SLOVENSKI STANDARD
SIST EN ISO 3747:2001

01-september-2001

Akustika - Ugotavljanje ravni zvoļnih moļi in virov hrupa z zvoļnim tlakom - Primerjalna metoda in situ (ISO 3747:2000)

Acoustics - Determination of sound power levels of noise sources using sound pressure - Comparison method for use in situ (ISO 3747:2000)

Akustik - Bestimmung der Schalleistungspegel von Geräuschquellen aus Schalldruckmessungen -Vergleichsverfahren zur Verwendung unter Einsatzbedingungen (ISO 3747:2000)

Acoustique - Détermination des niveaux de puissance acoustique émis par les sources de bruit a partir de la pression acoustique - Méthode de comparaison pour une utilisation in situ
(ISO 3747:2000)

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ICS:

17.140.01	Akustiļna merjenja in blaģenje hrupa na sploģno	Acoustic measurements and noise abatement in general

SIST EN ISO 3747:2001 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 3747

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English version

Acoustics - Determination of sound power levels of noise sources using sound pressure - Comparison method for use in situ (ISO 3747:2000)

Acoustique - Détermination des niveaux de puissance acoustique émis par les sources de bruit à partir de la pression acoustique - Méthode de comparaison pour une utilisation in situ (ISO 3747:2000)

Akustik - Bestimmung der Schalleistungspegel von Geräuschquellen aus Schalldruckmessungen - Vergleichsverfahren zur Verwendung unter Einsatzbedingungen (ISO 3747:2000)

This European Standard was approved by CEN on 1 July 2000.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Ref. No. EN ISO 3747:2000 E

Foreword

The text of the International Standard ISO 3747:2000 has been prepared by Technical Committee ISO/TC 43 "Acoustics" in collaboration with 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 2001, and conflicting national standards shall be withdrawn at the latest by January 2001.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

NOTE FROM CEN/CS: The foreword is susceptible to be amended on reception of the German language version. The confirmed or amended foreword, and when appropriate, the normative annex ZA for the references to international publications with their relevant European publications will be circulated with the German version.

Endorsement notice

The text of the International Standard ISO 3747:2000 was approved by CEN as a European Standard without any modification.

INTERNATIONAL STANDARD

ISO 3747

Second edition
2000-07-01

Acoustics — Determination of sound power levels of noise sources using sound pressure — Comparison method *in situ*

Acoustique — Détermination des niveaux de puissance acoustique émis par les sources de bruit à partir de la pression acoustique — Méthode de comparaison in situ

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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.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 3747 was prepared by Technical Committee ISO/TC 43, *Acoustics*, Subcommittee SC 1, *Noise*.

This second edition cancels and replaces the first edition (ISO 3747:1987), which has been technically revised.

Annex A forms a normative part of this International Standard. Annex B is for information only.

Introduction

This International Standard is one of the ISO 3740 series which, together with ISO 9614, specifies various methods for determining sound power levels of machines, equipment and sub-assemblies thereof. When selecting one of the methods of the 3740 series, it is necessary to decide which one is most appropriate for the conditions and purposes of the test. General guidelines to assist in the selection are provided in ISO 3740. Insofar as the operating and mounting conditions of the machine or equipment under test are concerned, only general principles are given in the ISO 3740 series. Reference should be made to the test code for a specific type of machine or equipment, if available, for specifications on mounting and operating conditions.

Acoustics — Determination of sound power levels of noise sources using sound pressure — Comparison method *in situ*

1 Scope

1.1 This International Standard specifies a method for determining the sound power levels of sound sources *in situ*, especially if non-movable. A comparison method is used and all measurements are carried out in octave bands. The measurement uncertainty depends on the test environment. The measurement uncertainty is evaluated by comparing with an indicator describing the spatial sound distribution. The accuracy will either be that of an engineering method or a survey method.

The sound power level of the source under test is calculated from the measured values of the sound pressure levels produced at specified measurement points by the source and by a reference sound source, respectively. The sound power level is calculated using the calibrated values of the reference sound source and the differences between the values obtained with the source under test and those of the reference sound source. All calculations are carried out in octave bands, from which the A-weighted sound power level is determined.

NOTE For noise sources which can be moved, other relevant standards in the ISO 3740 series may be used.

1.2 This International Standard is applicable to all kinds of test environments which are to be found outside a laboratory environment, provided that the background noise level is sufficiently low and the sound pressure level at the microphone positions depends mainly on reflections from the room surfaces.

NOTE ISO 3744 or ISO 9614 may provide alternative methods.

1.3 This International Standard is primarily applicable to sources which radiate broad-band noise. It may, however, also be used for sources which radiate narrow-band noise or discrete tones, although the measurement uncertainty might then become larger than stated herein.

NOTE For noise sources emitting stationary noise, ISO 9614 may be used as an alternative.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 6926, *Acoustics — Requirements for the performance and calibration of reference sound sources used for the determination of sound power levels*.

ISO 7574-1, *Acoustics — Statistical methods for determining and verifying stated noise emission values of machinery and equipment — Part 1: General considerations and definitions*.

IEC 60942, *Electroacoustics — Sound calibrators*.

IEC 61260:1995, *Electroacoustics — Octave-band and fractional-octave band filters.*

IEC 61672-1, *Electroacoustics — Sound level meters — Part 1: Specifications.*[1)]

3 Terms and definitions

For the purposes of this International Standard, the following terms and definitions apply.

3.1
reference sound source
RSS
stable and steady source emitting constant broad-band noise with an adequate sound power level, in conformance with and calibrated according to ISO 6926

3.2
calibration position
position, well-defined relative to reflecting surfaces, in which the reference sound source has been calibrated

3.3
reference box
hypothetical surface which is the smallest rectangular parallelepiped that just encloses the source and terminates on the reflecting plane(s)

3.4
reverberant sound field
that portion of the sound field in the test room over which the influence of sound received directly from the source is negligible

3.5
measurement distance
d_m
closest distance from the reference box to a microphone position

3.6
background noise
noise from all sources other than the source under test

NOTE Background noise may include contributions from airborne sound, structure-borne vibration, and electrical noise in instrumentation.

3.7
frequency range of interest
for general purposes, the frequency range of interest includes the octave bands with midband frequencies from 125 Hz to 8 000 Hz

NOTE 1 For special purposes, it is permissible to extend or reduce the frequency range of interest at either end, provided that the test environment, reference sound source and instrument accuracy are satisfactory for use over the extended or reduced frequency range. For sources which radiate predominantly high (or low) frequency sound, it is permissible to extend or reduce the frequency range of interest in order to optimize the test procedures.

NOTE 2 For determination of A-weighted sound power levels (or other frequency-weighted levels), frequency components within the range which do not contribute to the A-weighted sound power level may be disregarded.

1) To be published. (Revision of IEC 60651 and IEC 60804)