BRITISH STANDARD

BS EN ISO 80000-8:2007

Incorporating Corrigendum August 2007

Quantities and units —

Part 8: Acoustics

ICS 01.060

BSI British Standards

National foreword

This British Standard is the UK implementation of EN ISO 80000-8:2007. It supersedes BS ISO 31-7:1992 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee EH/1, Acoustics.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

Amendments issued since publication

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English Version

Quantities and units - Part 8: Acoustics (ISO 80000-8:2007, corrected 2007-08-15)

Grandeurs et unités - Partie 8: Acoustique (ISO 80000-8:2007, version corrigée 2007-08-15)

Größen und Einheiten - Teil 8: Akustik (ISO 80000-8:2007, berichtigt 2007-08-15)

This European Standard was approved by CEN on 3 May 2007.

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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 CEN Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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EUROPÄISCHES KOMITEE FÜR NORMUNG

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Ref. No. EN ISO 80000-8:2007: E

Foreword

This document (EN ISO 80000-8:2007) has been prepared by Technical Committee ISO/TC 12 "Quantities, units, symbols, conversion factors" in collaboration with 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of an identical text or by endorsement, at the latest by December 2007, and conflicting national standards shall be withdrawn at the latest by December 2007.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Endorsement notice

The text of ISO 80000-8:2007 has been approved by CEN as EN ISO 80000-8:2007 without any modifications.

INTERNATIONAL STANDARD

ISO 80000-8

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2007-06-01

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2007-08-15

Quantities and units —

Part 8: **Acoustics**

Grandeurs et unités —

Partie 8: Acoustique

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ISO 80000-8:2007(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 80000-8 was prepared by Technical Committee ISO/TC 12, *Quantities, units, symbols, conversion factors*, in collaboration with IEC/TC 25, *Quantities and units, and their letter symbols*.

This first edition cancels and replaces the second edition of ISO 31-7:1992 and ISO 31-7:1992/Amd.1:1998. The major technical changes from the previous standards are the following:

— the presentation of *numerical statements* has been changed;

— the *special remarks* in the Introduction have been changed;

— the *normative references* have been changed;

— some quantities have been added to the list of quantities and some quantities have been deleted.

This corrected version of ISO 80000-8:2007 incorporates the following corrections.

— 0.3.1 e) The sentence was reworded.

— 8-3.b In the definition, the sign "$=$" was replaced by the sign "$:=$" after "dec".

— 8-18 In the definition and in the remarks, the subscript "f" was deleted.

In the definition, "frequency-weighted" was deleted.

— 8-22 In the definition and in the remarks, the subscript "ft" was deleted.

In the definition, "frequency- and time-weighted" was deleted.

In the remarks, ", or both" was added at the end of the first line.

In the remarks, "and/or specific frequency bands" was changed to "or specific frequency bands or both" in the second line.

— 8-23 In the definition, "is" was added after "reference value".

— 8-24 In the definition, "is" was added after "reference value".

ISO 80000 consists of the following parts, under the general title *Quantities and units*:

— *Part 1: General*

— *Part 2: Mathematical signs and symbols to be used in the natural sciences and technology*

— *Part 3: Space and time*

— *Part 4: Mechanics*

— *Part 5: Thermodynamics*
— *Part 7: Light*
— *Part 8: Acoustics*
— *Part 9: Physical chemistry and molecular physics*
— *Part 10: Atomic and nuclear physics*
— *Part 11: Characteristic numbers*
— *Part 12: Solid state physics*

IEC 80000 consists of the following parts, under the general title *Quantities and units*:

— *Part 6: Electromagnetism*
— *Part 13: Information science and technology*
— *Part 14: Telebiometrics related to human physiology*

Introduction

0.1 Arrangements of the tables

The tables of quantities and units in this International Standard are arranged so that the quantities are presented on the left-hand pages and the units on the corresponding right-hand pages.

All units between two full lines on the right-hand pages belong to the quantities between the corresponding full lines on the left-hand pages.

Where the numbering of an item has been changed in the revision of a part of ISO 31, the number in the preceding edition is shown in parentheses on the left-hand page under the new number for the quantity; a dash is used to indicate that the item in question did not appear in the preceding edition.

0.2 Tables of quantities

The names in English and in French of the most important quantities within the field of this International Standard are given together with their symbols and, in most cases, their definitions. These names and symbols are recommendations. The definitions are given for identification of the quantities in the International System of Quantities (ISQ), listed on the left hand pages of the table; they are not intended to be complete.

