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Acoustics — Sound-scattering properties of surfaces —

Part 1: Measurement of the random-incidence scattering coefficient in a reverberation room

Acoustique — Propriétés de dispersion du son par les surfaces —

Partie 1: Mesurage du coefficient de dispersion sous incidence aléatoire en salle réverbérante

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Foreword

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ISO 17497-1 was prepared by Technical Committee ISO/TC 43, *Acoustics*, Subcommittee SC 2, *Building acoustics*.

ISO 17497 consists of the following parts, under the general title *Acoustics — Sound-scattering properties of surfaces*:

— *Part 1: Measurement of the random-incidence scattering coefficient in a reverberation room*

The following part is under preparation:

— *Part 2: Measurement of the directional diffusion coefficient in a free field*

Introduction

The degree of acoustic scattering from surfaces is very important in all aspects of room acoustics (e.g. in concert halls, sound studios, industrial halls and reverberation chambers). Insufficient scattering may cause strong deviations from exponential sound pressure decay. On the other hand, an approximately diffuse sound field may be obtained with highly scattering surfaces in a room. The degree of scattering in a room can be an important factor related to the acoustic quality of the room.

The scattering coefficient is introduced as a new concept in this part of ISO 17497. Together with the absorption coefficient, the scattering coefficient will be useful in room acoustic calculations, simulations and prediction models. For some time it has been known that modelling of the scattering from surfaces is very important for obtaining reliable predictions of room acoustics. This part of ISO 17497 presents a measurement method to quantify the scattering properties of a surface to replace formerly applied but not generally accepted estimation methods.

The work has been coordinated with the working group of the Audio Engineering Society, AES SC-04-02 for the Characterization of Acoustical Materials. This group emphasized the development of a measurement method for the directional diffusion coefficient, which is different from (but related to) the random incidence scattering coefficient. While the scattering coefficient is a rough measure that describes the degree of scattered sound, the diffusion coefficient describes the directional uniformity of the scattering; i.e. the quality of the diffusing surface. Therefore there is a need for both concepts and they have different applications.