
**Textiles — Determination of
antibacterial activity of textile
products**

*Textiles — Détermination de l'activité antibactérienne des produits
textiles*



This document is a preview generated by EKO



COPYRIGHT PROTECTED DOCUMENT

© ISO 2021

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Safety precaution	2
5 Apparatus	2
6 Reagents and culture media	4
6.1 Water	4
6.2 Tryptone soya broth (TSB)	4
6.3 Tryptone soya agar (TSA)	4
6.4 Agar for transfer	5
6.5 Nutrient broth (NB)	5
6.6 Peptone salt solution	5
6.7 Physiological saline	5
6.8 Soybean-Casein Digest Broth with Lecithin & Polysorbate 80 (SCDLP) medium	5
6.9 Dilution buffer for shake-out bacterial suspension	6
6.10 Neutralizing solution	6
6.11 Enumeration agar (EA)	6
6.12 Agar for printing	7
6.13 Cryoprotective solution for bacterial species	7
6.14 Stock solution of ATP standard reagent	7
6.15 Buffer solution for ATP luminescent reagent	7
6.16 ATP luminescent reagent	8
6.17 ATP extracting reagent	8
6.18 ATP eliminating reagent	8
6.19 SCDLP or other medium for preparing ATP reference solution	9
6.20 Shake-out physiological saline	9
7 Reference strains	9
7.1 Strains	9
7.2 Restoration and storage of strains	9
7.2.1 General	9
7.2.2 Ceramic bead method	9
7.2.3 Glycerol suspension method	10
8 Test procedures	10
8.1 Absorption method (see Annex E)	10
8.1.1 Incubation of test strain	10
8.1.2 Preparation of test inoculum	11
8.1.3 Preparation of test specimens	11
8.1.4 Test operation	12
8.1.5 Test results	13
8.2 Transfer method (see Annex E)	15
8.2.1 Preparation of test inoculum	15
8.2.2 Preparation of specimens	15
8.2.3 Test operation	15
8.2.4 Test results	16
8.3 Printing method (see Annex E)	18
8.3.1 Incubation of test strain	18
8.3.2 Preparation of test inoculum	18
8.3.3 Pretreatment of specimen	18
8.3.4 Test operation	19

8.3.5	Test results.....	21
9	Judgement of antibacterial efficacy.....	22
10	Test report.....	22
Annex A (normative)	Strain numbers.....	23
Annex B (normative)	Shaking method.....	24
Annex C (normative)	Quantitative measurement by plate count method.....	25
Annex D (normative)	Quantitative measurement by luminescence method.....	26
Annex E (informative)	Testing examples.....	28
Annex F (informative)	Efficacy of antibacterial activity.....	31
Bibliography	32

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 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 38, *Textiles*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 248, *Textiles and textile products*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 20743:2013), which has been technically revised.

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

- [Clause 2](#) has been updated;
- some NOTES have been changed to regular text;
- [Annex F](#) has been updated.

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.

Introduction

Specialty products of antibacterial-treated textiles have been introduced in the market and are expanding year by year in various applications. These textiles meet the consumer's requirement to seek prevention of, and protection from, the negative effects caused by bacteria, which in turn secures the quality of life.

This established a substantial need for an International Standard which covers test methods to determine the antibacterial activity for antibacterial textile products.

A qualitative test method for antibacterial activity was developed as ISO 20645. At the time, there were no testing standards for the quantitative method which gives more objective information for the antibacterial activity of the textile products.

Although there are 6 ways for the combination of inoculation methods and quantitative measurements to execute this test, the choice of the ways depends on the user's availability and consensus between the concerned parties.

Textiles — Determination of antibacterial activity of textile products

1 Scope

This document specifies quantitative test methods to determine the antibacterial activity of all antibacterial textile products including nonwovens.

This document is applicable to all textile products, including cloth, wadding, thread and material for clothing, bedclothes, home furnishings and miscellaneous goods, regardless of the type of antibacterial agent used (organic, inorganic, natural or man-made) or the method of application (built-in, after-treatment or grafting).

This document covers three inoculation methods for the determination of antibacterial activity:

- a) absorption method (an evaluation method in which the test bacterial suspension is inoculated directly onto specimens);
- b) transfer method (an evaluation method in which test bacteria are placed on an agar plate and transferred onto specimens);
- c) printing method (an evaluation method in which test bacteria are placed on a filter and printed onto specimens).

NOTE Based on the intended application and on the environment in which the textile product is to be used, and also on the surface properties of the textile properties, the user can select the most suitable inoculation method.

This document also specifies the colony plate count method and the adenosine triphosphate (ATP) luminescence method for measuring the enumeration of bacteria.

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 6330, *Textiles — Domestic washing and drying procedures for textile testing*

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/>

3.1

control fabric

fabric used to validate the growth condition of test bacteria and validate the test

Note 1 to entry: The same fabric as the fabric to be tested but without antibacterial treatment or a 100 % cotton fabric without fluorescent brighteners or other finish can be used.