The scalar, vectorial or tensorial character of quantities is pointed out, especially when this is needed for the definitions.

In most cases only one name and only one symbol for the quantity are given; where two or more names or two or more symbols are given for one quantity and no special distinction is made, they are on an equal footing. When two types of italic letters exist (for example as with ϑ and θ; φ and ϕ; *a* and a; *g* and g) only one of these is given. This does not mean that the other is not equally acceptable. It is not recommended to give such variants different meanings. A symbol within parentheses implies that it is a reserve symbol, to be used when, in a particular context, the main symbol is in use with a different meaning.

In this English edition, the quantity names in French are printed in an italic font, and are preceded by *fr*. The gender of the French name is indicated by (m) for masculine and (f) for feminine, immediately after the noun in the French name.

0.3 Tables of units

0.3.1 General

The names of units for the corresponding quantities are given together with the international symbols and the definitions. These unit names are language-dependent, but the symbols are international and the same in all languages. For further information, see the SI Brochure (8th edition 2006) from BIPM and ISO 80000-1[1)].

The units are arranged in the following way:

a) The coherent SI units are given first. The SI units have been adopted by the General Conference on Weights and Measures (Conférence Générale des Poids et Mesures, CGPM). The use of coherent SI units

1) To be published.

is recommended; decimal multiples and submultiples formed with the SI prefixes are recommended, even though not explicitly mentioned.

b) Some non-SI units are then given, being those accepted by the International Committee for Weights and Measures (Comité International des Poids et Mesures, CIPM), or by the International Organization of Legal Metrology (Organisation Internationale de Métrologie Légale, OIML), or by ISO and IEC, for use with the SI.

   Such units are separated from the SI units in the item by use of a broken line between the SI units and the other units.

c) Non-SI units currently accepted by the CIPM for use with the SI are given in small print (smaller than the text size) in the “Conversion factors and remarks” column.

d) Non-SI units that are not recommended are given only in annexes in some parts of this International Standard. These annexes are informative, in the first place for the conversion factors, and are not integral parts of the standard. These deprecated units are arranged in two groups:

   1) units in the CGS system with special names;

   2) units based on the foot, pound, second, and some other related units.

e) Other non-SI units are given for information, especially regarding the conversion factors, in informative annexes in some parts of this International Standard.

0.3.2 Remark on units for quantities of dimension one, or dimensionless quantities

The coherent unit for any quantity of dimension one, also called a dimensionless quantity, is the number one, symbol 1. When the value of such a quantity is expressed, the unit symbol 1 is generally not written out explicitly.

EXAMPLE 1 Refractive index $n = 1{,}53 \times 1 = 1{,}53$

Prefixes shall not be used to form multiples or submultiples of this unit. Instead of prefixes, powers of 10 are recommended.

EXAMPLE 2 Reynolds number $Re = 1{,}32 \times 10^3$

Considering that plane angle is generally expressed as the ratio of two lengths and solid angle as the ratio of two areas, in 1995 the CGPM specified that, in the SI, the radian, symbol rad, and steradian, symbol sr, are dimensionless derived units. This implies that the quantities plane angle and solid angle are considered as derived quantities of dimension one. The units radian and steradian are thus equal to one; they may either be omitted, or they may be used in expressions for derived units to facilitate distinction between quantities of different kinds but having the same dimension.

0.4 Numerical statements in this International Standard

The sign $=$ is used to denote “is exactly equal to”, the sign $\approx$ is used to denote “is approximately equal to”, and the sign $:=$ is used to denote “is by definition equal to”.

Numerical values of physical quantities that have been experimentally determined always have an associated measurement uncertainty. This uncertainty should always be specified. In this International Standard, the magnitude of the uncertainty is represented as in the following example.

EXAMPLE $l = 2{,}347\ 82(32)$ m

In this example, $l = a(b)$ m, the numerical value of the uncertainty b indicated in parentheses is assumed to apply to the last (and least significant) digits of the numerical value a of the length l. This notation is used when b represents the standard uncertainty (estimated standard deviation) in the last digits of a. The numerical example given above may be interpreted to mean that the best estimate of the numerical value of the length l (when l is expressed in the unit metre) is 2,347 82, and that the unknown value of l is believed to lie between $(2{,}347\ 82 - 0{,}000\ 32)$ m and $(2{,}347\ 82 + 0{,}000\ 32)$ m, with a probability determined by the standard uncertainty 0,000 32 m and the normal probability distribution of the values of l.

