

# SLOVENSKI STANDARD

## SIST EN ISO 10140-5:2010

01-december-2010

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SIST EN 20140-10:1997

SIST EN ISO 140-1:1998

SIST EN ISO 140-1:1998/A1:2005

SIST EN ISO 140-11:2005

SIST EN ISO 140-16:2006

SIST EN ISO 140-3:1997

SIST EN ISO 140-3:1997/A1:2005

SIST EN ISO 140-6:1999

SIST EN ISO 140-8:1998

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**Akustika - Laboratorijsko merjenje zvočne izolirnosti gradbenih elementov - 5. del:  
Zahteve in oprema za laboratorije (ISO 10140-5:2010)**

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Acoustics - Laboratory measurement of sound insulation of building elements - Part 5:  
Requirements for test facilities and equipment (ISO 10140-5:2010)

Akustik - Messung der Schalldämmung von Gebäudeteilen im Prüfstand - Teil 5:  
Anforderungen an Prüfstände und Prüfeinrichtungen (ISO 10140-5:2010)

Acoustique - Détermination de l'isolation acoustique des éléments de construction -  
Partie 5: Exigences pour installations et équipements d'essai (ISO 10140-5:2010)

**Ta slovenski standard je istoveten z: EN ISO 10140-5:2010**

### ICS:

91.120.20	Akustika v stavbah. Zvočna izolacija	Acoustics in building. Sound insulation
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NORME EUROPÉENNE  
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English Version

## Acoustics - Laboratory measurement of sound insulation of building elements - Part 5: Requirements for test facilities and equipment (ISO 10140-5:2010)

Acoustique - Mesurage en laboratoire de l'isolation acoustique des éléments de construction - Partie 5: Exigences relatives aux installations et appareillage d'essai (ISO 10140-5:2010)

Akustik - Messung der Schalldämmung von Gebäudeteilen im Prüfstand - Teil 5: Anforderungen an Prüfstände und Prüfeinrichtungen (ISO 10140-5:2010)

This European Standard was approved by CEN on 14 August 2010.

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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 Management Centre has the same status as the official versions.

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## Foreword

This document (EN ISO 10140-5:2010) has been prepared by Technical Committee ISO/TC 43 "Acoustics" in collaboration with Technical Committee CEN/TC 126 "Acoustic properties of building elements and of buildings" the secretariat of which is held by AFNOR.

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 March 2011, and conflicting national standards shall be withdrawn at the latest by March 2011.

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.

This document supersedes EN ISO 140-16:2006, EN 20140-10:1992, EN ISO 140-11:2005, EN ISO 140-1:1997, EN ISO 140-3:1995, EN ISO 140-8:1997, EN ISO 140-6:1998.

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10140-5

First edition  
2010-09-01

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**Acoustics — Laboratory measurement of  
sound insulation of building elements —  
Part 5:  
Requirements for test facilities and  
equipment**

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*Acoustique — Mesurage en laboratoire de l'isolation acoustique des  
éléments de construction —  
Partie 5. Exigences relatives aux installations et appareillages d'essai*

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## ISO 10140-5:2010(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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 10140-5 was prepared by Technical Committee ISO/TC 43, *Acoustics*, Subcommittee SC 2, *Building acoustics*.

This first edition of ISO 10140-5, together with ISO 10140-1, ISO 10140-2, ISO 10140-3 and ISO 10140-4, cancels and replaces ISO 140-1:1997, ISO 140-3:1995, ISO 140-6:1998, ISO 140-8:1997, ISO 140-10:1991, ISO 140-11:2005 and ISO 140-16:2006, which have been technically revised.

It also incorporates the Amendments ISO 140-1:1997/Amd.1:2004 and ISO 140-3:1995/Amd.1:2004.

ISO 10140 consists of the following parts, under the general title *Acoustics — Laboratory measurement of sound insulation of building elements*:

- *Part 1: Application rules for specific products*
- *Part 2: Measurement of airborne sound insulation*
- *Part 3: Measurement of impact sound insulation*
- *Part 4: Measurement procedures and requirements*
- *Part 5: Requirements for test facilities and equipment*

## Introduction

ISO 10140 (all parts) concerns laboratory measurement of the sound insulation of building elements (see Table 1).

ISO 10140-1 specifies the application rules for specific elements and products, including specific requirements for preparation, mounting, operating and test conditions. ISO 10140-2 and ISO 10140-3 contain the general procedures for airborne and impact sound insulation measurements, respectively, and refer to ISO 10140-4 and this part of ISO 10140 where appropriate. For elements and products without a specific application rule described in ISO 10140-1, it is possible to apply ISO 10140-2 and ISO 10140-3. ISO 10140-4 contains basic measurement techniques and processes. This part of ISO 10140 contains requirements for test facilities and equipment. For the structure of ISO 10140 (all parts), see Table 1.

ISO 10140 (all parts) was created to improve the layout for laboratory measurements, ensure consistency and simplify future changes and additions regarding mounting conditions of test elements in laboratory and field measurements. It is intended for ISO 10140 (all parts) to present a well-written and arranged format for laboratory measurements.

