Packaging for terminally sterilized medical devices —
Part 2: Validation requirements for forming, sealing and assembly processes

Emballages des dispositifs médicaux stérilisés au stade terminal —
Partie 2: Exigences de validation pour les procédés de formage, scellage et assemblage

ICS: 11.080.30
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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical committee ISO/TC 198, Sterilization of health care products.

This second edition cancels and replaces the first edition (ISO 11607-1:2006), which has been technically revised.

The main changes compared to the previous edition are as follows:

— New definitions for process variable, process parameter and monitoring of processes.

— Alignments of various definitions with ISO 11139 to ensure harmonization throughout the standards under ISO/TC 198.

— The terminology of “critical” process parameters is discontinued and the concept of a process specification is introduced to include all elements required to manufacture a product that consistently meets specifications.

A list of all parts in the ISO 11607 series can be found on the ISO website.
Introduction

Packaging for medical devices which shall be terminally sterilized should be designed and manufactured to ensure that the medical device can be sterilized and remain sterile under documented storage and transport conditions until the sterile barrier system is damaged or opened.

One of the most critical characteristics of a sterile barrier system and packaging system for sterile medical devices is the assurance of sterility maintenance. Medical devices delivered in a sterile state should have been manufactured, packed and sterilized by appropriate, validated methods. The development and validation of packaging processes are crucial to ensure that sterile barrier system integrity is attained and will remain so until opened by the users of sterile medical devices.

There should be a documented process validation program demonstrating the efficacy and reproducibility of all packaging and sterilization processes. Along with the sterilization process, some of the packaging operations that can affect sterile barrier system integrity are sealing, capping or other closure systems, cutting, form/fill/seal, assembly processes and subsequent handling. This part of ISO 11607 provides the framework of activities and requirements to develop and validate the process used to make and assemble the packaging system. Both parts of ISO 11607 were designed to meet the selected Essential Requirements of the European Medical Device Directives. During the revision of ISO 11607-1 and -2, the European Commission published the drafts and final versions of the European Medical Device Regulations (MDR) and the In Vitro Diagnostics Regulation (IVDR). The committee responsible for ISO 11607-1 and -2 incorporated changes in this revision to meet the specific requirements of the MDR and IVDR.

The term "sterile barrier system" was introduced in 2006 to describe the minimum packaging required to perform the unique functions required of medical packaging: to allow sterilization, to provide an acceptable microbial barrier, and to allow for aseptic presentation. "Protective packaging" protects the sterile barrier system, and together they form the packaging system. "Preformed sterile barrier systems" would include any partially assembled sterile barrier systems such as pouches, header bags or hospital packaging reels.

The sterile barrier system is essential to ensure the safety of terminally sterilized medical devices. Regulatory authorities recognize the critical nature of sterile barrier systems by considering them as an accessory or a component of a medical device. Preformed sterile barrier systems sold to healthcare facilities for use in internal sterilization are regulated as medical devices in many parts of the world.
Packaging for terminally sterilized medical devices —
Part 2:
Validation requirements for forming, sealing and assembly processes

1 Scope

This part of ISO 11607 specifies the requirements for development and validation of processes for packaging medical devices that are terminally sterilized. These processes include forming, sealing, and assembly of preformed sterile barrier systems, sterile barrier systems and packaging systems.

This part of ISO 11607 is applicable to industry, to health care facilities, and wherever medical devices are packaged and sterilized.

This part of ISO 11607 does not cover all requirements for packaging medical devices that are manufactured aseptically. Additional requirements may also be necessary for drug/device combinations.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 11607-1, Packaging for terminally sterilized medical devices — Part 1: Requirements for materials, sterile barrier systems and packaging systems

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:
— ISO Online browsing platform: available at http://www.iso.org/obp

3.1 control
regulation of variables within specified limits

[SOURCE: ISO/DIS 11139:2017]

3.2 expiry date
indication of the date by which the product should be used
3.3 installation qualification
IQ
Process of establishing by objective evidence that all key aspects of the process equipment and ancillary system installation adhere to the approved specification

[SOURCE: ISO/DIS 11139:2017]