0.5 Special remarks

0.5.1 General

In the explanations in the “Definition” column for quantities, it is assumed that systems are linear and that non-linear effects and effects due to anisotropy and superimposed flow are sufficiently small, that they may be neglected. Root-mean-square values may be indicated by the subscript “eff”.

0.5.2 Remark on logarithmic quantities and their units

Quantities are independent of the choice of units in which the values of the quantities are expressed. Derived units are expressed in terms of base units according to the equations between the corresponding quantities. In strict quantity calculus, it is therefore a circular definition if a unit is included in the definition of a quantity. This could, however, be done if the unit is defined elsewhere. In most practical applications in acoustics, logarithmic quantities are defined as expressed in the unit decibel, dB. This practice is applied in ISO 80000-8. For the fundamental definitions of logarithmic quantities, see ISO 80000-3:2006, items 3-21 and 3-22.

Quantities and units —

Part 8: Acoustics

1 Scope

ISO 80000-8 gives names, symbols and definitions for quantities and units of acoustics. Where appropriate, conversion factors are also given.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 16, *Acoustics — Standard tuning frequency (Standard musical pitch)*

ISO 80000-3:2006, *Quantities and units — Part 3: Space and time*

ISO 80000-4:2006, *Quantities and units — Part 4: Mechanics*

IEC 60027-1, *Letter symbols to be used in electrical technology — Part 1: General*

IEC 61672-1, *Electroacoustics — Sound level meters — Part 1: Specifications*

3 Names, symbols, and definitions

The names, symbols and definitions for quantities and units of acoustics are given on the following pages.

ACOUSTICS				QUANTITIES
Item No.	**Name**	**Symbol**	**Definition**	**Remarks**
8-1 (*7-1*)	period duration, period *fr période* (f)	T	duration of one cycle of a periodic phenomenon	See also ISO 80000-3:2006, item 3-12.
8-2 (*7-2*)	frequency *fr fréquence* (f)	f, (ν)	$f = 1/T$ where T is period (item 8-1)	For the standard tuning frequency (standard musical pitch), see ISO 16. See also ISO 80000-3:2006, item 3-15.1.
8-3 (*7-3*)	logarithmic frequency interval *fr intervalle* (m) *logarithmique de fréquence*	G	$G = \mathrm{lb}(f_2/f_1)$ where f_1 and $f_2 \geqslant f_1$ are frequencies (item 8-2) of two tones	$\mathrm{lb}(f_2/f_1) = \log_2(f_2/f_1)$
8-4 (*7-4*)	angular frequency *fr pulsation* (f)	ω	$\omega = 2\pi f$ where f is frequency (item 8-2)	See also ISO 80000-3:2006, item 3-16.
8-5 (*7-5*)	wavelength *fr longueur* (f) *d'onde*	λ	for a sinusoidal wave and in a direction perpendicular to the wavefront, distance between two successive points where at a given instant the phase (item 8-25.2, remark) differs by 2π	See also ISO 80000-3:2006, item 3-17.
8-6 (*7-6*)	wavenumber, repetency *fr nombre* (m) *d'onde*	σ	$\sigma = 1/\lambda$ where λ is wavelength (item 8-5)	The vector $\boldsymbol{k}$, corresponding to item 8-7, is generally called wave vector. Also the vector $\boldsymbol{\sigma}$ is sometimes called wave vector.
8-7 (*7-7*)	angular wavenumber, angular repetency *fr nombre* (m) *d'onde angulaire*	k	$k = \omega/c = 2\pi/\lambda$ where ω is angular frequency (item 8-4), c is phase speed of sound (item 8-14.1), 2π is the phase difference, and λ is wavelength (item 8-5)	
8-8 (*7-8*)	density, mass density *fr masse* (f) *volumique*	ρ	$\rho = m/V$ where m is mass (ISO 80000-4:2006, item 4-1) and V is volume (ISO 80000-3:2006, item 3-4)	

