

# SLOVENSKI STANDARD

## SIST EN ISO 3741:2009

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Acoustics - Determination of sound power levels of noise sources using sound pressure - Precision methods for reverberation rooms (ISO 3741:1999, including Cor 1:2001)

Akustik - Ermittlung der Schalleistungspegel von Geräuschquellen durch Schalldruckmessungen - Hallraumverfahren der Genauigkeitsklasse 1 (ISO 3741:1999, einschließlich Cor 1:2001)

Acoustique - Détermination des niveaux de puissance acoustique émis par les sources de bruit à partir de la pression acoustique - Méthodes de laboratoire en salles réverbérantes (ISO 3741:1999, Cor 1:2001 inclus)

Ta slovenski standard je istoveten z: EN ISO 3741:2009

### ICS:

17.140.01 Acoustic measurements and noise abatement in general

SIST EN ISO 3741:2009

en

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN ISO 3741**

July 2009

ICS 17.140.01

Supersedes EN ISO 3741:1999

English Version

**Acoustics - Determination of sound power levels of noise  
sources using sound pressure - Precision methods for  
reverberation rooms (ISO 3741:1999, including Cor 1:2001)**

Acoustique - Détermination des niveaux de puissance  
acoustique émis par les sources de bruit à partir de la  
pression acoustique - Méthodes de laboratoire en salles  
réverbérantes (ISO 3741:1999, Cor 1:2001 inclus)

Akustik - Ermittlung der Schalleistungspegel von  
Geräuschquellen durch Schalldruckmessungen -  
Hallraumverfahren der Genauigkeitsklasse 1 (ISO  
3741:1999, einschließlich Cor 1:2001)

This European Standard was approved by CEN on 13 July 2009.

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 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 Management Centre has the same status as the official versions.

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



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

**Management Centre: Avenue Marnix 17, B-1000 Brussels**

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## Foreword

The text of ISO 3741:1999, including Cor 1:2001 has been prepared by Technical Committee ISO/TC 43 "Acoustics" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 3741:2009 by Technical Committee CEN/TC 211 "Acoustics" the secretariat of which is held by DS.

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 January 2010, and conflicting national standards shall be withdrawn at the latest by January 2010.

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 3741:1999.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directives.

For relationship with EC Directives, see informative Annexes ZA and ZB, which are integral parts of this document.

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

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### Endorsement notice

The text of ISO 3741:1999, including Cor 1:2001 has been approved by CEN as a EN ISO 3741:2009 without any modification.

## **Annex ZA** (informative)

### **Relationship between this European Standard and the Essential Requirements of EU Directive 98/37/EC**

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to provide a means of conforming to Essential Requirements of the New Approach Directive 98/37/EC, amended by 98/79/EC on machinery.

Once this standard is cited in the Official Journal of the European Communities under that Directive and has been implemented as a national standard in at least one Member State, compliance with the normative clauses of this standard confers, within the limits of the scope of this standard, a presumption of conformity with the relevant Essential Requirements of that Directive and associated EFTA regulations.

**WARNING** - Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this standard.

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## **Annex ZB** (informative)

### **Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC**

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to provide a means of conforming to Essential Requirements of the New Approach Directive 2006/42/EC on machinery.

Once this standard is cited in the Official Journal of the European Communities under that Directive and has been implemented as a national standard in at least one Member State, compliance with the normative clauses of this standard confers, within the limits of the scope of this standard, a presumption of conformity with the relevant Essential Requirements of that Directive and associated EFTA regulations.

**WARNING —** Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this standard.

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# INTERNATIONAL STANDARD

**ISO  
3741**

Third edition  
1999-08-01

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## Acoustics — Determination of sound power levels of noise sources using sound pressure — Precision methods for reverberation rooms

*Acoustique — Détermination des niveaux de puissance acoustique émis par les sources de bruit à partir de la pression acoustique — Méthodes de laboratoire en salles réverbérantes*

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Reference number  
ISO 3741:1999(E)

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## 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 3.

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.

International Standard ISO 3741 was prepared by Technical Committee ISO/TC 43, *Acoustics*, Subcommittee SC 1, *Noise*.

This third edition of ISO 3741 cancels and replaces ISO 3741:1988 and ISO 3742:1988, which have been technically revised and amalgamated.

Annexes A, E and F form a normative part of this International Standard. Annexes B, C and D are for information only.

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## 0 Introduction

**0.1** This International Standard is one of the ISO 3740 series, which specifies various methods for determining the sound power levels of machines, equipment, and their sub-assemblies. When selecting one of the methods of the ISO 3740 series, it is necessary to select the most appropriate for the conditions and purpose of the test. General guidelines to assist in the selection are provided in ISO 12001 and ISO 3740. The ISO 3740 series gives only general principles regarding the operating and mounting conditions of the machine or equipment under test. Reference should be made to the noise test code for a specific type of machine or equipment, if available, for specifications on mounting and operating conditions.

**0.2** This International Standard specifies laboratory methods for determining the sound power radiated by sources as a function of frequency, using a reverberation test room having specified acoustical characteristics. If a room having these characteristics is not available, other documents of the series of basic standards with different environmental requirements are offered (see Table 1 and ISO 3744 or ISO 9614).

In this International Standard, the computation of sound power from sound pressure measurements is based on the premise that, for a source emitting a given sound power in the reverberation test room, the mean-square sound pressure averaged in space and time,  $\overline{p^2}$ , is directly proportional to the sound power and otherwise depends only on the acoustical and geometric properties of the room and on the physical constants of air.

If a source emits narrow-band or discrete-frequency sound, a precise determination of the radiated sound power level requires greater effort. The reasons are as follows:

- a) the space/time-averaged sound pressure along a short microphone path, or as determined with an array of a small number of microphones, is not always a good estimate of the space/time averaged mean-square pressure throughout the room;
- b) the sound power radiated by the sources is more strongly influenced by the normal modes of the room and by the position of the source within the room.

If narrow bands of noise or discrete tones are emitted by a source, a determination of its sound power level in a reverberation room requires either the optimization and qualification of the room and test set-up (see annex A) or the use of a greater number of source locations and microphone positions (or greater path length for a moving microphone). These numbers can be reduced by adding low frequency absorbers to decrease the reverberation time. It is also helpful if one or more diffusers are rotating in the test room during the measurements. Guidelines for the design of suitable rotating diffusers are given in annex B.