

**Akustika. Mürasallikate helivõimsustasemete
määramine. Juhised põhistandardite
rakendamiseks (ISO 3740:2000)**

Acoustics - Determination of sound power levels of
noise sources - Guidelines for the use of basic
standards (ISO 3740:2000)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN ISO 3740:2007 sisaldab Euroopa standardi EN ISO 3740:2000 ingliskeelset teksti.</p> <p>Standard on kinnitatud Eesti Standardikeskuse 04.04.2001 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 01.11.2000.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN ISO 3740:2007 consists of the English text of the European standard EN ISO 3740:2000.</p> <p>This standard is ratified with the order of Estonian Centre for Standardisation dated 04.04.2001 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.</p> <p>Date of Availability of the European standard text 01.11.2000.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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Võtmesõnad: akustika, helivõimsustase, müraallikad

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ICS 17.140.01

English version

Acoustics

Determination of sound power levels of noise sources

Guidelines for the use of basic standards
(ISO 3740 : 2000)

Acoustique – Détermination des
niveaux de puissance acoustique émis
par les sources de bruit – Guide pour
l'utilisation des normes de base
(ISO 3740 : 2000)

Akustik – Bestimmung der
Schallleistungspegel von Geräusch-
quellen – Leitlinien zur Anwendung
der Grundnormen (ISO 3740 : 2000)

This European Standard was approved by CEN on 2000-09-17.

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 Management Centre or to any CEN member.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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Foreword

International Standard

ISO 3740 : 2000 Acoustics – Determination of sound power levels of noise sources – Guidelines for the use of basic standards,

which was prepared by ISO/TC 43 'Acoustics' of the International Organization for Standardization, has been adopted by Technical Committee CEN/TC 211 'Acoustics', the Secretariat of which is held by DS, as a European Standard.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, and conflicting national standards withdrawn, by May 2001 at the latest.

In accordance with the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard:

Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

Endorsement notice

The text of the International Standard ISO 3740 : 2000 was approved by CEN as a European Standard without any modification.

NOTE: Normative references to international publications are listed in Annex ZA (normative).

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Introduction

0.1 General

The series of International Standards, for which this International Standard serves as a guideline for use, comprises ISO 3741, ISO 3743-1, ISO 3743-2, ISO 3744, ISO 3745, ISO 3746, ISO 3747, ISO 9614-1 and ISO 9614-2. In principle, the methods of determining sound power levels described in ISO 3741 to ISO 3747 and ISO 9614-1 and ISO 9614-2 cover all types of machinery and equipment.

ISO 3741 to ISO 3747, ISO 9614-1 and ISO 9614-2 make up a set of basic International Standards which specify the acoustical conditions and instrumentation to be used, describe the procedures to be followed, and give general information on the mounting and operation of the machine under test in order to determine sound power levels.

The selection of standards for the determination of sound power levels can, for practical reasons, have consequences for the selection of standards for the determination of the emission sound pressure levels (see ISO 11200) and vice versa. It is beneficial to make the choice of standards concurrently with respect to the two noise emission quantities.

0.2 Relationships to other standards

This International Standard is one of a series which specifies various methods for determining the noise emission of a piece of machinery or equipment, or a sub-assembly of such equipment (referred to throughout this International Standard as the "machine under test"). Standards in this series are grouped in three categories.

a) Methods for the determination of sound power levels

This category includes the following standards (see Table 1):

- ISO 3741 to ISO 3747 give methods with precision grade, engineering grade or survey grade of accuracy for determining sound power levels of machinery and equipment using sound pressure level measurements in different types of environments;
- ISO 9614-1 and ISO 9614-2 describe methods for determining the sound power levels of machinery and equipment using sound intensity level measurements.

b) Methods for the determination of emission sound pressure levels at work stations and at other specified positions

This category includes the following standards:

- ISO 11200 gives guidelines for the choice of the method to be used;
- ISO 11201, ISO 11202 and ISO 11204 give methods for determining emission sound pressure levels of machinery and equipment from measured sound pressure levels;
- ISO 11203 gives methods for determining the emission sound pressure levels of machinery and equipment from the sound power levels.

c) Noise test codes

For a particular family of machinery or equipment, a noise test code specifies the following:

- the methods and instruments to be used for the determination of the sound power level;
- the method to be used for the determination of emission sound pressure levels at work stations and/or at other specified positions;
- the positions of the work stations;
- the mounting and operating conditions of the machine under test for the purpose of determining the noise emission quantities;
- the method to be used for verifying declared noise emission quantities.

