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## AMERICAN NATIONAL STANDARD

**Acoustics – Determination of sound power levels of noise sources using sound pressure – Engineering methods for small, movable sources in reverberant fields -**

### **Part 2: Methods for special reverberation test rooms**

(A Nationally Adopted International Standard)

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NAIS STANDARD  
ANSI S12.53/2-1999  
ISO 3743-2: 1994

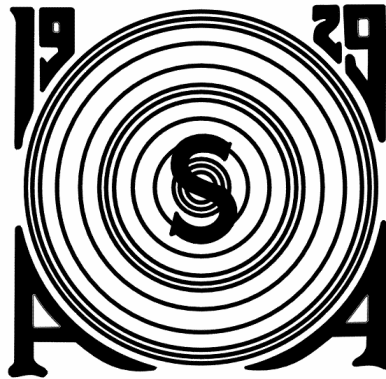
Accredited Standards Committee S12, Noise

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**ANSI S12.53/2-1999  
ISO 3743-2:1994**

## AMERICAN NATIONAL STANDARD

# **Acoustics—Determination of sound power levels of noise sources using sound pressure—Engineering methods for small, movable sources in reverberant fields—**

## **Part 2: Methods for special reverberation test rooms**

(A Nationally Adopted International Standard)

Secretariat

**Acoustical Society of America (ASA)**

Approved 18 October 1999

**American National Standards Institute, Inc. (ANSI)**

### **Abstract**

ISO 3743 is one of the ISO 3740 series, which specifies various methods for determining the sound power levels of machines, equipment and sub-assemblies. These basic standards specify the acoustical requirements for measurements appropriate for different test environments as shown in table 0.1. When selecting one of the methods of the ISO 3740 series, it is necessary to select the most appropriate for the conditions and purposes of the noise test. General guidelines to assist in the selection are provided in ISO 3740. The ISO 3740 series gives only general principles regarding the operating and mounting conditions of the machine or equipment under test. Reference should be made to the noise test code for a specific type of machine or equipment, if available, for specifications on mounting and operating conditions.

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## Contents

	Page
Foreword .....	ii
Introduction .....	v
1 Scope .....	1
2 Normative references .....	3
3 Definitions .....	3
4 Requirements for special reverberation test room .....	3
5 Instrumentation .....	5
6 Installation and operation of source under test .....	6
7 Measurements in test room .....	7
8 Calculation of sound power levels .....	10
9 Information to be recorded .....	11
10 Information to be reported .....	11
<b>Annexes</b>	
A Characteristics and calibration of reference sound source .....	12
B Guidelines for the design of special reverberation test rooms .....	13
C Examples of suitable instrumentation systems .....	18
D Bibliography .....	20
<b>Figures</b>	
1 Values of $R$ at the one-third-octave-band centre frequencies for $V=70 \text{ m}^3$ .....	4
B.1 Hardboard membrane absorber .....	14
B.2 Sound absorption coefficient $\alpha$ for the membrane absorber measured in a $200 \text{ m}^3$ reverberation room .....	14
B.3 Limiting curves for the ratio of the reverberation time $T$ to the nominal reverberation time $T_{\text{nom}}$ for a $70 \text{ m}^3$ room .....	16
B.4 Plot of an experimentally determined reverberation time (normalized to $T_{1000}$ ) as a function of one-third-octave-band centre frequency .....	17
<b>Tables</b>	
0.1 International Standards specifying various methods for determining the sound power levels of machines and equipment .....	vii
1 Estimated values of the standard deviation of reproducibility of sound power levels determined according to this part of ISO 3743 .....	3
2 Maximum permitted differences between octave-band power levels of broad-band noise sources measured in accordance with 4.7 a) .....	5
3 Relative tolerances for the instrumentation system .....	6
4 Minimum number of source locations, $N_s$ , for given numbers of microphone positions, $N_m$ , values of estimated standard deviations, $s_m$ , and octave-band centre frequencies .....	8
5 Corrections for background sound pressure levels .....	10
A.1 Calibration accuracy for reference sound source .....	12
B.1 Recommended room dimension ratios for rectangular rooms .....	13

## Foreword

[This Foreword is not part of the Nationally Adopted International Standard (NAIS), *Acoustics—Determination of sound power levels of noise sources using sound pressure—Engineering methods for small, movable sources in reverberant fields—Part 2: Methods for special reverberation test rooms*, ANSI S12.53/2-1999, ISO 3743-2:1994.]

