

**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**

The European Standard EN ISO 3743-2 : 1996 has the status of a
British Standard

ICS 17.140.99

Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee EPC/1, Acoustics, upon which the following bodies were represented:

Association of Consulting Engineers
 British Broadcasting Corporation
 British Occupational Hygiene Society
 British Telecommunications plc
 Department of the Environment (Building Research Establishment)
 Department of Trade and Industry (National Physical Laboratory)
 Health and Safety Executive
 Institute of Acoustics
 Institute of Occupational Hygienists
 Institute of Sound and Vibration Research
 Institution of Electrical Engineers
 Royal Institute of British Architects
 Society of Environmental Engineers

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

Advanced Manufacturing Technology Research Institute
 Agricultural Engineers Association
 British Cement Association
 British Compressed Air Society
 British Gas plc
 British Industrial Truck Association
 British Steel plc
 Construction Industry Research and Information Association
 Department of Trade and Industry (National Engineering Laboratory)
 Engineering Industries Association
 Fan Manufacturers Association
 Federation of Associations of Specialists and Subcontractors
 Federation of Manufacturers of Construction Equipment and Cranes
 Federation of Piling Specialists
 Federation of the Electronics Industry
 Hevac Association
 Institution of Engineering Designers
 Institution of Mechanical Engineers
 Rotating Electrical Machines Association (BEAMA Ltd.)
 University of Liverpool
 University of Manchester

This British Standard, having been prepared under the direction of the Health and Environment Sector Board (H/-), was published under the authority of the Standards Board and comes into effect on 15 March 1995

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The following BSI references relate to the work on this standard:
 Committee reference EPC/1
 Draft for comment 93/508222 DC

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9426	March 1997	Adoption as a European Standard. New Annex ZA

Summary of pages

The following table identifies the current issue of each page. Issue 1 indicates that a page has been introduced for the first time by amendment. Subsequent issue numbers indicate an updated page.

Page	Issue	Page	Issue
Front cover	2	Inside back cover	blank
Inside front cover	2	Back cover	2
a	1		
b	blank		
i	2		
ii	blank		
EN title page	1		
page iib	1		
iii	original		
iv	original		
v	original		
vi	blank		
pages 1-20	original		
21	1		
22	blank		

Change of identifier

Wherever BS ISO 3743-2 : 1994 appears in this standard, it should be read as BS EN ISO 3743-2 : 1997.

National foreword

This British Standard has been prepared by Technical Committee EH/1 (formerly EPC/1). It is the English language version of EN ISO 3743-2 : 1996, published by the European Committee for Standardization (CEN). It is identical with 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*, published by the International Organization for Standardization. It supersedes BS 4196 : Part 3 : 1991, which is withdrawn.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

English version

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
(ISO 3743-2 : 1994)

Acoustique — Détermination des niveaux de
puissance acoustique émis par les sources de
bruit à partir de la pression acoustique —
Méthodes d'expertise en champ réverbéré
applicables aux petites sources transportables —
Partie 2: Méthodes en salle d'essai réverbérante
spécial
(ISO 3743-2 : 1994)

Akustik — Bestimmung der Schalleistungspegel
von Geräuschquellen aus
Schalldruckmessungen — Verfahren der
Genauigkeitsklasse 2 für kleine, transportable
Quellen in Hallfeldern — Teil 2: Verfahren für
Sonder-Hallräume
(ISO 3743-2 : 1994)

This European Standard was approved by CEN on 1996-07-20. CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

Foreword

The text of the International Standard from Technical Committee ISO/TC 43, Acoustics of the International Organization for Standardization (ISO) has been taken over as an European Standard by Technical Committee CEN/TC 211, Acoustics, the secretariat of which is held by DS.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 1997, and conflicting national standards shall be withdrawn at the latest by February 1997.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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.

The requirements to be fulfilled by the special reverberation test room for measurements in accordance with this part of ISO 3743 are significantly more restrictive than those placed on the hard-walled test room by the comparison method of ISO 3743-1.

Table 0.1 — International Standards specifying various methods for determining the sound power levels of machines and equipment

International Standard	Classification of method ¹⁾	Test environment	Volume of source	Character of noise	Sound power levels obtainable	Optional information available
3741	Precision (grade 1)	Reverberation room meeting specified requirements	Preferably less than 1 % of test room volume	Steady, broad-band	In one-third-octave or octave bands	A-weighted sound power level
3742				Steady, discrete frequency or narrow-band		
3743-1	Engineering (grade 2)	Hard-walled test room	Preferably less than 1 % of test room volume	Steady, broad-band, narrow-band, or discrete frequency	A-weighted and in octave bands	Other weighted sound power levels
3743-2		Special reverberation test room				
3744	Engineering (grade 2)	Outdoors or in large room	Greatest dimension less than 15 m	Any	A-weighted and in one-third-octave or octave bands	Directivity information and sound pressure levels as a function of time; other weighted sound power levels
3745	Precision (grade 1)	Anechoic or semi-anechoic room	Preferably less than 0,5 % of test room volume	Any		
3746	Survey (grade 3)	No special test environment	No restrictions: limited only by available test environment	Any	A-weighted	Sound pressure levels as a function of time; other weighted sound power levels
3747	Survey (grade 3)	No special test environment; source under test not movable	No restrictions	Steady, broad-band, narrow-band, or discrete frequency	A-weighted	Sound power levels in octave bands
1) See ISO 2204.						