
**Textile machinery — Noise test code —
Part 1:
Common requirements**

Matériel pour l'industrie textile — Code d'essai acoustique —

Partie 1: Exigences communes

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO 9902-1:2001

<https://standards.iteh.ai/catalog/standards/sist/d07023fd-3b29-4711-9f39-df623b107577/iso-9902-1-2001>



PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO 9902-1:2001

<https://standards.iteh.ai/catalog/standards/sist/d07023fd-3b29-4711-9f39-df623b107577/iso-9902-1-2001>

© ISO 2001

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 either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.ch
Web www.iso.ch

Printed in Switzerland

Contents

Page

Foreword.....	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Defining the test object	3
5 Sound power level determination	3
6 Emission sound pressure level determination.....	4
7 Installation and mounting conditions.....	4
8 Operating conditions.....	5
9 Measurement uncertainties	6
10 Information to be recorded	7
11 Information to be reported.....	7
12 Declaration and verification of noise emission values.....	8
Annex A (informative) Forms for recording and reporting noise emission data of textile machinery.....	9

[ISO 9902-1:2001](https://standards.iteh.ai/catalog/standards/sist/d07023fd-3b29-4711-9f39-df623b107577/iso-9902-1-2001)

<https://standards.iteh.ai/catalog/standards/sist/d07023fd-3b29-4711-9f39-df623b107577/iso-9902-1-2001>

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 3.

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 part of ISO 9902 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 9902-1 was prepared by Technical Committee ISO/TC 72, *Textile machinery and machinery for dry-cleaning and industrial laundering*, Subcommittee SC 8, *Safety requirements for textile machinery*.

This first edition of ISO 9902-1, together with ISO 9902-2, ISO 9902-3, ISO 9902-4, ISO 9902-5, ISO 9902-6 and ISO 9902-7, cancels and replaces ISO 9902:1993, which has been technically revised.

ISO 9902 consists of the following parts, under the general title *Textile machinery — Noise test code*:

- Part 1: Common requirements
- Part 2: Spinning preparatory and spinning machinery
- Part 3: Nonwoven machinery
- Part 4: Yarn processing, cordage and rope manufacturing machinery
- Part 5: Weaving and knitting preparatory machinery
- Part 6: Fabric manufacturing machinery
- Part 7: Dyeing and finishing machinery

Annex A of this part of ISO 9902 is for information only.

Introduction

Basic noise emission quantities for textile machinery include emission sound pressure levels at work stations and the sound power level. The determination of these quantities (i.e. the test) is necessary for:

- manufacturers to be able to declare the noise emitted,
- machine users to be able to compare the noise emitted by machines in the group concerned,
- experimental verification of the noise control measures taken at the design stage, and
- estimation of noise immission (exposure) in the workplace or at the work station.

ISO 9902 constitutes a comprehensive noise test code for textile machinery. Its use will ensure the reproducibility of the determination of the noise emission quantities within specified limits determined by the grade of accuracy.

iTeh STANDARD PREVIEW (standards.iteh.ai)

ISO 9902-1:2001

<https://standards.iteh.ai/catalog/standards/sist/d07023fd-3b29-4711-9f39-df623b107577/iso-9902-1-2001>

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO 9902-1:2001

<https://standards.iteh.ai/catalog/standards/sist/d07023fd-3b29-4711-9f39-df623b107577/iso-9902-1-2001>

Textile machinery — Noise test code —

Part 1: Common requirements

1 Scope

This part of ISO 9902 gives requirements for carrying out, efficiently and under standardized conditions, the determination, declaration and verification of basic noise emission quantities common to the types of textile machinery dealt with in ISO 9902-2 to ISO 9902-7. It specifies noise measurement methods, as well as the mounting and operating conditions, to be used for this noise test code.

This part of ISO 9902 is applicable to all machinery, plant and equipment given according to ISO 11111, including equipment enabling the automated operation of machines and processes for single machines or complex installations, but excluding equipment for transportation between the machine interfaces.

NOTE 1 The measurement of the peak, C-weighted, instantaneous sound pressure value at workstations is not dealt with in this part of ISO 9902, since peak sound pressures sufficient to require such measurement are not to be expected from textile machines.

NOTE 2 For each textile machine, two parts of ISO 9902 will normally need to be used: this part and the relevant, specific part of ISO 9902.

