

This British Standard is the UK implementation of EN ISO 10993-12:2021+A1:2025. It is identical to ISO 10993-12:2021, incorporating amendment 1:2025. It supersedes BS EN ISO 10993-12:2021, which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to ISO text carry the number of the ISO amendment. For example, text altered by ISO amendment 1 is indicated by A1 A1.

The UK participation in its preparation was entrusted to Technical Committee CH/194, Biological evaluation of medical devices.

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

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Amendments/corrigenda issued since publication

Date	Text affected
30 September 2025	Implementation of ISO amendment 1:2025 with CEN endorsement A1:2025

English Version

Biological evaluation of medical devices - Part 12: Sample preparation and reference materials (ISO 10993-12:2021)

Évaluation biologique des dispositifs médicaux - Partie
12: Préparation des échantillons et matériaux de
référence (ISO 10993-12:2021)

Biologische Beurteilung von Medizinprodukten - Teil
12: Probenvorbereitung und Referenzmaterialien (ISO
10993-12:2021)

This European Standard was approved by CEN on 15 September 2020.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN ISO 10993-12:2021) has been prepared by Technical Committee ISO/TC 194 "Biological and clinical evaluation of medical devices" in collaboration with Technical Committee CEN/TC 206 "Biological and clinical evaluation of medical devices" 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of an identical text or by endorsement, at the latest by December 2021, and conflicting national standards shall be withdrawn at the latest by December 2021.

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 ISO 10993-12:2012.

This document 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 the relationship with EU Directive(s) see informative Annex ZA, which is integral part of this document.

The following referenced documents are indispensable for the application of this document. For undated references, the latest edition of the referenced document (including any amendments) applies. For dated references, only the edition cited applies. However, for any use of this standard 'within the meaning of Annex ZA, the user should always check that any referenced document has not been superseded and that its relevant contents can still be considered the generally acknowledged state-of-art.

When an IEC or ISO standard is referred to in the ISO standard text, this shall be understood as a normative reference to the corresponding EN standard, if available, and otherwise to the dated version of the ISO or IEC standard, as listed below.

NOTE The way in which these referenced documents are cited in normative requirements determines the extent (in whole or in part) to which they apply.

Table — Correlations between undated normative references and dated EN and ISO standards

References as listed in the ISO standard	Equivalent dated standard	
	EN	ISO or IEC
ISO 10993-1	EN ISO 10993-1:2020 ^a	ISO 10993-1:2018
ISO 10993-5	EN ISO 10993-5:2009	ISO 10993-5:2009
ISO 10993-17	EN ISO 10993-17: 2009	ISO 10993-17:2002
ISO 10993-18	EN ISO 10993-18:2020 ^a	ISO 10993-18:2020
^a Under preparation at European level.		

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Endorsement notice

The text of ISO 10993-12:2021 has been approved by CEN as EN ISO 10993-12:2021 without any modification.

European foreword to amendment A1

This document (EN ISO 10993-12:2021/A1:2025) has been prepared by Technical Committee ISO/TC 194 "Biological and clinical evaluation of medical devices" in collaboration with Technical Committee CEN/TC 206 "Biological and clinical evaluation of medical devices" the secretariat of which is held by DIN.

This Amendment to the European Standard EN ISO 10993-12:2021 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2026, and conflicting national standards shall be withdrawn at the latest by March 2026.

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This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

For the relationship with EU Legislation, see informative Annex ZA, which is an integral part of this document.

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

According to the CEN-CENELEC Internal Regulations, the national standards organizations 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.

Endorsement notice

The text of ISO 10993-12:2021/Amd 1:2025 has been approved by CEN as EN ISO 10993-12:2021/A1:2025 without any modification.

Annex ZA (informative)

Relationship between this European Standard the General Safety and Performance Requirements of Regulation (EU) 2017/745 aimed to be covered

This European standard has been prepared under M/575 to provide one voluntary means of conforming to the General Safety and Performance Requirements of Regulation (EU) 2017/745 of 5 April 2017 concerning medical devices [OJ L 117] and to system or process requirements including those relating to quality management systems, risk management, post-market surveillance systems, clinical investigations, clinical evaluation or post-market clinical follow-up.

Once this standard is cited in the Official Journal of the European Union under that Regulation, compliance with the normative clauses of this standard given in Table ZA.1 and application of the edition of the normatively referenced standards as given in Table ZA.2 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding General Safety and Performance Requirements of that Regulation, and associated EFTA Regulations.

Where a definition in this harmonised standard differs from a definition of the same term set out in Regulation (EU) 2017/745, the differences shall be indicated in the Annex Z. For the purpose of using this standard in support of the requirements set out in Regulation (EU) 2017/745, the definitions set out in this Regulation prevail.

Where the European standard is an adoption of an International Standard, the scope of this document can differ from the scope of the European Regulation that it supports. As the scope of the applicable regulatory requirements differ from nation to nation and region to region the standard can only support European regulatory requirements to the extent of the scope of the European Regulation for medical devices ((EU) 2017/745).

NOTE 1 Where a reference from a clause of this standard to the risk management process is made, the risk management process needs to be in compliance with Regulation (EU) 2017/745. This means that risks have to be 'reduced as far as possible', 'reduced to the lowest possible level', 'reduced as far as possible and appropriate', 'removed or reduced as far as possible', 'eliminated or reduced as far as possible', 'removed or minimized as far as possible', or 'minimized', according to the wording of the corresponding General Safety and Performance Requirement.

