

**AKUSTIKA**

**Keskkonnamüra kirjeldamine, mõõtmine ja hindamine  
Osa 1: Põhisuurused ja hindamiskord**

**Acoustics**

**Description, measurement and assessment of  
environmental noise**

**Part 1: Basic quantities and assessment procedures  
(ISO 1996-1:2016)**

**EESTI STANDARDI EESSÕNA****NATIONAL FOREWORD**

<p>See Eesti standard EVS-ISO 1996-1:2017 „Akustika. Keskkonnamüra kirjeldamine, mõõtmine ja hindamine. Osa 1: Põhisuurused ja hindamiskord“ sisaldab rahvusvahelise standardi ISO 1996-1:2016 „Acoustics – Description, measurement and assessment of environmental noise – Part 1: Basic quantities and assessment procedures“ identset ingliskeelset teksti.</p>	<p>This Estonian Standard EVS-ISO 1996-1:2017 consists of the identical English text of the International Standard ISO 1996-1:2016 „Acoustics – Description, measurement and assessment of environmental noise – Part 1: Basic quantities and assessment procedures“.</p>
<p>Ettepaneku rahvusvahelise standardi ümbertrüki meetodil ülevõtuks on esitanud EVS/TK 61, standardi avaldamist on korraldanud Eesti Standardikeskus.</p>	<p>Proposal to adopt the International Standard by reprint method has been presented by EVS/TK 61, the Estonian standard has been published by the Estonian Centre for Standardisation.</p>
<p>Standard EVS-ISO 1996-1:2017 on jõustunud sellekohase teate avaldamisega EVS Teataja 2017. aasta veebruarikuu numbris.</p>	<p>Standard EVS-ISO 1996-1:2017 has been endorsed with a notification published in the February 2017 issue of the official bulletin of the Estonian Centre for Standardisation.</p>
<p>Standard on kättesaadav Eesti Standardikeskusest.</p>	<p>The standard is available from the Estonian Centre for Standardisation.</p>

**Käsitlusala**

Standardisarja ISO 1996 see osa defineerib põhisuurused, mida tuleb kasutada müra kirjeldamiseks avalikes keskkondades, ja kirjeldab põhilist hindamiskorda. Samuti kirjeldab ta meetodeid keskkonnamüra hindamiseks ja annab juhiseid kogukonna potentsiaalse reaktsiooni prognoosiks eri tüüpi keskkonnamürade pikaajalisest ekspositsioonist põhjustatud häirivusele. Heli allikad võivad esineda eraldi või mitmesugustes kombinatsioonides. Häiriva toime prognoosimeetodi rakendamine on piiratud inimeste elamisalaga ja sellega seotud pikaajalise maakasutusega.

Kogukonna reageering mürale, millel vaatluste alusel on samad akustilised tasemed, võib olenevalt heliallikast erineda. Standardisarja ISO 1996 see osa kirjeldab erinevat iseloomu omavate helide parandusi. Terminit „hinnatud tase“ kasutatakse reaalsete heliprognoside või mõõtmiste kirjeldamiseks, millele on lisatud üks või rohkem parandust. Hinnatud tasemete alusel võib hinnata kogukonna reaktsiooni pikaajalisele häirivusele.

Helisid hinnatakse kas üksikult või koos viisil, mis võimaldab, kui vastutavad asutused peavad seda vajalikuks, arvesse võtta nende eriomadusi impulssiseloomu, tonaalsuse ja madalsagedusliku komponendi puhul ning teeliikluse müra, muude transportmüra vormide (nagu lennuliikluse müra) ja tööstusmüra eri tunnuseid.

Standardisarja ISO 1996 see osa ei kehtesta keskkonnamüra piirnorme.

**MÄRKUS 1** Akustikas võib heli kirjeldavate füüsikaliste suuruste tase olla esitatud detsibellides (nt helirõhk, maksimaalne helirõhk ja ekvivalentne püsiv helirõhk). Neile füüsikalistele suurustele vastavad tasemed on sama heli puhul tavaliselt erinevad. Tihti tekitab see segadust. Seetõttu on vaja määratleda aluseks olev füüsikaline suurus (nt helirõhu tase, maksimaalne helirõhu tase ja ekvivalentne püsiv helirõhu tase).

