



SLOVENSKI STANDARD SIST EN ISO 11267:2014

01-maj-2014

Kakovost tal - Zaviranje razmnoževanja vrste Folsomia candida iz rodu skakačev (Collembola) zaradi onesnaževal v tleh (ISO 11267:2014)

Soil quality - Inhibition of reproduction of Collembola (Folsomia candida) by soil contaminants (ISO 11267:2014)

Bodenbeschaffenheit - Hemmung der Reproduktion von Collembolen (Folsomia candida) durch Verunreinigungen (ISO 11267:2014)

Qualité du sol - Inhibition de la reproduction de Collembola (Folsomia candida) par des contaminants du sol (ISO 11267:2014)

<https://standards.iteh.ai/catalog/standards/sist/c5825725-1c73-47e5-9ccc-3a41d018f886/sist-en-iso-11267-2014>

Ta slovenski standard je istoveten z: EN ISO 11267:2014

ICS:

13.080.30 Biološke lastnosti tal Biological properties of soils

SIST EN ISO 11267:2014 en,fr,de

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN ISO 11267:2014

<https://standards.iteh.ai/catalog/standards/sist/c5825725-1c73-47e5-9ccc-3a41d018f886/sist-en-iso-11267-2014>

EUROPEAN STANDARD

EN ISO 11267

NORME EUROPÉENNE

EUROPÄISCHE NORM

February 2014

ICS 13.080.30

English Version

Soil quality - Inhibition of reproduction of Collembola (*Folsomia candida*) by soil contaminants (ISO 11267:2014)

Qualité du sol - Inhibition de la reproduction de Collembola (*Folsomia candida*) par des contaminants du sol (ISO 11267:2014)

Bodenbeschaffenheit - Hemmung der Reproduktion von Collembolen (*Folsomia candida*) durch Verunreinigungen (ISO 11267:2014)

This European Standard was approved by CEN on 4 January 2014.

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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

<https://standards.iteh.ai/catalog/standards/sist/c5825725-1c73-47e5-9ccc-3a41d018f886/sist-en-iso-11267-2014>



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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents	Page
Foreword.....	3

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN ISO 11267:2014
<https://standards.iteh.ai/catalog/standards/sist/c5825725-1c73-47e5-9ccc-3a41d018f886/sist-en-iso-11267-2014>

Foreword

This document (EN ISO 11267:2014) has been prepared by Technical Committee ISO/TC 190 "Soil quality" in collaboration with Technical Committee CEN/TC 345 "Characterization of soils" the secretariat of which is held by NEN.

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 August 2014, and conflicting national standards shall be withdrawn at the latest by August 2014.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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

Endorsement notice

The text of ISO 11267:2014 has been approved by CEN as EN ISO 11267:2014 without any modification.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN ISO 11267:2014](https://standards.iteh.ai/catalog/standards/sist/c5825725-1c73-47e5-9ccc-3a41d018f886/sist-en-iso-11267-2014)

<https://standards.iteh.ai/catalog/standards/sist/c5825725-1c73-47e5-9ccc-3a41d018f886/sist-en-iso-11267-2014>

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN ISO 11267:2014

<https://standards.iteh.ai/catalog/standards/sist/c5825725-1c73-47e5-9ccc-3a41d018f886/sist-en-iso-11267-2014>

INTERNATIONAL
STANDARD

ISO
11267

Second edition
2014-02-15

**Soil quality — Inhibition of
reproduction of Collembola (*Folsomia
candida*) by soil contaminants**

*Qualité du sol — Inhibition de la reproduction de Collembola
(Folsomia candida) par des contaminants du sol*

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN ISO 11267:2014](https://standards.iteh.ai/catalog/standards/sist/c5825725-1c73-47e5-9ccc-3a41d018f886/sist-en-iso-11267-2014)

<https://standards.iteh.ai/catalog/standards/sist/c5825725-1c73-47e5-9ccc-3a41d018f886/sist-en-iso-11267-2014>