3.4 labelling
label, instructions for use, and any other information that is related to identification, technical description, intended purpose and proper use of the medical device but excluding shipping documents

[SOURCE: ISO/DIS 11139:2017]

3.5 monitoring
continual checking, supervising, critically observing or determining the status in order to identify change from the performance level required or expected

[SOURCE: ISO/DIS 11139:2017]

3.6 operational qualification
OQ
process of obtaining and documenting evidence that installed equipment operates within predetermined limits when used in accordance with its operational procedures

[SOURCE: ISO/DIS 11139:2017]

3.7 packaging system
combination of the sterile barrier system and protective packaging

[SOURCE: ISO/DIS 11139:2017]

3.8 process parameter
specified value for a process variable

Note 1 to entry: The specification for a process includes the process parameters and their tolerances.

3.9 performance qualification
PQ
process of establishing by objective evidence that the process, under anticipated conditions, consistently produces a product which meets all predetermined requirements

[SOURCE: ISO/DIS 11139:2017]

3.10 preformed sterile barrier system
sterile barrier system that is supplied partially assembled for filling and final closure or sealing

EXAMPLE       Pouches, bags and open reusable containers

[SOURCE: ISO/DIS 11139:2017]
3.11 process parameter
specified value for a process variable

Note 1 to entry: The specification for a process includes the process parameters and their tolerances.

[SOURCE: ISO/DIS 11139:2017]

3.12 process variable
chemical or physical properties attribute within a cleaning, disinfection, packaging, or sterilization process, changes in which can alter its effectiveness

EXAMPLE Time, temperature, pressure, concentration, humidity, wavelength

[SOURCE: ISO/DIS 11139:2017]

3.13 product
tangible result of a process

EXAMPLE Raw material(s), intermediate(s), sub-assembly(ies), healthcare product(s)

Note 1 to entry: For the purposes of ISO 11607-1 and ISO 11607-2, product includes preformed sterile barrier systems, sterile barrier systems, and contents within them.

[SOURCE: Modified from ISO/DIS 11139:2017]

3.14 protective packaging
configuration of materials designed to prevent damage to the sterile barrier system and its contents from the time of their assembly until the point of use

3.15 repeatability
closeness of the agreement between the results of successive measurements of the same particular quantity subject to measurement (measurand) carried out under the same conditions of measurement

[SOURCE: ISO/DIS 11139:2017]

3.16 reproducibility
condition of measurement, out of a set of conditions that includes different locations, operators, measuring systems, and replicate measurements on the same or similar objects

[SOURCE: ISO/DIS 11139:2017]

3.17 reusable container
rigid sterile barrier system designed to be repeatedly used

3.18 sterile barrier system
minimum package that minimizes the risk of ingress of microorganisms and allows aseptic presentation of the sterile contents at the point of use

3.19 sterile fluid-path packaging
system of protective port covers and/or packaging designed to ensure sterility of the portion of the medical device intended for contact with fluids

Note 1 to entry: An example of sterile fluid-path packaging would be the interior of the tubing for administration of an intravenous fluid.
3.20 validation
confirmation process through the provision of objective evidence that the requirements for a specific intended use or application have been fulfilled

Note 1 to entry: The objective evidence needed for a validation is the result of a test or other form of determination such as performing alternative calculations or reviewing documents.

Note 2 to entry: The word “validated” is used to designate the corresponding status.

Note 3 to entry: The use conditions for validation can be real or simulated

[SOURCE: ISO/DIS 11139:2017]

4 General requirements

4.1 General
Practices in 4.2, 4.3, 4.4 and 4.5 are a fundamental prerequisite of demonstrating compliance to ISO 11607-2.

4.2 Quality systems

4.2.1 The activities described within this part of ISO 11607 shall be carried out within a formal quality system.

NOTE ISO 9001 and ISO 13485 contain requirements for suitable quality systems. Additional requirements might be specified by a country or region.

4.2.2 It shall not be necessary to obtain third-party certification of the quality system to fulfil the requirements of this part of ISO 11607.

