

Sound power levels of noise sources —

Part 8: Specification for the performance and calibration of reference sound sources

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Environment And Pollution Standards Policy Committee (EPC/-) to Technical Committee EPC/1, upon which the following bodies were represented:

Association of Consulting Engineers	Health and Safety Executive
British Broadcasting Corporation	Incorporated Association of Architects and Surveyors
British Occupational Hygiene Society	Institute of Acoustics
British Telecommunications plc	Institute of Occupational Hygienists
Department of Health	Institute of Physics
Department of the Environment (Building Research Establishment)	Institute of Sound and Vibration Research
Department of Trade and Industry (Air Division)	Institution of Civil Engineers
Department of Trade and Industry (National Physical Laboratory)	Institution of Electrical Engineers
Engineering Equipment and Materials Users' Association	Royal Institute of British Architects
	Society of Environmental Engineers
	Transmission and Distribution Association (BEAMA Ltd.)

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

AFRC Institute of Engineering Research	Engineering Industries Association
Advanced Manufacturing Technology Research Institute	Federation of Associations of Specialists and Sub-Contractors
Agricultural Engineers' Association	Federation of Manufacturers of Construction Equipment and Cranes
British Cement Association	Federation of Piling Specialists
British Compressed Air Society	Hevac Association
British Hydromechanics' Research Association	Institution of Mechanical Engineers
British Industrial Truck Association	Institution of Production Engineers
British Steel plc	Rotating Electrical Machines Association (BEAMA Ltd.)
Construction Industry Research and Information Association	Society of Motor Manufacturers and Traders Ltd.
Department of Trade and Industry (National Engineering Laboratory)	University of Liverpool
EEA (the Association of Electronics, Telecommunications and Business Equipment Industries)	

This British Standard, having been prepared under the direction of the Environment and Pollution Standards Policy Committee, was published under the authority of the Board of BSI and comes into effect on 28 February 1991

© BSI 08-1999

The following BSI references relate to the work on this standard:
Committee reference EPC/1
Draft for comment 84/53194 DC

ISBN 0 580 19322 5

Amendments issued since publication

Amd. No.	Date	Comments

Contents

	Page
Committees responsible	Inside front cover
National foreword	ii
1 Scope	1
2 Normative references	1
3 Definitions	1
4 Performance requirements	2
5 Calibration of reference sound source	3
6 Information to be recorded	5
7 Information to be reported	5
Annex A (informative) Guidelines for the mechanical characteristics of reference sources	6
Table 1 — Estimated standard deviation of sound power level calibrations of reference sound sources in hemi-anechoic rooms	1
Publication(s) referred to	Inside back cover

National foreword

This Part of BS 4196 has been prepared under the direction of the Environment and Pollution Standards Policy Committee and is identical with ISO 6926:1990 “Acoustics — Determination of sound power levels of noise sources — Requirements for the performance and calibration of reference sound sources” published by the International Organization for Standardization (ISO). ISO 6926 was prepared by Sub-committee 1, Noise, of ISO Technical Committee 43, Acoustics, with the active participation and approval of the UK.

BS 4196 at present comprises the following Parts which have been published.

- *Part 0: Guide for the use of basic standards and for the preparation of noise test codes;*
- *Part 1: Precision methods for determination of sound power levels for broad-band sources in reverberation rooms;*
- *Part 2: Precision methods for determination of sound power levels for discrete-frequency and narrow-band sources in reverberation rooms;*
- *Part 3: Engineering methods for determination of sound power levels for sources in special reverberation test rooms;*
- *Part 4: Engineering methods for determination of sound power levels for sources in free-field conditions over a reflecting plane;*
- *Part 5: Precision methods for determination of sound power levels for sources in anechoic and semi-anechoic rooms;*
- *Part 6: Survey method for determination of sound power levels of noise sources;*
- *Part 7: Survey method for determination of sound power levels of noise sources using a reference sound source;*
- *Part 8: Specification for the performance and calibration of reference sound sources.*

Parts 1, 2 and 3 of BS 4196 are implementations of ISO 3741:1975, ISO 3742:1975 and ISO 3743:1976 respectively. It is envisaged that revised editions of Parts 1, 2 and 3 of BS 4196 implementing the 1988 revisions of these ISO standards will be published in due course.

Reference sound sources are used extensively in comparison methods for determining the noise emissions of stationary sound sources. A reference sound source, of known power output, is used to establish the numerical relationship between the sound power level of a source in a given location in a given acoustical environment, and the space- and time-average sound pressure level at a set of microphone positions. The average sound pressure level produced by the source under investigation is then measured and the sound power level produced by that source is calculated.

This Part of BS 4196 specifies the key performance characteristics of reference sound sources and procedures for their calibration, and is intended to be used in conjunction with Parts 1, 2, 3, 6 and 7 of BS 4196 which involve the use of a reference sound source.

It should be noted that in Parts 4 and 7 of BS 4196, a reference sound source may be used in environments other than a free field over a reflecting plane. In such environments, the sound power and mode of acoustic radiation may differ from those obtained during calibration, which is carried out with the reference sound source mounted directly on the reflecting plane of a hemi-anechoic room. Manufacturers of reference sound sources should provide information about the magnitude of the changes in such environments if requested by users.

Reference sound sources may also be used for qualification tests on an acoustic environment and to estimate the influence of an acoustic environment on the sound pressure levels produced by one or more sound sources in that environment.

Several types of reference source are described in Annex A.

Cross-references

International Standard	Corresponding British Standard
ISO 3745:1977	BS 4196 <i>Sound power levels of noise sources</i> Part 5:1981 <i>Precision methods for determination of sound power levels for sources in anechoic and semi-anechoic rooms</i> (Identical)
IEC 651:1979 ^a	BS 5969:1981 <i>Specification for sound level meters</i> (Identical)

^a International Electrotechnical Commission.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

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

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 6, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.