MÄRKUS 2 Standardisarja ISO 1996 selles osas on suurused avaldatud tasemetena detsibellides. Mõned riigid avaldavad siiski aluseks olevad füüsikalised suurused, nagu maksimaalne helirõhk – paskalites või heliekspositsioon – paskal ruudus sekundit.

MÄRKUS 3 Helirõhu tasemete määramist käsitleb ISO 1996-2.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile [standardiosakond@evs.ee](mailto:standardiosakond@evs.ee).

ICS 13.140

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 43, *Acoustics*, Subcommittee SC 1, *Noise*.

This third edition cancels and replaces the second edition (ISO 1996-1:2003), which has been technically revised. In particular, the following subclauses and annexes have been added or revised: [3.6](#), [6.3.1](#), [6.5](#), [8.1](#), [8.2.1 i](#), [Annex A](#), [Annex D](#), [Annex E](#), [Annex F](#), [Annex G](#), and [Annex H](#).

ISO 1996 consists of the following parts, under the general title *Acoustics — Description, measurement and assessment of environmental noise*:

- *Part 1: Basic quantities and assessment procedures*
- *Part 2: Determination of sound pressure levels*

## Introduction

To be of practical use, any method of description, measurement, and assessment of environmental noise is intended to be related in some way to what is known about human response to noise. Many adverse consequences of environmental noise increase with increasing noise, but the precise dose-response relationships involved continue to be the subject of scientific debate. In addition, it is important that all methods used be practicable within the social, economic, and political climate in which they are used. For these reasons, there is a very large range of different methods in use around the world for different types of noise, and this creates considerable difficulties for international comparison and understanding.

The broad aim of the ISO 1996 series is to contribute to the international harmonization of methods of description, measurement, and assessment of environmental noise from all sources.

The methods and procedures described in this part of ISO 1996 are intended to be applicable to noise from various sources, individually or in combination, which contribute to the total exposure at a site. At the stage of technology at the time of publication of this part of ISO 1996, the evaluation of long-term noise annoyance seems to be best met by adopting the adjusted A-weighted equivalent continuous sound pressure level, which is termed a "rating level".

The aim of the ISO 1996 series is to provide authorities with material for the description and assessment of noise in community environments. Based on the principles described in this part of ISO 1996, national standards, regulations, and corresponding acceptable limits for noise can be developed.

# Acoustics — Description, measurement and assessment of environmental noise —

## Part 1: Basic quantities and assessment procedures

### 1 Scope

This part of ISO 1996 defines the basic quantities to be used for the description of noise in community environments and describes basic assessment procedures. It also specifies methods to assess environmental noise and gives guidance on predicting the potential annoyance response of a community to long-term exposure from various types of environmental noises. The sound sources can be separate or in various combinations. Application of the method to predict annoyance response is limited to areas where people reside and to related long-term land uses.

Community response to noise can vary differently among sound sources that are observed to have the same acoustic levels. This part of ISO 1996 describes adjustments for sounds that have different characteristics. The term “rating level” is used to describe physical sound predictions or measurements to which one or more adjustments have been added. On the basis of these rating levels, the long-term community response can be estimated.

The sounds are assessed either singly or in combination, allowing for consideration, when deemed necessary by responsible authorities, of the special characteristics of their impulsiveness, tonality, and low-frequency content, and for the different characteristics of road-traffic noise, other forms of transportation noise (such as aircraft noise), and industrial noise.

This part of ISO 1996 does not specify limits for environmental noise.

**NOTE 1** In acoustics, several different physical measures describing sound can have their level expressed in decibels (e.g. sound pressure, maximum sound pressure, and equivalent continuous sound pressure). The levels corresponding to these physical measures normally will differ for the same sound. This often leads to confusion. Therefore, it is necessary to specify the underlying physical quantity (e.g. sound pressure level, maximum sound pressure level, and equivalent continuous sound pressure level).

**NOTE 2** In this part of ISO 1996, quantities are expressed as levels in decibels. However, some countries validly express the underlying physical quantity, such as maximum sound pressure, in pascal or sound exposure in pascal-squared seconds.

**NOTE 3** ISO 1996-2 deals with the determination of sound pressure levels.

### 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

### 3 Terms and definitions

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