NOTE 2 The manufacturer's policy for determining **acceptable risk** must be in compliance with General Safety and Performance Requirements 1, 2, 3, 4, 5, 8, 9, 10, 11, 14, 16, 17, 18, 19, 20, 21 and 22 of the Regulation.

NOTE 3 When a General Safety and Performance Requirement does not appear in Table ZA.1, it means that it is not addressed by this European Standard.

Table ZA.1 — Correspondence between this European Standard and Annex I of Regulation (EU) 2017/745 [OJ L 117] and to system or process requirements including those relating to quality management systems, risk management, post-market surveillance systems, clinical investigations, clinical evaluation or post-market clinical follow-up

General Safety and Performance Requirements of Regulation (EU) 2017/745	Clause(s)/subclause(s) of this EN	Remarks/Notes
10.1 (a), (b) first half sentence and (d)	4, 5, 6, 7, 8, 9, 10 and 11	<p>10.1 is only partly covered by this document, since the document does not provide requirements on design and manufacture, nor does it provide methods to fulfil characteristics and performance requirements.</p> <p>However, this document provides a means of preparing samples, and when used in conjunction with other relevant parts from the EN ISO 10993 series it can provide information on “toxicity”, on “compatibility with tissues, cells and body fluids” as well as on the “impact of processes on material properties”.</p> <p>Flammability is not covered.</p> <p>For 10.1 (b), ADME (Absorption, Distribution, Metabolism and Excretion) are not covered.</p> <p>For 10.1 (d), impact of processes on material properties is covered as far as they could affect the biocompatibility, while general impact on mechanical stability is not covered.</p>

General Safety and Performance Requirements of Regulation (EU) 2017/745	Clause(s)/subclause(s) of this EN	Remarks/Notes
10.2	4, 5, 6, 7, 8, 9, 10 and 11	<p>10.2 is only partly covered by this document, since the document does not provide requirements on design and manufacture and does not oblige to minimize risk.</p> <p>However, this document provides a means of preparing samples to assess conformity with this General Safety and Performance requirement in conjunction with other relevant parts of EN ISO 10993 series, which describe tests to assess specific toxicological risks, for the design and manufacture of medical devices. Packaging is only covered with respect to packaging migrants in the final product.</p> <p>Risks from residues to person involved in the transport or storage of medical devices are not covered.</p>
10.4.1 (First paragraph only)	4, 5, 6, 7, 8, 9, 10 and 11	<p>10.4.1 is only partly covered by this document, since the document does not provide requirements on design and manufacture and does not oblige to reduce as far as possible the risk.</p> <p>However, this document provides a means of preparing samples of medical devices to assess conformity with General Safety and Performance requirement in conjunction with other relevant parts of EN ISO 10993 series, which describe tests to assess specific toxicological risks.</p>

Table ZA.2 — Normative references from Clause 2 of this document and their corresponding European publications

Column 1 Reference in Clause 2	Column 2 International Standard Edition	Column 3 Title	Column 4 Corresponding European Standard Edition
ISO 10993-1	ISO 10993-1:2018	Biological evaluation of medical devices — Part 1: Evaluation and testing within a risk management process	EN ISO 10993-1:2020
ISO 10993-18	ISO 10993-18:2020 ISO 10993-18:2020/Amd 1:2022	Biological evaluation of medical devices — Part 18: Chemical characterization of medical device materials within a risk management process	EN ISO 10993-18:2020 EN ISO 10993-18:2020/A1:2023
ISO/TS 10993-19	ISO/TS 10993-19:2020	Biological evaluation of medical devices — Part 19: Physico-chemical, morphological and topographical characterization of materials	For applicable standard edition see Column 2
ISO 14971	ISO 14971:2019	Medical devices — Application of risk management to medical devices	EN ISO 14971:2019 EN ISO 14971:2019/A11:2021

The documents listed in the Column 1 of Table ZA.2, in whole or in part, are normatively referenced in this document, i.e., are indispensable for its application. The achievement of the presumption of conformity is subject to the application of the edition of Standards as listed in Column 4 or, if no European Standard Edition exists, the International Standard Edition given in Column 2 of Table ZA.2.

WARNING 1 — Presumption of conformity stays valid only as long as a reference to this European standard is maintained in the list published in the Official Journal of the European Union. Users of this standard should consult frequently the latest list published in the Official Journal of the European Union.

WARNING 2 — Other Union legislation may be applicable to the product(s) falling within the scope of this standard.

Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 General requirements	3
5 Reference materials (RMs)	4
5.1 General.....	4
5.2 Certification of RMs for biological safety testing.....	4
6 Use of RMs as experimental controls	4
7 Test sample selection	5
8 Test sample and RM preparation	5
9 Selection of representative portions from a medical device	6
10 Preparation of extracts of samples	6
10.1 General.....	6
10.2 Containers for extraction.....	6
10.3 Extraction conditions and methods.....	7
10.4 Extraction conditions for materials that polymerize <i>in situ</i>	10
11 Records	10
Annex A (informative) Experimental controls	11
Annex B (informative) General principles on, and practices of, test sample preparation and sample selection	13
Annex C (informative) Principles of test sample extraction	15
Annex D (informative) Exhaustive extraction of polymeric materials for biological evaluation	18
Bibliography	20