4.3 Sampling
The sampling plans used for testing of materials, sterile barrier systems or packaging systems shall be applicable to materials, sterile barrier systems or packaging systems being evaluated. Sampling plans shall be based upon statistically valid rationale.

NOTE Common statistically based sampling plans as given for example in ISO 2859-1 or ISO 186 (with appropriate modifications if necessary) can be applied to materials, sterile barrier systems or packaging systems. Additional sampling plans might be specified by countries or regions. For further guidance, see ISO/TS 16775:2014, Annex L.

4.4 Test methods

4.4.1 A rationale for the selection of appropriate tests for the packaging system shall be established and documented.

4.4.2 A rationale for acceptance criteria shall be established and documented.

NOTE Pass/fail is a type of acceptance criterion.

4.4.3 All test methods used to show compliance with this part of ISO 11607 shall be validated and documented by the laboratory performing the test.

NOTE ISO 11607-1, Annex B contains a list of test methods. Publication of a method by a standards body does not make it validated in any laboratory.
4.4.4 The test method validation shall demonstrate the suitability of the method as used. The following elements shall be included:

— determination of test method repeatability;
— determination of test method reproducibility; and
— establishment of test method sensitivity for integrity tests.

4.5 Documentation

4.5.1 Demonstration of compliance with the requirements of this part of ISO 11607 shall be documented.

4.5.2 All documentation shall be retained for a specified period of time. The retention period shall consider factors such as regulatory requirements, expiry date and traceability of the medical device or sterile barrier system.

4.5.3 Documentation of compliance with the requirements shall include, but is not limited to, performance data, specifications and test results from validated test methods as well as validation protocols, conclusions and any necessary actions.

4.5.4 Electronic records, electronic signatures and handwritten signatures executed to electronic records that contribute to validation, process control or other quality decision-making processes shall remain legible, readily identifiable, and retrievable.

5 Validation of packaging processing

5.1 General

5.1.1 Preformed sterile barrier systems and sterile barrier system manufacturing processes shall be validated.

NOTE Examples of these processes include, but are not limited to:

— pouch, reel, or bag forming and sealing;
— form/fill/seal automated processes;
— kit assembly and wrapping, including application of tape;
— assembly of sterile fluid-path products;
— tray/lid sealing;
— filling and closing of reusable containers;
— sterilization sheets folding and wrapping.

5.1.2 Process validation shall include, at a minimum, an installation qualification, an operational qualification, and a performance qualification in this order.

5.1.3 A process specification shall be established for forming, assembly and sealing processes, including, but not limited to, the following elements:

— the required process output;
— the process parameters for control to produce the specified process output; and
— the process variables and process (and/or product) attributes to be monitored in order to maintain the process in a state of control and capability.

NOTE 1 Process development, while not formally part of process validation, is considered an integral part of forming and sealing (see Annex A).

NOTE 2 Validation of existing products can rely on data from previous validations of existing products. That data can be used for determination of the tolerances for process parameters.

5.1.4 When similar preformed sterile barrier systems and sterile barrier system manufacturing processes are validated, a rationale for establishing similarities and identifying the worst case configuration shall be documented. As a minimum, the worst case configuration shall be validated to determine compliance with this part of ISO 11607.

NOTE For example, similarity could be established by different sizes of preformed sterile barrier systems made of the same or comparable raw materials.

5.2 Installation qualification (IQ)

5.2.1 Installation qualification shall be performed including as minimum all elements listed in the process specification.

The following shall be considered:
— equipment design features;
— installation conditions such as wiring, utilities, functionality, etc.;
— safety features;
— equipment operating within the stated design parameters;
— supplier documentation, prints, drawings and manuals;
— spare-parts lists;
— software validation;
— environmental conditions such as cleanliness, temperature, humidity;
— documented operator training;
— operating manual or procedure.

5.2.2 Tests shall be performed to confirm that process variables can be controlled as specified.

5.2.3 Functions that allow process variable monitoring shall be checked.

5.2.4 Alarms, warning systems, or machine stops shall be challenged in the event that process variables exceed predetermined limits.