Reference number
ISO 11267:2014(E)

© ISO 2014

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN ISO 11267:2014

<https://standards.iteh.ai/catalog/standards/sist/c5825725-1c73-47e5-9ccc-3a41d018f886/sist-en-iso-11267-2014>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2014

All rights reserved. Unless otherwise specified, 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
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Principle	3
5 Reagents and material	4
6 Apparatus	6
7 Procedure	6
7.1 Experimental design.....	6
7.2 Preparation of test mixture.....	7
7.3 Addition of the biological material.....	9
7.4 Test conditions and measurements.....	9
7.5 Determination of surviving Collembola.....	9
8 Calculation and expression of results	9
8.1 Calculation.....	9
8.2 Expression of results.....	9
9 Validity of the test	10
10 Statistical analysis	10
10.1 General.....	10
10.2 Single-concentration tests.....	10
10.3 Multi-concentration tests.....	11
11 Test report	11
Annex A (informative) Techniques for rearing and breeding of Collembola	13
Annex B (informative) Determination of water-holding capacity	15
Annex C (informative) Guidance on adjustment of pH of artificial soil	16
Annex D (informative) Extraction and counting of Collembola	17
Bibliography	18

ISO 11267:2014(E)**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 WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 190, *Soil quality*, Subcommittee SC 4, *Biological methods*.

This second edition cancels and replaces the first edition (ISO 11267:1999), which has been technically revised.

Introduction

Ecotoxicological test systems are applied to obtain information about the effects of contaminants in soil and are proposed to complement conventional chemical analysis (see [2] and [4]). Reference [2] includes a list and short characterization of recommended and standardized test systems and [4] gives guidance on the choice and evaluation of the bioassays. Aquatic test systems with soil eluate are applied to obtain information about the fraction of contaminants potentially reaching the groundwater by the water path (retention function of soils), whereas terrestrial test systems are used to assess the habitat function of soils.

Soil-dwelling Collembola are ecologically relevant species for ecotoxicological testing. Springtails are prey animals for a variety of endogeic and epigeic invertebrates and they contribute to decomposition processes in soils. In acidic soils they may be the most important soil invertebrates besides enchytraeids with respect to that function, since earthworms are typically absent.[19] Additionally, Collembola represent arthropod species with a different route and a different rate of exposure compared to earthworms[1] and enchytraeids.[3] Various species were used in bioassays of which four species were used most commonly, *Folsomia candida*, *Folsomia fimetaria*, *Onychiurus armatus*, and *Orchesella cincta*. [20] Numerous soil toxicity tests supported by Environment Canada (EC) resulted in the development and standardization of a biological test method for determining the lethal and sublethal toxicity of samples of contaminated soil to Collembola.[10] The method prepared by EC includes three species, *Orthonychiurus folsomi*, *Folsomia candida*, and *Folsomia fimetaria*. As standardized test systems using Collembola as indicator organisms for the habitat function of soil, another two methods exist. One is designed for assessing the effects of substances on the reproductive output of the Collembola, *Folsomia fimetaria* L. and *Folsomia candida* Willem in soil,[19], [21], and the other method described here, focuses on testing contaminated soil. Optionally the method can be used for testing substances added to standard soils (e.g. artificial soil) for their sublethal hazard potential to Collembola.

This International Standard describes a method that is based on the determination of sublethal effects of contaminated soils to adult Collembola of the species *Folsomia candida* Willem. The species is distributed worldwide. It plays a similar ecological role to *Folsomia fimetaria*. [10], [19] *Folsomia candida* reproduces parthenogenetically and is an easily accessible species as it is commercially available and easy to culture. *Folsomia candida* is considered to be a representative of soil arthropods and Collembola in particular. Background information on the ecology of springtails and their use in ecotoxicological testing is available.[22]

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN ISO 11267:2014

<https://standards.iteh.ai/catalog/standards/sist/c5825725-1c73-47e5-9ccc-3a41d018f886/sist-en-iso-11267-2014>