



SLOVENSKI STANDARD SIST EN ISO 11820:1999

01-november-1999

Akustika – Merjenje dušilnikov na mestu delovanja (ISO 11820:1996)

Acoustics - Measurements on silencers in situ (ISO 11820:1996)

Akustik - Messungen an Schalldämpfern im Einsatzfall (ISO 11820:1996)

Acoustique - Mesurage sur silencieux in situ (ISO 11820:1996)

Ta slovenski standard je istoveten z: **EN ISO 11820:1996**

[SIST EN ISO 11820:1999](https://standards.iteh.ai/catalog/standards/sist/4c0e9e08-140c-4221-a4ce-76fc70fdc9dd/sist-en-iso-11820-1999)

<https://standards.iteh.ai/catalog/standards/sist/4c0e9e08-140c-4221-a4ce-76fc70fdc9dd/sist-en-iso-11820-1999>

ICS:

| | | |
|-----------|--|---|
| 17.140.01 | Akustična merjenja in blaženje hrupa na splošno | Acoustic measurements and noise abatement in general |
|-----------|--|---|

SIST EN ISO 11820:1999

en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN ISO 11820:1999

<https://standards.iteh.ai/catalog/standards/sist/4c0e9e08-140c-4221-a4ce-76fc70fdc9dd/sist-en-iso-11820-1999>

EUROPEAN STANDARD

EN ISO 11820

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 1996

ICS 17.140.40; 91.140.30

Descriptors: See ISO document

English version

**Acoustics - Measurements on silencers in situ
(ISO 11820:1996)**Acoustique - Mesurages sur silencieux in situ
(ISO 11820:1996)**STANDARD PREVIEW**
(standards.iteh.ai)SIST EN ISO 11820:1999<https://standards.iteh.ai/catalog/standards/sist/4c0e9e08-140c-4221-a4ce-76fc70fde9dd/sist-en-iso-11820-1999>

This European Standard was approved by CEN on 1996-11-07. 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.

The European Standards exist 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.

CENEuropean 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 ISO 11820:1996 has been prepared by Technical Committee ISO/TC 43 "Acoustics" 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 June 1997, and conflicting national standards shall be withdrawn at the latest by June 1997.

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.

Endorsement notice

The text of the International Standard ISO 11820:1996 was approved by CEN as a European Standard without any modification.

NOTE: Normative references to International Standards are listed in annex ZA (normative).

iTeh STANDARD PREVIEW
(standards.iteh.ai)



SIST EN ISO 11820:1999

<https://standards.iteh.ai/catalog/standards/sist/9c0e9e68-140c-4321-a4e-76f70b7670b7/sist-en-iso-11820-1999>

AGENCE VOIES RAISONNABLES
SIST EN ISO 11820:1999
Ouvrage de référence
Avis de dépôt

.....
L'UNION FRANÇAISE DES NORMES

Annex ZA (normative)**Normative references to international publications
with their relevant European publications**

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

| <u>Publication</u> | <u>Year</u> | <u>Title</u> | <u>EN</u> | <u>Year</u> |
|--------------------|-------------|---|-------------|-------------|
| ISO 3744 | 1994 | Acoustics - Determination of sound power levels of noise sources using sound pressure - Engineering method in an essentially free field over a reflecting plane | EN ISO 3744 | 1995 |

ITEH STANDARD PREVIEW
(standards.iteh.ai)

SIST EN ISO 11820:1999

<https://standards.iteh.ai/catalog/standards/sist/4c0e9e08-140c-4221-a4ce-76fc70fdc9dd/sist-en-iso-11820-1999>

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN ISO 11820:1999

<https://standards.iteh.ai/catalog/standards/sist/4c0e9e08-140c-4221-a4ce-76fc70fdc9dd/sist-en-iso-11820-1999>

INTERNATIONAL
STANDARD

ISO
11820

First edition
1996-12-15

**Acoustics — Measurements on silencers
*in situ***

Acoustique — Mesurages sur silencieux in situ

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN ISO 11820:1999](https://standards.iteh.ai/catalog/standards/sist/4c0e9e08-140c-4221-a4ce-76fc70fdc9dd/sist-en-iso-11820-1999)

<https://standards.iteh.ai/catalog/standards/sist/4c0e9e08-140c-4221-a4ce-76fc70fdc9dd/sist-en-iso-11820-1999>



Reference number
ISO 11820:1996(E)

ISO 11820:1996(E)

| Contents | Page |
|--|-------------|
| 1 Scope | 1 |
| 2 Normative references | 2 |
| 3 Definitions | 2 |
| 4 Corrections for background noise..... | 4 |
| 4.1 Transmission sound pressure level difference | 4 |
| 4.2 Insertion sound pressure level difference..... | 5 |
| 5 Installation conditions | 5 |
| 6 Measuring instruments | 5 |
| 6.1 Acoustic instruments | 5 |
| 6.2 Air flow, static pressure and temperature measuring devices | 7 |
| 7 Test object and measuring conditions | 7 |
| 8 Measurement procedures..... | 7 |
| 8.1 General..... | 7 |
| 8.2 Acoustic measurements | 7 |
| 8.3 Flow, pressure and temperature measurements..... | 9 |
| 9 Evaluation | 10 |
| 9.1 Evaluation of sound pressure measurements | 10 |
| 9.2 Evaluation of flow measurements..... | 12 |
| 10 Information to be recorded | 13 |
| 11 Information to be reported | 14 |
| Annexes | |
| A Field corrections | 15 |
| B Calibration of directional microphones and microphones equipped with a turbulence windscreen | 17 |
| C Bibliography..... | 18 |