5.2.5 Specified instruments, sensors, displays, controllers, etc. shall be documented as calibrated and have written calibration schedules.

5.2.6 There shall be written preventive maintenance and cleaning schedules.

5.2.7 The application of software systems shall be validated.

NOTE For software validation see also ISO 13485:2015, 7.5.6 and GAMP 5[17].
5.3 Operational qualification (OQ)

5.3.1 Process variables shall be challenged to determine the upper and lower parameter limits that produce preformed sterile barrier systems and/or sterile barrier systems that meet all predetermined specifications.

NOTE See Annex A.

5.3.2 As a minimum, preformed sterile barrier systems and sterile barrier systems shall be produced at both the upper and lower parameter limits (see 5.3.1) and exhibit the properties that meet predefined specifications.

The following quality properties shall be considered:

a) For forming/assembly:
   — sterile barrier system completely formed/assembled;
   — product fits into the sterile barrier system;
   — essential dimensions are met.

b) For sealing:
   — intact seal for a specified seal width;
   — absence of channels or open seals;
   — absence of punctures or tears;
   — absence of material delamination or separation.

c) For other closure systems:
   — continuous closure;
   — absence of punctures or tears;
   — absence of material delamination or separation.

5.4 Performance qualification (PQ)

5.4.1 The performance qualification shall demonstrate that the process will consistently produce preformed sterile barrier systems, and sterile barrier systems, that meet predetermined requirements under anticipated operating conditions.

5.4.2 Performance qualification shall include:

— the actual or simulated contents, unless a rationale can be established that the contents are not required for process validation activities;
— process parameters established in the operational qualification;
— verification of product/package requirements;
— assurance of process control and capability;
— process repeatability and reproducibility.

5.4.3 Challenges to the process shall include conditions anticipated to be encountered during manufacture.
NOTE These challenges can include, but are not limited to, machine set-up and change-over procedures; process start-up and restart procedures; power failure and variations, and multiple shifts, if applicable.

5.4.4 PQ of the process shall include at least three production runs to assess variability within a run and reproducibility between different runs.

NOTE These process variations include, but are not limited to, machine warm up until equilibrium is reached, breaks and shift changes, normal starts and stops, and material lot-to-lot differences.

5.4.5 Documented procedures and specifications for the forming, assembly, sealing or closing operations shall be established and incorporated into the performance qualification.

5.4.6 Specified process variables shall be monitored and recorded.

5.4.7 The process shall be under control and capable of consistently producing products according to predetermined requirements.

5.5 Formal approval of the process validation

5.5.1 Review and formal approval of the process validation shall be carried out and documented as a final step in the validation program.

5.5.2 The documentation shall summarize and reference all protocols and results, and state conclusions regarding the validation status of the process.

5.6 Process control and monitoring

5.6.1 Procedures shall be established, implemented and maintained to ensure that the packaging process is under control and within the established parameters during routine operation and consistently producing the specified process output.

5.6.2 Specified process variables shall be routinely monitored and records shall be maintained.

5.7 Process changes and revalidation

5.7.1 Processes concerning forming, assembly, sealing or closing shall be covered by a change-control procedure for documenting, verifying and authorizing change.

5.7.2 Processes shall be revalidated if changes are made to the equipment, contents, packaging materials or packaging process, which compromise the original validation.

NOTE The following list gives examples of changes which usually affect the status of a validated process:
— raw material changes that would impact the process variables;
— a new piece of equipment is installed or a main part of the equipment which could affect one or more of the established parameters has been changed;
— modification or refurbishment of equipment;
— transfer of processes and/or equipment from one facility or location to another;
— negative trends in quality or process control indicators.
5.7.3 The need for revalidation shall be evaluated and documented. If the situation does not require that all aspects of the original validation be repeated, this revalidation does not have to be as extensive as the initial validation.

5.7.4 Minor process changes shall be documented and may require review of the validation status.

NOTE Multiple minor changes are considered to be able to cumulatively affect the validation status of the packaging system.

6 Packaging system assembly

6.1 The sterile barrier system shall be assembled under appropriate environmental conditions to minimize the risk posed by contaminants to the medical device.

