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Part 3: Objective method for the measurement of prominence of impulsive sounds and for adjustment of L_{Aeq}

Acoustique — Description, mesurage et évaluation du bruit de l'environnement —

Partie 3: Méthode objective pour le mesurage de l'émergence des bruits impulsifs et pour l'ajustement du L_{Aeq}

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Contents

Page

Foreword ..... **iv**
Introduction ..... **v**
1 Scope **1**
2 Normative references **1**
3 Terms and definitions **1**
4 Measurements **3**
5 Prominence, P **5**
6 Identification of adjustment to L_{Aeq} **6**
7 Categorisation of impulsive sound **7**
8 Accuracy **7**
9 Test report **7**
Annex A (informative) **Research topics** **8**
Bibliography **9**

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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).

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).

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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.

This document was prepared by Technical Committee ISO/TC 43, *Acoustics*, Subcommittee SC 1, *Noise*.

A list of all parts in the ISO 1996 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.

This corrected version of ISO/PAS 1996-3:2022 incorporates the following correction:

— Formula (3) in Clause 6 has been corrected.

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Introduction

Noise with prominent impulsive sound is more annoying than continuous types of noise (without impulses or tones) with the same equivalent sound pressure level. Therefore, an adjustment is commonly added to the measured L_{Aeq}, if prominent impulsive sound is present.

In ISO 1996, three categories of impulsive sound have been found to correlate best with community response, and adjustments are given for each. Sources of impulsive sound are listed for each category. However, the list is not exhaustive.

This method objectively categorises sources by determining the prominence of impulsive sound at the receiver point, with the aim of correlating to human response. The resulting adjustments can be used to categorise the sources or be applied directly. It describes specific methodology for this purpose and provides guidance to cognizant authorities for categorising sources and their adjustments. It is intended to complement the ISO 1996-2 measurement method for general purpose environmental noise assessment.

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Acoustics — Description, measurement and assessment of environmental noise —

Part 3: Objective method for the measurement of prominence of impulsive sounds and for adjustment of L_{Aeq}

1 Scope

This method objectively categorises sources by determination of the prominence of impulsive sound, with the aim of correlating to community response. This method for measuring the prominence of impulsive sounds is intended for sources not identified as gunfire or high-energy impulsive sound. It typically produces adjustments in the range 0,0 dB to 9,0 dB. These adjustments are intended to be used to categorise the sources as either regular impulsive or highly impulsive sound sources and apply the penalty indicated in ISO 1996-1. However, the adjustments may be applied directly, as is done in NT ACOU 112[2], and BS 4142[3]. ISO 1996-2 provides additional guidance for performing these measurements.

The method is intended for use on sources with impulsive characteristics that are not already categorised in ISO 1996-1. A non-exhaustive list of examples includes compressed air release, scrap handling, goods delivery, fork lifts with rattling forks, skateboard ramps, industrial shearing, gas discharges, percussive tools in demolition, powered riveting, etc.

The method is not intended for use on sounds from firearms. Although the measurements of prominence may give relevant results, research has shown the response to these sources is influenced by factors outside of the scope of this document. In addition, the method is not intended to use for high-energy impulsive sound sources as specified in ISO 1996-1.

NOTE This method is not intended for occupational hearing loss, which is outside the scope of this document.

See Annex A for recommended additional research.

2 Normative references

The following documents are referred to in the text in such a 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 1996-1, *Acoustics — Description, measurement and assessment of environmental noise — Part 1: Basic quantities and assessment procedures*

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.

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

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

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