UNITS				ACOUSTICS
Item No.	**Name**	**International symbol**	**Definition**	**Conversion factors and remarks**
8-1.a	second	s		
8-2.a	hertz	Hz	1 Hz $:=$ 1 s^{-1}	1 Hz is the frequency of a periodic phenomenon, the period of which is 1 s.
8-3.a	octave	oct	1 oct $:=$ lb 2 $=$ 1	1 oct is the logarithmic frequency interval between f_1 and f_2 when $f_2/f_1 = 2$.
8-3.b	decade	dec	1 dec $:=$ lb 10 $=$ $(\text{lb } 10)$ oct $\approx$ 3,32 oct $=$ 3,32	1 dec is the logarithmic frequency interval between f_1 and f_2 when $f_2/f_1 = 10$.
8-4.a	radian per second	rad/s		
8-4.b	second to the power minus one	s^{-1}		
8-5.a	metre	m		
8-6.a	metre to the power minus one	m^{-1}		
8-7.a	radian per metre	rad/m		
8-7.b	metre to the power minus one	m^{-1}		
8-8.a	kilogram per cubic metre	kg/m^3		

(*continued*)

ACOUSTICS				QUANTITIES
Item No.	**Name**	**Symbol**	**Definition**	**Remarks**
8-9.1 (*7-9.1*)	static pressure *fr pression* (f) *statique*	p_s	pressure that would exist in the absence of sound waves	
8-9.2 (*7-9.2*)	sound pressure *fr pression* (f) *acoustique* (*instantanée*)	p	difference between instantaneous total pressure and static pressure	The symbols for any of the quantities 8-9.2 to 8-13 inclusive are often used without modification for their root-mean-square (r.m.s.) values. See also IEC 60027-1.
8-10 (*7-10*)	sound particle displacement *fr élongation* (f) (*instantanée*) *d'une particule*	$\boldsymbol{\delta}$ (ξ, η, ζ)	instantaneous displacement of a particle in a medium from what would be its position in the absence of sound waves	
8-11 (*7-11*)	sound particle velocity *fr vitesse* (f) *acoustique* (*instantanée*) *d'une particule*	$\boldsymbol{v}$, $\boldsymbol{u}$ (u, v, w)	$\boldsymbol{v} = \dfrac{\partial \boldsymbol{\delta}}{\partial t}$ where $\boldsymbol{\delta}$ is sound particle displacement (item 8-10) and t is time	
8-12 (*7-12*)	sound particle acceleration *fr accélération* (f) *acoustique* (*instantanée*) *d'une particule*	$\boldsymbol{a}$	$\boldsymbol{a} = \dfrac{\partial \boldsymbol{v}}{\partial t}$ where $\boldsymbol{v}$ is sound particle velocity (item 8-11) and t is time	
8-13 (*7-13*)	sound volume velocity, sound volume flow rate *fr flux* (m) *de vitesse acoustique* (*instantanée*)	q, (q_V)	surface integral of the normal component of the sound particle velocity (item 8-11) over the cross-section (through which the sound propagates)	
8-14.1 (*7-14.1*)	phase speed of sound *fr vitesse* (f) *de phase du son*, (*célérité)* (f) *du son*)	c	$c = \dfrac{\omega}{k} \, (= \lambda f)$ where ω is angular frequency (item 8-4) and k is angular wavenumber (item 8-7)	Phase speed of sound is the travel speed of the phase of a sound wave.
8-14.2 (*7-14.1*)	group speed of sound *fr vitesse* (f) *de groupe du son*	c_g	$c_g = \dfrac{\mathrm{d}\omega}{\mathrm{d}k}$ where ω is angular frequency (item 8-4) and k is angular wavenumber (item 8-7)	Group speed of sound is the travel speed of the energy of a sound wave.

UNITS				ACOUSTICS
Item No.	**Name**	**Inter-national symbol**	**Definition**	**Conversion factors and remarks**
8-9.a	pascal	Pa		
8-10.a	metre	m		
8-11.a	metre per second	m/s		
8-12.a	metre per second squared	m/s^2		
8-13.a	cubic metre per second	m^3/s		
8-14.a	metre per second	m/s		

(*continued*)