This Nationally Adopted International Standard (NAIS) comprises a part of a group of definitions, standards, and specifications for use in acoustical work. It has been adopted by the American National Standards Institute utilizing the Accredited Standards Committee Procedure, under the Secretariat of the Acoustical Society of America.

Accredited Standards Committee S12, Noise, under whose jurisdiction this NAIS Standard was adopted, has the following scope:

*Standards, specifications, and terminology in the field of acoustical noise pertaining to methods of measurement, evaluation, and control; including biological safety, tolerance and comfort, and physical acoustics as related to environmental and occupational noise.*

This standard is in harmony with International Standard ISO 3743-2:1994, *Acoustics—Determination of sound power levels of noise sources using sound pressure—Engineering methods for small, movable sources in reverberant fields—Part 2: Methods for special reverberation test rooms*, which was developed by Working Group 28 of Technical Committee 43/Subcommittee 1 of the International Organization for Standardization (ISO/TC 43/SC 1/WG 28).

At the time this NAIS Standard was submitted to Accredited Standards Committee S12, Noise, for final approval, the membership was as follows:

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**Suggestions for improvement of this NAIS Standard will be welcomed. Send suggestions for improvement to Accredited Standards Committee S12, Noise, in care of the ASA Standards Secretariat, 120 Wall Street, 32nd floor, New York, New York 10005-3993, USA. Telephone: +1 212 248 0373; FAX: +1 212 248 0146.**



## Introduction

**0.1** ISO 3743 is one of the ISO 3740 series, which specifies various methods for determining the sound power levels of machines, equipment and sub-assemblies. These basic standards specify the acoustical requirements for measurements appropriate for different test environments as shown in table 0.1. When selecting one of the methods of the ISO 3740 series, it is necessary to select the most appropriate for the conditions and purposes of the noise test. General guidelines to assist in the selection are provided in ISO 3740. The ISO 3740 series gives only general principles regarding the operating and mounting conditions of the machine or equipment under test. Reference should be made to the noise test code for a specific type of machine or equipment, if available, for specifications on mounting and operating conditions.

**0.2** The method given in this part of ISO 3743 enables measurement of sound pressure levels with A-weighting and in octave bands at prescribed fixed microphone positions or along prescribed paths. It allows determination of A-weighted sound power levels or sound power levels with other weighting and octave-band sound power levels. Quantities which cannot be determined are the directivity characteristics of the source and the temporal pattern of noise radiated by sources emitting non-steady noise.

**0.3** Parts 1 and 2 of ISO 3743 specify engineering methods for determining the A-weighted and octave-band sound power levels of small noise sources. The methods are applicable to small machines, devices, components and sub-assemblies which can be installed in a special reverberation test room or in a hard-walled test room with prescribed acoustical characteristics. The methods are particularly suitable for small items of portable equipment; they are not intended for larger pieces of stationary equipment which, due to their manner of operation or installation, cannot readily be moved into the test room and operated as in normal usage. The procedures are intended to be used when an engineering grade of accuracy is desired without requiring the use of laboratory facilities.

**0.4** In ISO 3743-1, a comparison method is used to determine the octave-band sound power levels of the source. The spatial average (octave-band) sound pressure levels produced by the source under test are compared to the spatial average (octave-band) sound pressure levels produced by a reference sound source of known sound power output. The difference in sound pressure levels is equal to the difference in sound power levels if conditions are the same for both sets of measurements. The A-weighted sound power level is then calculated from the octave-band sound power levels.