6.2 The packaging system assembly process shall follow controlled labelling and processing procedures to prevent mislabelling.

NOTE Additional guidance can be found in ISO/TS 16775, DIN 58953-7 and DIN 58953-8.

6.3 Packaging systems shall be assembled and filled according to the instructions based on a validated process that assures sterilization in a defined sterilization process. These instructions should include configuration of contents and organizing inserts, total weight, inner wrapping, and absorbent materials.

7 Use of reusable sterile barrier systems

In addition to the requirements listed in Clause 6, instructions and restrictions for use as specified in ISO 11607-1:201X, 5.1.10 and 5.1.11 shall be followed (e.g. assembly, disassembly, maintenance, repair, storage).

NOTE For additional guidance on reusable containers, see EN 868-8, DIN 58953-9 and ANSI/AAMI ST77. For additional guidance on reusable fabrics, see EN 13795-1 and ANSI/AAMI ST65.

8 Sterile fluid-path packaging

8.1 Assembly of sterile fluid-path components and closures shall meet the requirements of Clauses 5 and 6.

8.2 Medical devices labelled “sterile fluid path” shall maintain sterility of the fluid path by the construction of the device in combination with its closures.

NOTE 1 The requirements for microbial barrier properties and sterile barrier system integrity are provided in ISO 11607-1. The requirements apply to the device itself.

NOTE 2 For the purpose of interpreting the requirements of this part of ISO 11607, the device and its closures constitute the sterile barrier system.
Annex A
(informative)

Process development

Process development, while not a formal part of process validation, should be considered as an integral part of forming and sealing. Process development or process design requires an assessment to identify and evaluate

— process variables to be controlled to meet established parameters (i.e. the operating ranges, settings and tolerances); and

— process variables and attributes to be monitored along with their thresholds, deviations or states that require action for producing the desired process output.

A process assessment is conducted to establish appropriate and necessary upper and lower processing limits, as well as the expected normal operating conditions to achieve a robust process capable of consistently producing the desired process output. These process limits should be sufficiently removed from failure or marginal conditions. One technique could be the creation of seal-strength curves with accompanying visual examples of seal results that could aid in the selection of an optimal process window.

Potential failure modes and action levels having the greatest impact on the process should be identified and addressed (failure mode and effects analysis, cause and effect analysis).

Statistically valid techniques, such as screening experiments and statistically designed experiments to optimize the process, should be used.

Process variables that are evaluated may include, but are not limited to:

— temperature;
— contact pressure;
— vacuum;
— dwell time (line speed);
— energy levels/frequency (radio frequency/ultrasonic);
— torque limits for lid/cap closure systems.

The specified process variables will be selected such that they will produce a process that is in control, and capable of yielding sterile barrier systems and packaging systems that meet predetermined design specifications.
Annex B
(informative)


The European Commission has recently published the new medical device regulations on the 5th of May 2017. The European Commission has not issued a standardization request to CEN for the new EU regulation as of the DIS (enquiry) stage of this document. This annex is a draft of the Annex ZA that will be completed and submitted when the details of the standardization request are available.

This standard is designed to be used as one voluntary means of conforming to specific aspects of the general safety and performance requirements (SPRs) of Regulation (EU) 2017/745 as detailed in the table below.
### Table B.1 — Correspondence between this standard and Regulation (EU) 2017/746

