International Standard 2204

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Acoustics — Guide to International Standards on the measurement of airborne acoustical noise and evaluation of its effects on human beings

Acoustique — Guide pour la rédaction des Normes internationales sur le mesurage du bruit aérien et l'évaluation de ses effets sur l'homme

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 2204 was developed by Technical Committee ISO/TC 43, *Acoustics*.

This second edition was submitted directly to the ISO Council, in accordance with clause 5.10.1 of the Directives for the technical work of ISO. It cancels and replaces the first edition (i.e. ISO 2204-1973), which had been approved by the member bodies of the following countries :

Austria	Ireland	South Africa, Rep. of
Belgium	Israel	Sweden
Canada	Japan	Switzerland
Czechoslovakia	Netherlands	Turkey
Denmark	New Zealand	United Kingdom
France	Norway	USA
Germany, F. R.	Poland	USSR
Hungary	Romania	

No member body had expressed disapproval of the document.

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0 Introduction

The problems associated with the measurement of noise and evaluation of its effects are of increasing importance to the community, not only to specialists in acoustics, but also to a large number of individuals with more limited experience in this field.

Although noise-measuring equipment in common use is relatively simple to operate, a programme of noise measurements and the evaluation of the results obtained should be carefully planned. The correct methods, scales and units should be chosen and a number of precautions should be observed in order that consistent results may be obtained.

This International Standard outlines some of the basic problems associated with the measurement of noise and evaluation of its effects on human beings and presents a summary of the methods in common use and of the methods specified in other International Standards.

1 Scope and field of application

This International Standard describes the general procedures for the measurement of noise and evaluation of its effects on human beings.

It is intended as an introduction to the more specialized instructions contained in standards describing methods for acoustic measurements and evaluations, specific test codes and interpretation procedures published by national and international standardization bodies.

2 Classification of noise problems

2.1 Most noise problems may be classified as follows :

2.1.1 Problems associated with the determination of the amount and character of noise emitted by one or more noise sources, or with the prediction of the performance of one or more noise sources under specified conditions.

For problems of this group, the purpose of the noise measurements is to determine some physical quantity, usually the sound pressure level at a certain point or the sound power level of the source(s). The character of the noise may be described by the frequency spectrum and dependence on time of these levels and by the character of the sound field.

2.1.2 Problems associated with the evaluation and prediction of the different effects of noise on human beings.

For problems of this group, the purpose of the noise measurements is to obtain a quantity that relates the magnitude of the sound stimulus to the effects of the noise on a human being, be it an individual or a smaller or larger part of a group.

2.2 Broadly speaking, the problems of 2.1.1 are mainly concerned with the generation and transmission of noise, whereas the problems of 2.1.2 are mainly concerned with the reception of noise. It is emphasized that these two categories are not mutually exclusive, because a particular noise problem is usually related to both categories. For example, the purpose of many noise abatement projects is to reduce the noise emitted by a source to a level at which the influence on human beings of the noise received is tolerable.

3 Classification of different types of noise

The character of a noise may be described by its frequency spectrum, the variations of level with time, and the character of the sound field. Many noises have a continuous spectrum, i.e. the sound energy is rather evenly distributed over a large part of the audible frequency range. In some cases, discrete tones are clearly audible in the noise.

The noises most frequently encountered in practice may be classified according to the following characteristic features :

3.1 Frequency spectrum

3.1.1 Continuous spectrum

3.1.2 Spectrum with audible discrete tones

3.2 Dependence on time

3.2.1 steady noise : A noise with negligibly small fluctuations of level within the period of observation.

3.2.2 non-steady noise : A noise whose level shifts significantly during the period of observation.