ACOUSTICS				QUANTITIES
Item No.	**Name**	**Symbol**	**Definition**	**Remarks**
8-15 (*7-15*)	sound energy density *fr énergie* (f) *volumique acoustique*	w	time-averaged sound energy in a given volume divided by that volume	
8-16 (*7-16*)	sound power *fr puissance* (f) *acoustique*	P, P_a	through a surface, product of the sound pressure, p (item 8-9.2), and the component of the particle velocity, u_n (item 8-11), at a point on the surface in the direction normal to the surface, integrated over that surface (item 8-16.2)	
8-17.1 (*7-17*)	sound intensity *fr intensité* (f) *acoustique*	$\boldsymbol{i}$	$\boldsymbol{i} = p \cdot \boldsymbol{v}$ where p is sound pressure (item 8-9.2) and $\boldsymbol{v}$ is sound particle velocity (item 8-11)	Intensity is sometimes known as energy flux density.
8-17.2 (—)	time-averaged sound intensity *fr intensité* (f) *acoustique moyenne*	$\boldsymbol{I}$	$\boldsymbol{I} = \frac{1}{t_2 - t_1} \int_{t_1}^{t_2} \boldsymbol{i}(t)\, \mathrm{d}t$ where t_1 and t_2 are the starting and ending times for the integral and $\boldsymbol{i}$ is sound intensity (item 8-17.1)	
8-18 (—)	sound exposure *fr exposition* (f) *sonore,* *exposition* (f) *au bruit*	E	$E = \int_{t_1}^{t_2} p^2\, \mathrm{d}t$ where t_1 and t_2 are the starting and ending times for the integral and p is sound pressure (item 8-9.2)	Because of practical limitations of the measuring instruments, p^2 is always understood to denote the square of a frequency-weighted and frequency-band-limited sound pressure. If specific frequency weightings as specified in IEC 61672-1 are applied, this should be indicated by appropriate subscripts to the symbol E.
8-19 (*7-20.2*)	characteristic impedance of a medium *fr impédance* (f) *acoustique caractéristique d'un milieu*	Z_c	at a point in a non-dissipative medium and for a plane progressive wave, the quotient of the sound pressure (item 8-9.2) by the component of the sound particle velocity (item 8-11) in the direction of the wave propagation	$Z_c = \rho c$ where ρ is the density (item 8-8) of the medium and c the phase speed of sound (item 8-14.1).

UNITS				ACOUSTICS
Item No.	**Name**	**International symbol**	**Definition**	**Conversion factors and remarks**
8-15.a	joule per cubic metre	J/m^3		
8-16.a	watt	W		
8-17.a	watt per square metre	W/m^2		
8-18.a	pascal squared second	$Pa^2 \cdot s$		
8-19.a	pascal second per metre	$Pa \cdot s/m$		

(*continued*)

ACOUSTICS				QUANTITIES
Item No.	**Name**	**Symbol**	**Definition**	**Remarks**
8-20 (*7-18*)	acoustic impedance *fr impédance* (f) *acoustique*	Z_a	at a surface, the complex quotient of the average sound pressure (item 8-9.2) over that surface by the sound volume flow rate (item 8-13) through that surface	
8-21 (*7-19*)	mechanical surface impedance *fr impédance* (f) *mécanique* (*de surface*)	Z_m	at a surface, the complex quotient of the total force on the surface by the component of the average sound particle velocity (item 8-11) at the surface in the direction of the force	$Z_\mathrm{m} = Z_\mathrm{a} \cdot A^2$ where A is the area of the surface considered and Z_a is the acoustic impedance (item 8-20).
8-22 (*7-21*)	sound pressure level *fr niveau* (m) *de pression acoustique*	L_p	$L_p = 10 \lg \frac{p^2}{p_0^2}$ dB where p is sound pressure (item 8-9.2) and the reference value in airborne acoustics is $p_0 = 20\ \mu\mathrm{Pa}$	Because of practical limitations of the measuring instruments, p^2 is always understood to denote the square of a frequency-weighted, frequency-band-limited or time-weighted sound pressure or both. If specific frequency and time weightings as specified in IEC 61672-1 or specific frequency bands or both are applied, this should be indicated by appropriate subscripts. For a general definition of the level of a field quantity, see also ISO 80000-3:2006, item 3-21. For media other than air, other reference values may be used.
8-23 (*7-22*)	sound power level *fr niveau* (m) *de puissance acoustique*	L_W	$L_W = 10 \lg \frac{P}{P_0}$ dB where P is sound power (item 8-16) and the reference value is $P_0 = 1$ pW	For a general definition of the level of a power quantity, see also ISO 80000-3:2006, item 3-22.
8-24 (—)	sound exposure level *fr niveau* (m) *d'exposition sonore, niveau d'exposition au bruit*	L_E	$L_E = 10 \lg \frac{E}{E_0}$ dB where E is sound exposure (item 8-18) and the reference value is $E_0 = 400\ \mu\mathrm{Pa}^2 \cdot \mathrm{s}$	If specific frequency weightings as specified in IEC 61672-1 are applied, this should be indicated by appropriate subscripts.

