

Acoustics - Recommended practice for the design of low-noise workplaces containing machinery - Part 1: Noise control strategies (ISO 11690-1:2020)

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

See Eesti standard EVS-EN ISO 11690-1:2020 sisaldab Euroopa standardi EN ISO 11690-1:2020 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 11690-1:2020 consists of the English text of the European standard EN ISO 11690-1:2020.
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Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

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English Version

Acoustics - Recommended practice for the design of low-noise workplaces containing machinery - Part 1: Noise control strategies (ISO 11690-1:2020)

Acoustique - Pratique recommandée pour la conception de lieux de travail à bruit réduit contenant des machines - Partie 1: Stratégies de maîtrise du bruit (ISO 11690-1:2020)

Akustik - Richtlinien für die Gestaltung lärmarmen maschinenbestückter Arbeitsstätten - Teil 1: Allgemeine Grundlagen (ISO 11690-1:2020)

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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## European foreword

This document (EN ISO 11690-1:2020) 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 DIN.

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of an identical text or by endorsement, at the latest by May 2021, and conflicting national standards shall be withdrawn at the latest by May 2021.

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

This document supersedes EN ISO 11690-1:1996.

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## Endorsement notice

The text of ISO 11690-1:2020 has been approved by CEN as EN ISO 11690-1:2020 without any modification.

# Contents

Page

<b>Foreword</b>	<b>iv</b>
<b>Introduction</b>	<b>v</b>
<b>1 Scope</b>	<b>1</b>
<b>2 Normative references</b>	<b>1</b>
<b>3 Terms and definitions</b>	<b>1</b>
3.1 General noise descriptors	1
3.2 Noise emission descriptors	2
3.3 Noise immission and noise exposure	4
3.4 Noise reduction	6
<b>4 Basic concepts in noise control</b>	<b>11</b>
4.1 Basic noise control strategy	11
4.2 Concept of noise reduction	11
<b>5 Assessment of the noise situation</b>	<b>12</b>
5.1 Quantities for noise emission, noise immission and noise exposure	12
5.1.1 Noise emission quantities [see 3.2 and Figure 1 a)]	12
5.1.2 Noise immission and noise exposure quantities [see 3.3 and Figures 1 b), 1 c) and 2]	12
5.2 Description of the noise situation	13
5.3 Use of noise information sheets and noise maps	14
<b>6 Parties involved</b>	<b>15</b>
<b>7 How to tackle noise problems in workplaces</b>	<b>15</b>
7.1 Noise control objectives	15
7.2 Principles of noise control planning for new and existing workplaces	16
7.2.1 General	16
7.2.2 Preliminary planning and design stage	17
7.2.3 Planning and design stage	17
7.2.4 Implementation stage	18
7.2.5 Assessment and acceptance stage	19
7.3 Dealing with existing noise problems	19
<b>8 What to do before buying a new machine</b>	<b>19</b>
8.1 Questions that a potential buyer should consider	19
8.2 What information to request from potential suppliers	20
8.3 Declared and additional noise emission values	22
8.4 Meaning and use of noise emission values	22
8.5 Requirements for noise immission levels	23
8.6 Verification of declared noise emission and/or noise immission levels	23
8.7 Developments	23
<b>9 Noise prediction as a planning tool</b>	<b>24</b>
<b>10 Long-term noise control programme</b>	<b>24</b>
<b>Bibliography</b>	<b>27</b>

## 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)).

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

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 43, *Acoustics*, Subcommittee SC 1, *Noise*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 211, *Acoustics*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 11690-1:1996), of which it constitutes a minor revision. The changes compared to the previous edition are editorial.

A list of all parts in the ISO 11690 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

## Introduction

Several standards specify methods for measurement and/or evaluation of noise. The final objective of the ISO 11690 series is noise reduction.

A number of noise control measures are offered. However, in order to be effective, the most appropriate noise control measure(s) should be chosen for a given situation.

It is important when non-acoustic engineers are involved in noise control practice for these engineers to have a basic knowledge of noise emission and propagation characteristics and to understand the basic principles of noise control.

To assist in the development of noise control in the workplace, it is essential that the information contained in these recommended practices is disseminated through International Standards.

In order to reduce noise as a hazard in the workplace, individual countries have produced national legislation. Generally, such national legislation requires noise control measures to be carried out in order to achieve the lowest reasonable levels of noise emission, noise immission and noise exposure, taking into account:

- known available measures;
- the state of the art regarding technical progress;
- the treatment of noise at source;
- appropriate planning, procurement and installation of machines and equipment.

This part of ISO 11690, together with the two other parts in the series, outlines procedures to be considered when dealing with noise control at workplaces, within workrooms and in the open. These recommended practices give in relatively simple terms the basic information necessary for all parties involved in noise control in workplaces and in the design of low-noise workplaces to promote the understanding of the desired noise control requirements.

The purpose of the ISO 11690 series is to bridge the gap between existing literature on noise control and the practical implementation of noise control measures. In principle, the series applies to all workplaces and its main function is:

- to provide simple, brief information on some aspects of noise control in workplaces;
- to act as a guide to help in the understanding of requirements in standards, directives, text books, manuals, reports and other specialized technical documents;
- to provide assistance in decision making when assessing the various measures available.

The ISO 11690 series should be useful to persons such as plant personnel, health and safety officers, engineers, managers, staff in planning and purchasing departments, architects and suppliers of plants, machines and equipment. However, the above-mentioned parties should keep in mind that adherence to the recommendations of the ISO 11690 series is not all that is necessary to create a safe workplace.

The effects of noise on health, well-being and human activity are many. By giving guidelines for noise control strategies and measures, the ISO 11690 series aims at a reduction of the impact of noise on human beings at workplaces. Assessment of the impact of noise on human beings is dealt with in other documents.

# Acoustics — Recommended practice for the design of low-noise workplaces containing machinery —

## Part 1: Noise control strategies

### 1 Scope

This document outlines strategies to be used in dealing with noise problems in existing and planned workplaces by describing basic concepts in noise control (noise reduction, noise emission, noise immission and noise exposure). It is applicable to all types of workplaces and all types of sources of sound which are met in workplaces, including human activities.

It includes those important strategies to adopt when buying a new machine or equipment.

This document deals only with audible sound.

### 2 Normative references

The following documents are referred to in the text in such way that some or all of their content constitutes requirements 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 4871, *Acoustics — Declaration and verification of noise emission values of machinery and equipment*

### 3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

#### 3.1 General noise descriptors

##### 3.1.1

##### sound pressure level

$L_p$

ten times the logarithm to the base 10 of the ratio of the mean-square sound pressure  $p$ , in pascals, to the square of a reference value,  $p_0$

$$L_p = 10 \lg \left( \frac{p^2}{p_0^2} \right) \text{ dB}$$

where the reference value,  $p_0$ , is 20  $\mu\text{Pa}$

Note 1 to entry: The sound pressure level is the main quantity to describe the noise at a given point. It is expressed in decibels and should be measured with a standardized sound level meter (see IEC 61672-1).

Note 2 to entry: The frequency weighting (A or C) or the width of the frequency band and the time weighting (S [slow], F [fast], I [impulse] or peak) used should be indicated.