<table>
<thead>
<tr>
<th>Safety and performance requirements (SPRs) of Regulation (EU) 2017/746</th>
<th>Clause(s)/sub-clause(s) of this standard</th>
<th>Remarks/Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>11.1</strong> Devices and their manufacturing processes shall be designed in such a way as to eliminate or to reduce as far as possible the risk of infection to patients, users and, where applicable, other persons. The design shall: (a) reduce as far as possible and appropriate the risks from unintended cuts and pricks, such as needle stick injuries, (b) allow easy and safe handling, (c) reduce as far as possible any microbial leakage from the device and/or microbial exposure during use, and (d) prevent microbial contamination of the device or its content such as specimens or fluids.</td>
<td>4.3, 5, 6, 7, 8</td>
<td>SPR 11.1 (b) and (d) are covered only in respect of the function of the sterile barrier system(s) to protect the sterility of the device from the point of sterilisation to the point of use and to allow for aseptic presentation and only if the requirements of EN ISO 11607-1:[date of revision] are met as well.</td>
</tr>
<tr>
<td><strong>11.4</strong> Devices delivered in a sterile state shall be designed, manufactured and packaged in accordance with appropriate procedures, to ensure that they are sterile when placed on the market and that, unless the packaging which is intended to maintain their sterile condition is damaged, they remain sterile, under the transport and storage conditions specified by the manufacturer, until that packaging is opened at the point of use. It shall be ensured that the integrity of that packaging is clearly evident to the final user.</td>
<td>4.3, 5, 6, 8</td>
<td>SPR 11.5 is covered only in respect of the function of sterile barrier system(s) to protect the sterility of the device from the point of sterilisation to the point of use and to allow for aseptic presentation but only if the requirements of EN ISO 11607-1:[date of revision] are met as well (requirements for materials, sterile barrier systems and packaging systems). In this respect damage to the &quot;packaging which is intended to maintain their sterile condition&quot; is taken to mean damage to or loss of integrity of the sterile barrier system only. Regarding the aspects of “clearly evident integrity of the packaging”, this Draft International Standard includes considerations for seals and closure quality properties as supportive requirements for compliance.</td>
</tr>
<tr>
<td><strong>11.5</strong> Devices labelled as sterile shall be processed, manufactured, packaged and, sterilised by means of appropriate, validated methods</td>
<td>5, 6, 8</td>
<td>SPR 11.5 is covered only in respect of the compatibility between the packaging and the selected sterilisation processes including packaging system performance testing and sterile barrier system stability testing, but only if the requirements of EN ISO 11607-1:[date of revision] are met as well (requirements for materials, sterile barrier systems and packaging systems).</td>
</tr>
</tbody>
</table>

Note 1 The text in blue will be removed from the final annex Z if the template is similar than for the MDD.
Note 2  Date of revision needs to be replaced by the final date when the standard is published.

WARNING — Presumption of conformity is valid only after publication of an annex in the European version of this standard based on the standardization request and guidance of the European Commission and after the reference to the EU standard is published in the respective list in the Official Journal of the European Union.
Annex C
(informative)


The European Commission has published the new in vitro diagnostic regulations on the 5th of May 2017. The European Commission has not issued a standardization request to CEN for the new EU regulation as of the DIS (enquiry) stage of this document. This annex is a draft of the Annex ZA that will be completed and submitted when the details of the standardization request are available.

This standard is designed to be used as one voluntary means of conforming to specific aspects of the General Safety and Performance Requirements (SPRs) of REGULATION (EU) 2017/746 as detailed in the table below.

Table C.1 — Correspondence between this Standard and Regulation (EU) 2017/746

<table>
<thead>
<tr>
<th>Safety and performance requirements (SPRs) of Regulation (EU) 2017/746</th>
<th>Clause(s)/sub-clause(s) of this standard</th>
<th>Remarks/Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>11.2</strong> Devices labelled either as sterile or as having a specific microbial state shall be designed, manufactured and packaged to ensure that their sterile condition or microbial state is maintained under the transport and storage conditions specified by the manufacturer until that packaging is opened at the point of use, unless the packaging which maintains their sterile condition or microbial state is damaged.</td>
<td>4.3, 5, 6, 8</td>
<td>SPR 11.2 is covered only in respect of the function of the sterile barrier system(s) to protect the sterility of the device from the point of sterilisation to the point of use and to allow for aseptic presentation but only if the requirements of EN ISO 11607-1:[date of revision] are met as well (requirements for materials, sterile barrier systems and packaging systems). In this respect damage to the “packaging which maintains their sterile condition” is taken to mean damage to or loss of integrity of the sterile barrier system only.</td>
</tr>
<tr>
<td><strong>11.3</strong> Devices labelled as sterile shall be processed, manufactured, packaged and, sterilised by means of appropriate, validated methods.</td>
<td>5, 6, 8</td>
<td>SPR 11.3 is covered only in respect of the compatibility between the packaging and the selected sterilisation processes including packaging system performance testing and sterile barrier system stability testing, but only if the requirements of EN ISO 11607-1:[date of revision] are met as well (requirements for materials, sterile barrier systems and packaging systems).</td>
</tr>
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</table>

Note 1 The text in blue will be removed from the final annex Z if the template is similar than for the MDD.