UNITS				ACOUSTICS
Item No.	**Name**	**International symbol**	**Definition**	**Conversion factors and remarks**
8-20.a	pascal second per cubic metre	$Pa \cdot s/m^3$		
8-21.a	newton second per metre	N·s/m		
8-22.a	bel	B	1 B is the sound pressure level when $p/p_0 = \sqrt{10}$	In practical applications and consistent with the definition of sound pressure level, the submultiple decibel, dB, is used instead of the bel, B. NOTE The addition of a postscript to indicate the frequency weighting, e.g. dB(A), is incorrect. This information should be carried by the quantity symbol, e.g. L_A.
8-23.a	bel	B	1 B is the sound power level when $P/P_0 = 10$	In practical applications and consistent with the definition of sound power level, the submultiple decibel, dB, is used instead of the bel, B.
8-24.a	bel	B	1 B is the sound exposure level when $E/E_0 = 10$	In practical applications and consistent with the definition of sound exposure level, the submultiple decibel, dB, is used instead of the bel, B.

(*continued*)

ACOUSTICS				QUANTITIES
Item No.	**Name**	**Symbol**	**Definition**	**Remarks**
8-25.1 (*7-26.1*)	attenuation coefficient *fr affaiblissement* (m) *linéique de propagation*	α	if a field quantity is a function of distance x given by $F(x) = A\mathrm{e}^{-\alpha x} \cos[\beta(x - x_0)]$, then α is the attenuation coefficient and β is the phase coefficient	The quantity $1/\alpha$ is called the attenuation length. $m = 2\alpha$ is called the power attenuation coefficient. When there is a risk of confusion with item 8-26.4, $m/2$ is used instead of α for the attenuation coefficient.
8-25.2 (*7-26.2*)	phase coefficient *fr déphasage* (m) *linéique*	β		The quantity $\beta(x - x_0)$ is called the phase.
8-25.3 (*7-26.3*)	propagation coefficient *fr exposant* (m) *linéique de propagation*	γ	$\gamma = \alpha + \mathrm{j}\beta$	$-\mathrm{j}\gamma$ is the complex angular wavenumber.
8-26.1 (*7-27.1*)	dissipation factor for sound power, dissipance *fr facteur* (m) *de dissipation en puissance du son*	δ, ψ	ratio of dissipated sound power to incident sound power	
8-26.2 (*7-27.2*)	reflection factor for sound power, reflectance *fr facteur* (m) *de réflexion en puissance du son*	r, (ρ)	ratio of reflected sound power to incident sound power	
8-26.3 (*7-27.3*)	transmission factor for sound power, transmittance *fr facteur* (m) *de transmission en puissance du son*	τ	ratio of transmitted sound power to incident sound power	$\delta + r + \tau = 1$
8-26.4 (*7-27.4*)	absorption factor for sound power, absorbance *fr facteur* (m) *d'absorption acoustique en puissance du son*	α	ratio of dissipated and transmitted sound power to incident sound power	$\alpha = \delta + \tau$

UNITS				ACOUSTICS
Item No.	**Name**	**International symbol**	**Definition**	**Conversion factors and remarks**
8-25.a	metre to the power minus one	m^{-1}		
8-26.a	one	1		See the Introduction, 0.3.2.

(*continued*)

ACOUSTICS				QUANTITIES
Item No.	**Name**	**Symbol**	**Definition**	**Remarks**
8-27 (*7-28*)	sound reduction index *fr indice* (m) *d'affaiblissement acoustique*	R	$R = 10 \lg(1/\tau)$ dB where τ is the transmission factor (item 8-26.3)	
8-28 (*7-29*)	equivalent absorption area of a surface or object *fr aire* (f) *d'absorption équivalente d'une surface ou d'un objet*	A	in a diffuse sound field, that area of a surface having an absorption factor equal to 1, which, if diffraction effects are neglected, would, in the same diffuse sound field, absorb the same power	
8-29 (*7-30*)	reverberation time *fr durée* (f) *de réverbération*	T_n	duration required for the space-averaged sound energy density in an enclosure to decrease to $10^{-n/10}$ of its initial value (i.e. by n dB) after the source emission has stopped	

UNITS				ACOUSTICS
Item No.	**Name**	**International symbol**	**Definition**	**Conversion factors and remarks**
8-27.a	bel	B	1 B is the sound reduction index when $1/\tau = 10$	In practical applications and consistent with the definition of sound reduction index, the submultiple decibel, dB, is used instead of the bel, B.
8-28.a	square metre	m^2		
8-29.a	second	s		

(*concluded*)

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