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Sterilization of health care products — Biological indicators —

Part 8: Method for validation of a reduced incubation time for a biological indicator

Stérilisation des produits de santé — Indicateurs biologiques —

Partie 8: Méthode pour la validation d'un temps d'incubation réduit pour un indicateur biologique

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Foreword

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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).

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For an explanation of the voluntary nature of standards, 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 www.iso.org/iso/foreword.html.

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

A list of all parts in the ISO 11138 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

A biological indicator incubation time is the minimum period of cultivation required before making a final determination that a biological indicator is negative (shows no growth). The reference incubation time for biological indicators for established sterilization processes such as moist heat and ethylene oxide is 7 d (see ISO 11138-1:2017). In some instances where biological indicator results are needed as part of the product release process, a 7-day incubation time might not be practical. This is especially the case where biological indicators are used to monitor sterilization processes in hospitals or other health care facilities such as dental or general practitioner offices.

The purpose of a reduced incubation time procedure is to demonstrate recovery of the surviving test organisms within the specified reduced incubation time period. The reduced incubation time is a function of the test method and conditions used to establish the incubation time and is independent of the process parameters for the sterilization method used to deliver the lethality.

Biological indicators with an incubation time of less than 7 d (a Reduced Incubation Time, or RIT) have been in use since the 1970s. The methodology to determine the RIT was originally created by the biological indicator manufacturers. Later, the United States Food and Drug Administration published guidance for manufacturers seeking regulatory clearance to market biological indicators to health care facilities in the United States (see Reference [1]). This guidance contained a protocol for validating an incubation time that was less than 7 d. This document was specific to regulations for commercial practices in a single country and did not address requirements for RIT methodology outside of that application. The purpose of this document is to describe an internationally agreed approach to the validation of the reduced incubation time of a biological indicator.

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Sterilization of health care products — Biological indicators —

Part 8: Method for validation of a reduced incubation time for a biological indicator

1 Scope

1.1 This document specifies the requirements for a test method to be utilized to establish or confirm a reduced incubation time (RIT) that is shorter than the 7-day reference incubation time specified in 7.3.2 of ISO 11138-1:2017 for biological indicators used to monitor moist heat sterilization processes or ethylene oxide (EO) sterilization processes.

NOTE For biological indicators used for EO sterilization, the stated RIT is applicable to 100 % EO processes or processes that use EO blends, regardless of the product load.

1.2 This document is applicable to manufacturers of biological indicators (BIs) and to end users of BIs who intend to, if required by their quality system, establish, validate or confirm a RIT.

1.3 This document does not apply to biological indicators used to monitor dry heat, low temperature steam formaldehyde (LTSF) or vaporized hydrogen peroxide (VH2O2) sterilization processes.

NOTE The method described in this document to establish a RIT for biological indicators used to monitor moist heat or EO sterilization processes has been used extensively for many years. However, there is limited experience in use of this method to establish a RIT for biological indicators used to monitor dry heat, low temperature steam formaldehyde or vaporized hydrogen peroxide sterilization processes. This document, therefore, does not include these sterilization processes.

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.

ISO 18472, *Sterilization of health care products — Biological and chemical indicators — Test equipment*

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 https://www.iso.org/obp

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

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3.1
biological indicator
test system containing viable microorganisms providing a specified resistance to a specified sterilization process

[SOURCE: ISO 11139:2018, 3.29]

3.2
carrier
supporting material on or in which test microorganisms are deposited

[SOURCE: ISO 11139:2018, 3.33]

3.3
culture condition
combination of growth media and manner of incubation used to promote germination, growth and/or multiplication of microorganisms

Note 1 to entry: The manner of incubation can include the temperature, time and any other conditions specified for incubation.

[SOURCE: ISO 11139:2018, 3.70]

3.4
fractional cycle
operating cycle in which the exposure phase is reduced compared with that specified for the sterilization cycle

[SOURCE: ISO 11139:2018, 3.123]

3.5
inoculated carrier
supporting material on or in which a specified number of viable test organisms have been deposited

[SOURCE: ISO 11139:2018, 3.144]

3.6
resistometer
test equipment designed to create specified combinations of the physical and/or chemical parameters of a sterilization process

[SOURCE: ISO 11139:2018, 3.233]

3.7
self-contained biological indicator
biological indicator (3.1) presented such that the primary package, intended for incubation, contains the incubation medium required for incubation and recovery of the test organism

[SOURCE: ISO 11139:2018, 3.248]

4 General

4.1 When establishing, validating, or confirming a RIT (i.e. an incubation time of less than 7 d), the exposure shall be designed to achieve a fractional response in either:

a) a resistometer meeting the requirements of ISO 18472, or

b) a sterilizer process where all parameters are specified, controlled, and repeatable.

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