© ISO 1996

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

International Organization for Standardization
Case Postale 56 • CH-1211 Genève 20 • Switzerland

Printed in Switzerland

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.

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.

iTeh STANDARD PREVIEW

(standards.iteh.ai)
International Standard ISO 11820 was prepared by Technical Committee ISO/TC 43, *Acoustics*, Subcommittee SC 1, *Noise*.

Annexes A to C of this International Standard are for information only.

<https://standards.iteh.ai/catalog/standards/sist/4c0e9e08-140c-4221-a4ce-76fc70fdc9dd/sist-en-iso-11820-1999>

Introduction

This International Standard gives a method for evaluating the acoustic performance of silencers under plant-operating conditions. The attenuation losses determined express the extent to which the level of sound power passing through a duct, or across the internal cross-section of an aperture or opening (e.g. in an enclosure or a building) is reduced by the use of a silencer. Sound transmission via flanking elements is attributed to the silencer performance unless the flanking element is not a part of the silencer or of the related duct walls. The influences of flow noise and of alterations to the operating conditions with and without a silencer are included.

In laboratory measurements on ducted silencers in accordance with ISO 7235, insertion losses, static pressure losses and regenerated sound (flow noise) are determined under well-defined conditions. In practical applications both the sound field and flow field are less uniformly distributed. This can lead to different attenuations and greater pressure losses. In addition, sound levels and rates of flow are mutually dependent. Therefore, in this International Standard the regenerated sound is not measured separately but is treated as a property of the silencer in its operating installation which limits the degree of attenuation in the particular application.

<https://standards.iteh.ai/catalog/standards/sist/4c0e9e08-140c-4221-a4ce-76fc70fdc9dd/sist-en-iso-11820-1999>

Acoustics — Measurements on silencers *in situ*

1 Scope

1.1 This International Standard specifies measurements on silencers *in situ*. It is applicable to measurements on silencers in practical applications for acoustic analysis, acceptance tests and similar evaluations. Results obtained in accordance with this International Standard cannot be compared to performance data obtained from laboratory measurements on ducted silencers in accordance with ISO 7235, partly because of different test conditions (such as sound field distribution, flow, temperature and mounting conditions) and partly because of different definitions.

Depending on the method used, the measurement is either of

- insertion loss D_{is} , or
- transmission loss D_{ts} .

The measurement method depends upon the type of silencer and the installation conditions (e.g. insertion loss measurements must be carried out for blowdown silencers).

NOTE 1 The subscripts denote the practical application of the silencer and the particular installation and operating conditions: “s” stands for “*in situ*”, “t” for transmission, and “i” for insertion.

Additional characteristic quantities, which could include measurements taken using artificial sound sources or measurements taken to determine the directivity of sound propagation from the silencer, may be agreed upon in accordance with this International Standard.

1.2 This International Standard is applicable to

- a) silencers which are installed either as a whole or in the form of individual baffles in the propagation path of sound (e.g. openings of ducts) originating from a sound source (machine, building, plant

such as a gas turbine generator, scrubbing plant, cooling tower, heating ventilation and air conditioning (HVAC) plant, exhaust stack, air intake duct, weapon, internal combustion engine, compressor, etc.);

- b) all types of passive silencers (absorptive, reactive, reflection and blowdown silencer);
- c) active silencers (involving amplifiers and loudspeakers) as far as the insertion loss of passive silencers is equivalent to the off/on conditions of active devices; and
- d) other measures or means of effecting acoustic attenuation in air or other gases (e.g. components installed in ducting, louvres, grilles and deflector hoods).

Additionally, this International Standard is applicable to the determination of the effect of cleaning or refurbishing silencers.

This International Standard is not applicable to closed high-pressure systems (e.g. silencers in closed pipes) since measurements of structure-borne sound are not anticipated.

1.3 Quantities to be measured include the following:

- a) sound pressure levels in octave bands with centre frequencies at least from 63 Hz to 4 kHz and, if possible and required, from 31,5 Hz to 8 kHz or in one-third-octave bands with centre frequencies from 50 Hz to 5 kHz and, if possible and required, from 25 Hz to 10 kHz
 - at a point or points on the source side of a silencer,
 - at a point or points on the receiver side of a silencer;
- b) static and dynamic pressures, flow velocities and temperatures at selected positions.

Operating data to be determined include flow rate, pressure and speed, which define the operating conditions of the machine or plant to be silenced.