It is intended to update ISO 10140-1 with application rules for other products. It is also intended to incorporate ISO 140-18 into ISO 10140 (all parts).

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## ISO 10140-5:2010(E)

Table 1 — Structure and contents of ISO 10140 (all parts)

Relevant part of ISO 10140	Main purpose, contents and use	Detailed content
ISO 10140-1	It indicates the appropriate test procedure for elements and products. For certain types of element/product, it can contain additional and more specific instructions about quantities and test element size and about preparation, mounting and operating conditions. Where no specific details are included, the general guidelines are according to ISO 10140-2 and ISO 10140-3.	Appropriate references to ISO 10140-2 and ISO 10140-3 and product-related, specific and additional instructions on: <ul style="list-style-type: none"> <li>— specific quantities measured;</li> <li>— size of test element;</li> <li>— boundary and mounting conditions;</li> <li>— conditioning, testing and operating conditions;</li> <li>— additional specifics for test report.</li> </ul>
ISO 10140-2	It gives a complete procedure for airborne sound insulation measurements according to ISO 10140-4 and ISO 10140-5. For products without specific application rules, it is sufficiently complete and general for the execution of measurements. However, for products with specific application rules, measurements are carried out according to ISO 10140-1, if available.	<ul style="list-style-type: none"> <li>— Definitions of main quantities measured</li> <li>— General mounting and boundary conditions</li> <li>— General measurement procedure</li> <li>— Data processing</li> <li>— Test report (general points)</li> </ul>
ISO 10140-3	It gives a complete procedure for impact sound insulation measurements according to ISO 10140-4 and ISO 10140-5. For products without specific application rules, it is sufficiently complete and general for the execution of measurements. However, for products with specific application rules, measurements are carried out according to ISO 10140-1, if available.	<ul style="list-style-type: none"> <li>— Definitions of main quantities measured</li> <li>— General mounting and boundary conditions</li> <li>— General measurement procedure</li> <li>— Data processing</li> <li>— Test report (general points)</li> </ul>
ISO 10140-4	It gives all the basic measurement techniques and processes for measurement according to ISO 10140-2 and ISO 10140-3 or facility qualifications according to ISO 10140-5. Much of the content is implemented in software.	<ul style="list-style-type: none"> <li>— Definitions</li> <li>— Frequency range</li> <li>— Microphone positions</li> <li>— SPL measurements</li> <li>— Averaging, space and time</li> <li>— Correction for background noise</li> <li>— Reverberation time measurements</li> <li>— Loss factor measurements</li> <li>— Low-frequency measurements</li> <li>— Radiated sound power by velocity measurement</li> </ul>
ISO 10140-5	It specifies all information needed to design, construct and qualify the laboratory facility, its additional accessories and measurement equipment (hardware).	<p>Test facilities, design criteria:</p> <ul style="list-style-type: none"> <li>— volumes, dimensions;</li> <li>— flanking transmission;</li> <li>— laboratory loss factor;</li> <li>— maximum achievable sound reduction index;</li> <li>— reverberation time;</li> <li>— influence of lack of diffusivity in the laboratory.</li> </ul> <p>Test openings:</p> <ul style="list-style-type: none"> <li>— standard openings for walls and floors;</li> <li>— other openings (windows, doors, small technical elements);</li> <li>— filler walls in general.</li> </ul> <p>Requirements for equipment:</p> <ul style="list-style-type: none"> <li>— loudspeakers, number, positions;</li> <li>— tapping machine and other impact sources;</li> <li>— measurement equipment.</li> </ul> <p>Reference constructions:</p> <ul style="list-style-type: none"> <li>— basic elements for airborne and impact insulation improvement;</li> <li>— corresponding reference performance curves.</li> </ul>

# Acoustics — Laboratory measurement of sound insulation of building elements —

## Part 5: Requirements for test facilities and equipment

### 1 Scope

This part of ISO 10140 specifies laboratory test facilities and equipment for sound insulation measurements of building elements, such as:

- components and materials;
- building elements;
- technical elements (small building elements);
- sound insulation improvement systems.

It is applicable to laboratory test facilities with suppressed radiation from flanking elements and structural isolation between source and receiving rooms.

This part of ISO 10140 specifies qualification procedures for use when commissioning a new test facility with equipment for sound insulation measurements. It is intended that these procedures be repeated periodically to ensure that there are no issues with the equipment and the test facility.

### 2 Normative references

The following referenced documents are indispensable for the application 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 717-1, *Acoustics — Rating of sound insulation in buildings and of building elements — Part 1: Airborne sound insulation*

ISO 717-2, *Acoustics — Rating of sound insulation in buildings and of building elements — Part 2: Impact sound insulation*

ISO 3382-2, *Acoustics — Measurement of room acoustic parameters — Part 2: Reverberation time in ordinary rooms*

ISO 9052-1:1989, *Acoustics — Determination of dynamic stiffness — Part 1: Materials used under floating floors in dwellings*

ISO 10140-1, *Acoustics — Laboratory measurement of sound insulation of building elements — Part 1: Application rules for specific products*

ISO 10140-2, *Acoustics — Laboratory measurement of sound insulation of building elements — Part 2: Measurements of airborne sound insulation*