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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 25077-2010

Replacing GB/T 25077-2010

Acoustics - Determination of airflow resistance - Part 1: Static airflow method

声学 多孔吸声材料流阻测量

(English Translation)

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Foreword

This document conforms to GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting is scheduled.

This document is Part 1 of GB/T 25077 "Acoustic Flow Resistance Measurement". GB/T 25077 has the following parts published.

--Part 1: Static airflow method.

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This document replaces GB/T 20577-2010 "Measurement of Flow Resistance of Porous Acoustic Absorbing Materials". Compared with GB/T 20577-2010, except for...

Aside from structural adjustments and editorial changes, the main technical changes are as follows.

--Added the term and definition of "penetration rate" (see 3.5);

--Specific technical requirements for the measuring tube and support orifice plate have been added (see 5.2);

--Added "Use of Calibration Samples" (see 5.6);

--The content related to "communication method" has been deleted, and the relevant content has been revised and supplemented and included in Part 2 of GB/T 25077 (see 2010).

Versions 3.2, 4.2, and 6.5).

--Added reference information on measurement uncertainty (see Chapter 8).

This document is equivalent to ISO 9053-1:2018 "Acoustic flow resistance measurement - Part 1: Static airflow method".

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed by the Chinese Academy of Sciences.

This document is under the jurisdiction of the National Acoustics Standardization Technical Committee (SAC/TC 17).

Introduction

Flow resistance is a fundamental parameter of porous materials, reflecting their internal pores and some structural characteristics, and is a major factor affecting their sound absorption performance.

One of the factors. GB/T 25077 "Determination of Acoustic Flow Resistance" provides two methods for determining the flow resistance of porous sound-absorbing materials, aiming to standardize and guide the determination of flow resistance.

The flow resistance measurement of acoustic materials consists of two parts.

--Part 1: Static Airflow Method. The aim is to provide a method for measuring the flow resistance of acoustic porous materials using a stable airflow under laminar flow conditions.

method.

--Part 2: Alternating Airflow Method. The aim is to provide a method for measuring the flow

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of acoustic porous materials using alternating airflow generated by a piston undergoing simple harmonic motion.

Methods of obstruction.

Acoustic flow resistance measurement, Part 1: Static airflow method

1 Scope

This document describes a method for measuring the flow resistance of acoustic porous materials under laminar flow conditions using a steady airflow [3], [4].

2 Normative references

This document has no normative references.

3 Terms and Definitions

The following terms and definitions apply to this document.

The URLs for the terminology databases maintained by ISO and IEC for standardization are as follows.

airflow resistance

The ratio of the pressure difference across the specimen to the volume velocity of the airflow passing through the specimen.

R = deltapqv

In the formula.

deltap -- Pressure difference across the specimen, in Pascals (Pa);

qv -- Volume velocity of the airflow through the specimen, in cubic meters per second (m3/s).

Note: The unit of flow resistance is Pascal-second per cubic meter (Pa·s/m3).

Specific airflow resistance R s the ratio of the pressure difference across the specimen to the linear velocity of the airflow passing through the specimen is the product of the flow resistance and the cross-sectional area of the specimen.

Rs = R ·A

In the formula.

R -- Flow resistance of the specimen, in Pascals per cubic meter (Pa·s/m3).

A -- The cross-sectional area of the specimen perpendicular to the airflow direction, in square meters (m2).

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Note: The unit of specific flow resistance is Pascal-second per meter (Pa·s/m).

airflow resistivity

For isotropic materials, the flow resistance is the specific flow resistance per unit thickness of the material, that is, the specific flow resistance divided by the specimen thickness.

sigma = R sd

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