ISO 12001 gives rules for the drafting and presentation of a noise test code.

1 Scope

This International Standard gives guidance for the use of a series of nine International Standards describing various methods for determining the sound power levels from all types of machinery and equipment. It provides:

- brief summaries of these basic International Standards;
- guidance on the selection of one or more of these standards which are appropriate to any particular type (see clause 5 and annex D). The guidance given applies only to airborne sound. It is for use in the preparation of noise test codes (see ISO 12001) and also in noise testing where no specific noise test code exists.

This International Standard is not intended to replace any of the details of, or add any additional requirements to, the individual test methods in the other basic standards referred to.

These basic standards specify the acoustical requirements for measurements appropriate for different test environments and accuracies.

It is important that specific test codes for various types of machinery and equipment be established and used in accordance with the requirements of these basic International Standards. Such standardized noise test codes will recommend the basic International Standard(s) to be used and will give detailed requirements on mounting and operating conditions for a particular family to which the machine under test belongs.

If no specific noise test code exists for a particular type of machinery, this International Standard is of use for the choice of the most suitable of the basic standards. In all cases, the mounting and operating conditions of the machine under test should be in accordance with the general principles given in the basic standards.

NOTE Two quantities which complement each other can be used to describe the sound emission of machinery or equipment. One is the emission sound pressure level at a specified position and the other is the sound power level. The International Standards which describe the basic methods for determining emission sound pressure levels at the work station and at other specified positions are the series ISO 11200 to ISO 11204.

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 3741:1999, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Precision methods for reverberation rooms*.

ISO 3743-1, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Engineering methods for small, movable sources in reverberant fields — Part 1: Comparison method for hard-walled test rooms*.

ISO 3743-2:1994, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Engineering methods for small, movable sources in reverberant fields — Part 2: Methods for special reverberation test rooms.*

ISO 3744:1994, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Engineering method in an essentially free field over a reflecting plane.*

ISO 3745:—¹⁾, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Precision methods for anechoic and hemi-anechoic rooms.*

ISO 3746:1995, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Survey method using an enveloping measurement surface over a reflecting plane.*

ISO 3747, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Comparison method in situ.*

ISO 9614-1:1993, *Acoustics — Determination of sound power levels of noise sources using sound intensity — Part 1: Measurement at discrete points.*

ISO 9614-2:1996, *Acoustics — Determination of sound power levels of noise sources using sound intensity — Part 2: Measurement by scanning.*

ISO 12001, *Acoustics — Noise emitted by machinery and equipment — Rules for the drafting and presentation of a noise test code.*

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

3 Terms and definitions

For the purposes of this International Standard, the following terms and definitions apply. More detailed definitions may be found in the ISO 3740 series (which includes ISO 3741 through ISO 3747), in ISO 9614-1 and ISO 9614-2 and in noise test codes for specific types of machinery and equipment.

3.1 emission

airborne sound radiated by a well-defined noise source (e.g. the machine under test) under specified operating and mounting conditions

NOTE Emission values may be incorporated in a product label and/or product specification. The basic noise emission quantities are the sound power level of the source itself and the emission sound pressure levels at the work station and/or at other specified positions (if any) in the vicinity of the source.

[ISO 12001]

3.2 sound power

W
rate per unit time at which airborne sound energy is radiated by a source

NOTE It is expressed in watts.

[ISO 12001]

1) To be published. (Revision of ISO 3745:1977)