<https://standards.iteh.ai/catalog/standards/sist/d07023fd-3b29-4711-9f39-df623b107577/iso-9902-1-2001>

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 9902. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 9902 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 3740:2000, *Acoustics — Determination of sound power levels of noise sources — Guidelines for the use of basic standards.*

ISO 3743-1:1994, *Acoustics — Determination of sound power levels of noise sources — Engineering methods for small, movable sources in reverberant fields — Part 1: Comparison method for hard-walled test rooms.*

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.*

ISO 3746:1995, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Survey method using an enveloping measurement surface over a reflecting plane.*

ISO 3747:2000, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Comparison method in situ.*

ISO 4871:1996, *Acoustics — Declaration and verification of noise emission values of machinery and equipment.*

ISO 9902-1:2001(E)

ISO 7574-1:1985, *Acoustics — Statistical methods for determining and verifying stated noise emission values of machinery and equipment — Part 1: General considerations and definitions.*

ISO 9614-1:1993, *Acoustics — Determination of sound power levels of noise sources using sound intensity — Part 1: Measurement at discrete points.*

ISO 9614-2:1996, *Acoustics — Determination of sound power levels of noise sources using sound intensity — Part 2: Measurement by scanning.*

ISO 9902 (parts 2 to 7), *Textile machinery — Noise test code.*

ISO 11111:1995, *Safety requirements for textile machinery.*

ISO 11200:1995, *Acoustics — Noise emitted by machinery and equipment — Guidelines for the use of basic standards for the determination of emission sound pressure levels at a work station and at other specified positions.*

ISO 11201:1995, *Acoustics — Noise emitted by machinery and equipment — Measurement of emission sound pressure levels at a work station and at other specified positions — Engineering method in an essentially free field over a reflecting plane.*

ISO 11202:1995, *Acoustics — Noise emitted by machinery and equipment — Measurement of emission sound pressure levels at a work station and at other specified positions — Survey method in situ.*

ISO 11203:1995, *Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at a work station and at other specified positions from the sound power level.*

ISO 11204:1995, *Acoustics — Noise emitted by machinery and equipment — Measurement of emission sound pressure levels at a work station and at other specified positions — Method requiring environmental corrections.*

EN 292-2:1991/A.1:1995, *Safety of machinery — Basic concepts, general principles for design — Part 2: Technical principles and specifications.*

<https://standards.iteh.ai/catalog/standards/sist/d07023fd-3b29-4711-9f39-df623b107577/iso-9902-1-2001>

3 Terms and definitions

For the purposes of this part of ISO 9902, the terms and definitions given in ISO 4871 and the following apply.

3.1

A-weighted sound power level

L_{WA}
ten times the logarithm to the base 10 of the ratio of the A-weighted sound power radiated by the source under test to the reference sound power [$W_0 = 1 \text{ pW}$ (10^{-12} W)]

NOTE 1 Adapted from ISO 3740:2000.

NOTE 2 It is expressed in decibels.

NOTE 3 Time-averaged values of sound pressure levels are the basis for calculation of sound power levels. This is not the case for ISO 9614-1 and ISO 9614-2.

3.2

A-weighted emission sound pressure level

L_{pA}
ten times the logarithm to the base 10 of the ratio of the square of the A-weighted emission sound pressure to the square of the reference sound pressure [$p_0 = 20 \text{ } \mu\text{Pa}$ ($2 \times 10^{-5} \text{ Pa}$)]

NOTE 1 Adapted from ISO 3740:2000.

NOTE 2 It is expressed in decibels.

3.3 uncertainty

K

value of the measurement uncertainty associated with a measured noise emission value

[ISO 4871:1996]

NOTE 1 It is expressed in decibels.

NOTE 2 The uncertainty is designated K_{WA} for A-weighted sound power levels and K_{pA} for A-weighted emission sound pressure levels.

4 Defining the test object

The test object is the machine in its operating condition, with or without process material, as specified in ISO 9902-2 to ISO 9902-7.

Possible machine configurations (see the tables in ISO 9902-2 to ISO 9902-7):

- a) a single machine, which can be run with process material independently of other machines;
- b) a coupled machine, part of an integrated line but which can be run independently without the process material;
- c) an integrated machine, part of an integrated line that cannot be run independently of the other machines in the line, with or without process material.

