

<b>STN</b>	<b>Papier a lepenka určené na styk s požívatinami Stanovenie prenosu antimikrobiálnych zložiek</b>	<b>STN EN 1104</b>
		50 7006

Paper and board intended to come into contact with foodstuffs - Determination of the transfer of antimicrobial constituents

Táto norma obsahuje anglickú verziu európskej normy.  
This standard includes the English version of the European Standard.

Táto norma bola označená vo Vestníku ÚNMS SR č. 04/19

Rozpracovaná aj prekladom.

Obsahuje: EN 1104:2018

Oznámením tejto normy sa ruší  
STN EN 1104 (50 7006) z februára 2006

**128359**

EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

EN 1104

November 2018

ICS 67.250; 85.060

English Version

Paper and board intended to come into contact with foodstuffs - Determination of the transfer of antimicrobial constituents

Papier et carton destinés à entrer en contact avec les denrées alimentaires - Détermination du transfert des constituants antimicrobiens

Papier und Pappe vorgesehen für den Kontakt mit Lebensmitteln - Bestimmung des Übergangs antimikrobieller Bestandteile

This European Standard was approved by CEN on 15 July 2018.

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.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

## Contents

	Page
<b>European foreword.....</b>	<b>4</b>
<b>1 Scope.....</b>	<b>5</b>
<b>2 Normative references.....</b>	<b>5</b>
<b>3 Terms and definitions .....</b>	<b>5</b>
<b>4 Principle .....</b>	<b>5</b>
<b>5 Apparatus.....</b>	<b>6</b>
<b>6 Reagents and media .....</b>	<b>6</b>
<b>6.1 General.....</b>	<b>6</b>
<b>6.2 Non ionic wetting agent .....</b>	<b>6</b>
<b>6.3 Nutrient medium for the preparation of <i>Bacillus subtilis</i> spores .....</b>	<b>6</b>
<b>6.3.1 Composition .....</b>	<b>6</b>
<b>6.3.2 Preparation .....</b>	<b>6</b>
<b>6.4 Nutrient medium of Sabouraud for the preparation of <i>Aspergillus niger</i> spores.....</b>	<b>7</b>
<b>6.4.1 Composition .....</b>	<b>7</b>
<b>6.4.2 Preparation .....</b>	<b>7</b>
<b>6.5 Nutrient medium for the inhibition test with <i>Bacillus subtilis</i> .....</b>	<b>7</b>
<b>6.5.1 Composition .....</b>	<b>7</b>
<b>6.5.2 Preparation .....</b>	<b>7</b>
<b>6.6 Nutrient medium of modified Sabouraud for the inhibition test with <i>Aspergillus niger</i> .....</b>	<b>8</b>
<b>6.6.1 Composition .....</b>	<b>8</b>
<b>6.6.2 Preparation .....</b>	<b>8</b>
<b>6.7 Tryptone salt solution .....</b>	<b>8</b>
<b>6.7.1 Composition .....</b>	<b>8</b>
<b>6.7.2 Preparation .....</b>	<b>8</b>
<b>6.8 Test microorganisms .....</b>	<b>8</b>
<b>6.8.1 General.....</b>	<b>8</b>
<b>6.8.2 Preparation of working cultures .....</b>	<b>8</b>
<b>6.8.3 Preparation of inoculating spore suspension of <i>Bacillus subtilis</i> .....</b>	<b>9</b>
<b>6.8.4 Preparation of inoculating spore suspension of <i>Aspergillus niger</i> .....</b>	<b>9</b>
<b>6.8.5 Concentrations of spores for inhibition test .....</b>	<b>9</b>
<b>6.9 Positive controls.....</b>	<b>10</b>
<b>6.9.1 Antibiotic.....</b>	<b>10</b>
<b>6.9.2 Antifungal agent .....</b>	<b>10</b>
<b>7 Sampling and preparation of test pieces.....</b>	<b>10</b>
<b>8 Procedure.....</b>	<b>10</b>
<b>8.1 General.....</b>	<b>10</b>
<b>8.2 Preparation of plates .....</b>	<b>10</b>
<b>8.2.1 General.....</b>	<b>10</b>
<b>8.2.2 Test with <i>Bacillus subtilis</i> .....</b>	<b>10</b>
<b>8.2.3 Test with <i>Aspergillus niger</i> .....</b>	<b>11</b>
<b>8.3 Incubation.....</b>	<b>11</b>
<b>9 Evaluation.....</b>	<b>11</b>

<b>10</b>	<b>Test report .....</b>	<b>12</b>
	<b>Annex A (informative) Guidelines for interpreting results.....</b>	<b>13</b>
<b>A.1</b>	<b>General .....</b>	<b>13</b>
<b>A.2</b>	<b>Negative and positive controls .....</b>	<b>13</b>
<b>A.2.1</b>	<b>Negative controls .....</b>	<b>13</b>
<b>A.2.2</b>	<b>Positive controls .....</b>	<b>14</b>
<b>A.3</b>	<b>Paper and board samples .....</b>	<b>15</b>
<b>A.3.1</b>	<b>General .....</b>	<b>15</b>
<b>A.3.2</b>	<b>Case of <i>Bacillus subtilis</i> .....</b>	<b>15</b>
<b>A.3.3</b>	<b>Case of <i>Aspergillus niger</i>.....</b>	<b>19</b>

**EN 1104:2018 (E)****European foreword**

This document (EN 1104:2018) has been prepared by Technical Committee CEN/TC 172 "Pulp, paper and board", 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 May 2019, and conflicting national standards shall be withdrawn at the latest by May 2019.

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 1104:2005.

With regards to EN 1104:2005 the following changes have been made:

- a) The definition of the inhibition zone has been clarified;
- b) Modified Sabouraud nutrient medium for the preparation of *Aspergillus niger* spores has been replaced by 4 % Sabouraud;
- c) Guidelines for interpreting the results in Annex A have been added, including figures: these guidelines are intended to aid the interpretation of results obtained in the framework of application of EN 1104 standard for the various controls performed and for the samples tested;
- d) Editorial updating.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## 1 Scope

This document specifies a method for the determination of transfer of antimicrobial constituents from paper and board materials and articles intended for food contact.

NOTE The need of using this Standard may be specified by the legislation regarding paper and board intended to come into contact with foodstuffs.

## 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 ISO 186, *Paper and board — Sampling to determine average quality (ISO 186)*

EN ISO 7218, *Microbiology of food and animal feeding stuffs — General requirements and guidance for microbiological examinations (ISO 7218)*

EN ISO 11133, *Microbiology of food, animal feed and water — Preparation, production, storage and performance testing of culture media (ISO 11133)*

## 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:

koniec náhľadu – text d'alej pokračuje v platenej verzii STN