Note 2 Date of revision needs to be replaced by the final date when the standard is published.
WARNING — Presumption of conformity is valid only after publication of an annex in the European version of this standard based on the standardization request and guidance of the European Commission and after the reference to the EU standard is published in the respective list in the Official Journal of the European Union.
Annex ZA
(informative)

Relationship between this European Standard and the essential requirements of Directive 93/42/EEC [OJ L 169] aimed to be covered

This European Standard has been prepared under a Commission's standardization request M/023 concerning the development of European Standards related to medical devices to provide one voluntary means of conforming to essential requirements of Council Directive 93/42/EEC of 14 June 1993 concerning medical devices [OJ L 169].

Once this standard is cited in the Official Journal of the European Union under that Directive and has been implemented as a national standard in at least one Member State, compliance with the normative clauses of this standard given in Table ZA.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding essential requirements of that Directive and associated EFTA regulations.

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 Directive 93/42/EEC as amended by 2007/47/EC. This means that risks have to be reduced ‘as far as possible’, ‘to a minimum’, ‘to the lowest possible level’, ‘minimized’ or ‘removed’, according to the wording of the corresponding essential requirement.

NOTE 2 The manufacturer’s policy for determining acceptable risk must be in compliance with Essential Requirements 1, 2, 5, 6, 7, 8, 9, 11 and 12 of the Directive.

NOTE 3 This Annex ZA is based on normative references according to the table of references in the European foreword, replacing the references in the core text.

NOTE 4 When an Essential 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 Directive 93/42/EEC [OJ L 169]

<table>
<thead>
<tr>
<th>Essential Requirements of Directive 93/42/EEC</th>
<th>Clause(s)/sub-clause(s) of this EN</th>
<th>Remarks/Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.1</td>
<td>4.3, 5, 6, 7, 8</td>
<td>E.R. 8.1 is covered only in respect of the function of the sterile barrier system(s) to protect the sterility of the device from the point of sterilisation to the point of use and to allow for aseptic presentation and only if the requirements of EN ISO 11607-1:[date of revision] are met as well.</td>
</tr>
<tr>
<td>8.3</td>
<td>4.3, 5, 6, 8</td>
<td>E.R. 8.3 is covered only in respect of the function of single use sterile barrier system(s) to protect the sterility of the device from the point of sterilisation to the point of use and to allow for aseptic presentation but only if the requirements of EN ISO 11607-1:[date of revision] are met as well (Requirements for materials, sterile barrier systems and packaging systems) In this respect damage to the “protective packaging” is taken to mean damage to or loss of integrity of the sterile barrier system only.</td>
</tr>
<tr>
<td>8.4</td>
<td>5, 6, 8</td>
<td>E.R. 8.4 is covered only in respect of the compatibility between the packaging and the selected sterilisation processes including packaging system performance testing and sterile barrier system stability testing, but only if the requirements of EN ISO 11607-1:[date of revision] are met as well (requirements for materials, sterile barrier systems and packaging systems).</td>
</tr>
</tbody>
</table>

**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 products falling within the scope of this standard.
Annex ZB
(informative)

Relationship between this European Standard and the essential requirements of Directive 90/385/EEC [OJ L 189] aimed to be covered

This European Standard has been prepared under a Commission’s standardization request M/432 to provide one voluntary means of conforming to essential requirements of Council Directive 90/385/EEC of 20 June 1990 on the approximation of the laws of the Member States relating to active implantable medical devices [OJ L 189].

Once this standard is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of this standard given in Table ZB.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding essential requirements of that Directive and associated EFTA regulations.

