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Acoustics - Determination of sound power levels of noise sources using sound pressure - Precision methods for anechoic and Semi-anechoic rooms

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN ISO 3745:2009 sisaldab Euroopa standardi EN ISO 3745:2009 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 30.09.2009 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

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English Version

Acoustics - Determination of sound power levels of noise
sources using sound pressure - Precision methods for anechoic
and semi-anechoic rooms (ISO 3745:2003)

Acoustique - Détermination des niveaux de puissance
acoustique émis par les sources de bruit à partir de la
pression acoustique - Méthodes de laboratoire pour les
salles anéchoïques et semi-anéchoïques (ISO 3745:2003)

Akustik - Bestimmung der Schalleistungspegel von
Geräuschquellen aus Schalldruckmessungen - Verfahren
der Genauigkeitsklasse 1 für reflexionsarme Räume und
Halbräume (ISO 3745:2003)

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

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Foreword

The text of ISO 3745:2003 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 3745:2009 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of an identical text or by endorsement, at the latest by January 2010, and conflicting national standards shall be withdrawn at the latest by January 2010.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 3745:2003.

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 EC 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.

Endorsement notice

The text of ISO 3745:2003 has been approved by CEN as a EN ISO 3745:2009 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.

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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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 other 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 source 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 a laboratory method for determining the sound power radiated by sources using an anechoic test room or a hemi-anechoic test room having specified acoustical characteristics. The method specified in this International Standard is only applicable to indoor measurements in specialized test rooms.

0.3 This International Standard specifies a laboratory method for the determination of not only sound power levels but also sound energy levels of sound sources. For a single burst of sound energy or transient sound, the sound power level cannot be defined and so it is necessary to adopt the sound energy level in order to specify the emitted sound with such a time history. The application of sound energy levels will be considered in the future revision of other standards of the ISO 3740 series.

0.4 In this International Standard, the sound power level or sound energy level for reference meteorological conditions is determined. This is required especially for grade 1 measurements.

Acoustics — Determination of sound power levels of noise sources using sound pressure — Precision methods for anechoic and hemi-anechoic rooms

1 Scope

This International Standard specifies methods for measuring the sound pressure levels on a measurement surface enveloping a noise source in anechoic and hemi-anechoic rooms, in order to determine the sound power level or sound energy level produced by the noise source. It gives requirements for the test environment and instrumentation, as well as techniques for obtaining the surface sound pressure level from which the sound power level or sound energy level is calculated, leading to results which have a grade 1 accuracy.

The methods specified in this International Standard are suitable for measurements of all types of noise.

The noise source can be a device, machine, component or sub-assembly. The maximum size of the source under test depends on the radius of the hypothetical sphere (or hemisphere) used as the enveloping measurement surface.

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 7574-1:1985, *Acoustics — Statistical methods for determining and verifying stated noise emission values of machinery and equipment — Part 1: General considerations and definitions*

ISO 7574-4:1985, *Acoustics — Statistical methods for determining and verifying stated noise emission values of machinery and equipment — Part 4: Methods for stated values for batches of machines*

ISO 9613-1:1993, *Acoustics — Attenuation of sound during propagation outdoors — Part 1: Calculation of the absorption of sound by the atmosphere*

IEC 60942:2003, *Electroacoustics — Sound calibrators*

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

IEC 61672-1:2002, *Electroacoustics — Sound level meters — Part 1: Specifications*

GUM:1993¹⁾, *Guide to the expression of uncertainty in measurement*. BIPM/IEC/IFCC/ISO/IUPAC/IUPAP/OIML (ISBN 92-67-10188-9)

1) Corrected and reprinted in 1995.