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 Directive 90/385/EEC as amended by 2007/47/EC. This means that risks have to be reduced ‘as far as possible’, ‘to a minimum’, ‘to the lowest possible level’, ‘minimized’ or ‘removed’, according to the wording of the corresponding essential requirement.

NOTE 2 The manufacturer’s policy for determining acceptable risk must be in compliance with Essential Requirements 1, 4, 5, 8, 9 and 10 of the Directive.

NOTE 3 This Annex ZB is based on normative references according to the table of references in the European foreword, replacing the references in the core text.

NOTE 4 When an Essential Requirement does not appear in Table ZB.1, it means that it is not addressed by this European Standard.

Table ZB.1 — Correspondence between this European Standard and Annex I of Directive 90/385/EEC [OJ L 189]

<table>
<thead>
<tr>
<th>Essential Requirements of Directive 90/385/EEC</th>
<th>Clause(s)/sub-clause(s) of this EN</th>
<th>Remarks/Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>4.3, 5, 6, 8</td>
<td>E.R. 7 is covered only in respect of the function of single use sterile barrier system(s) to protect the sterility of the device from the point of sterilisation to the point of use and to allow for aseptic presentation but only if the requirements of EN ISO 11607-1:[date of revision] are met as well (requirements for materials, sterile barrier systems and packaging systems).</td>
</tr>
</tbody>
</table>

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 products falling within the scope of this standard.
Annex ZC
(informative)

Relationship between this European Standard and the essential requirements of Directive 98/79/EC [OJ L 331] aimed to be covered

This European Standard has been prepared under a Commission's standardization request, M/252, concerning the development of European Standards relating to in vitro diagnostic medical devices, to provide one voluntary means of conforming to essential requirements of Directive 98/79/EC of the European Parliament and of the Council of 27 October 1998 on in vitro diagnostic medical devices [OJ L 331].

Once this standard is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of this standard given in Table ZC.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding essential requirements of that Directive and associated EFTA regulations.

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 Directive 98/79/EC. This means that risks have to be reduced 'as far as possible', 'to a minimum', 'to the lowest possible level', 'minimized' or 'removed', according to the wording of the corresponding essential requirement.

NOTE 2 The manufacturer's policy for determining acceptable risk must be in compliance with Essential Requirements Part A: 1, 2 and 5; Part B: 1.2, 2, 3, 5, 6 and 7 of the Directive.

NOTE 3 This Annex ZC is based on normative references according to the table of references in the European foreword, replacing the references in the core text.

NOTE 4 When an Essential Requirement does not appear in Table ZC.1, it means that it is not addressed by this European Standard.
### Table ZC.1 — Correspondence between this European Standard and Annex I of Directive 98/79/EC [OJ L 331]

<table>
<thead>
<tr>
<th>Essential Requirements of Directive 98/79/EC</th>
<th>Clause(s)/sub-clause(s) of this EN</th>
<th>Remarks/Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>B2.3</td>
<td>4.3, 5, 6, 8</td>
<td>E.R. B2.3 is covered only in respect of the function of the sterile barrier system(s) to protect the sterility of the device from the point of sterilisation to the point of use and to allow for aseptic presentation but only if the requirements of EN ISO 11607-1:[date of revision] are met as well (requirements for materials, sterile barrier systems and packaging systems). In this respect damage to the “protective packaging” is taken to mean damage to or loss of integrity of the sterile barrier system only.</td>
</tr>
<tr>
<td>B2.4</td>
<td>5, 6, 8</td>
<td>E.R. B2.4 is covered only in respect of the compatibility between the packaging and the selected sterilisation processes including packaging system performance testing and sterile barrier system stability testing, but only if the requirements of EN ISO 11607-1:[date of revision] are met as well (requirements for materials, sterile barrier systems and packaging systems).</td>
</tr>
</tbody>
</table>

**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 products falling within the scope of this standard.
Bibliography


[17] GHTF Study Group 3, Process validation guidance for medical device manufacturers


[19] GAMP 5, Good Automated Manufacturing Practice: A Risk-Based Approach to Compliant GxP Computerized Systems Guide issued by International Society for Pharmaceutical Engineering ISPE