If several textile machines form an integrated group working together, the noise emission shall be determined for each machine. This may require that the machines be run without process material.

For necessary further information concerning the test object and machine configurations, especially in relation to particular pieces of equipment required or not required to be included as part of the test object, as well as design features important for verification of the measurement, see the appropriate columns in the tables in ISO 9902-2 to ISO 9902-7.

5 Sound power level determination

5.1 International Standards required for basic measurements

A-weighted sound power levels, L_{WA} , shall be determined in accordance with the basic noise emission standards given in ISO 9902-2 to ISO 9902-7.

Grade 2 (engineering) methods shall be used wherever practicable, and only where this is not practicable may grade 3 (survey) methods be used. Permitted measurement standards are specified in ISO 9902-2 to ISO 9902-7.

5.2 Very large machines

For very large machines, sound power level determinations according to the option offered by EN 292-2:1991/A1:1995, annex A, 1.7.4 f) are not required: only the emission sound pressure levels determined using clause 6 of this and the other parts of ISO 9902. Very large machines are designated in the tables in ISO 9902-2 to ISO 9902-7 by the letter "L".

6 Emission sound pressure level determination

6.1 International Standards required for basic measurements

The A-weighted emission sound pressure level, L_{pA} , shall be determined in accordance with the basic noise emission standards given in ISO 9902-2 to ISO 9902-7. Where more than one position ($i = 1 \dots N$) is specified in the definition of the work station, the time-averaged emission sound pressure level L'_{pAi} shall be measured at each position.

The background noise correction, K_{1Ai} , shall be measured and the local environmental correction, K_{3Ai} , shall be calculated for each measurement position using the appropriate methods.

From the values of L'_{pAi} , K_{1Ai} and K_{3Ai} thus obtained, L_{pAi} shall be determined for each measurement position using $L_{pAi} = L'_{pAi} - K_{1Ai}$, according to ISO 11201, or $L_{pAi} = L'_{pAi} - K_{1Ai} - K_{3Ai}$, according to ISO 11202 or ISO 11204.

Grade 2 (engineering) methods shall be used wherever practicable, and only where this is not practicable may grade 3 (survey) methods be used. The basic measurement standards to be used are specified in ISO 9902-2 to ISO 9902-7.

From the individual values, with L_{pAi} thus obtained, L_{pA} shall be calculated using the formula:

$$L_{pA} = 10 \lg \left(\frac{1}{N} \sum_{i=1}^N 10^{0,1L_{pAi}} \right) \text{ dB}$$

where N represents the number of specified positions.

This value shall be reported and declared.

6.2 Selection of work station and other specified positions

The positions at which sound pressure levels are to be measured for the determination of L_{pA} shall be as specified in ISO 9902-2 to ISO 9902-7.

For a machine belonging to a family to which ISO 9902 is applicable but not specifically mentioned in the other parts of ISO 9902, the most appropriate work station shall be selected from the options given in those parts and then reported as required by clause 11.

If no work station or other position is specified and none of the options is appropriate, measurements shall be made at a distance of 1 m from the machine and at a height of 1,60 m above the floor or access platform. The highest emission sound pressure level value and the position at which it was obtained shall be reported and declared.

7 Installation and mounting conditions

7.1 General

The installation and mounting conditions shall be identical for the determination of both L_{WA} and L_{pA} .

Care shall be taken to ensure that any electrical conduits, piping or air ducts connected to the machinery, but not part of the machine, do not radiate significant amounts of sound energy into the test environment.

The machine under test shall be placed on a reflecting (acoustically hard) floor.

Additional requirements relating to installation and mounting conditions shall be as specified in ISO 9902-2 to ISO 9902-7. Noise reduction features that are part of the machine shall be in place during the measurement.

7.2 *In situ*

The installation and mounting conditions for the measurement shall be the same as those indicated by the manufacturer in the instruction handbook.

7.3 On the manufacturer's premises

A machine tested on the manufacturer's premises that would normally be assembled and installed on the customer's premises shall be installed and mounted, together with any applicable auxiliary equipment, following the manufacturer's written instructions and to simulate *in situ* installation and mounting conditions as closely as possible.

8 Operating conditions

The operating conditions under which the test is to be performed shall make it possible to include in the measurement all significant noises emitted by the test object (see clause 4).

The test object shall be in a clean and lubricated condition and at normal operating temperature.

In those cases where the work cycle includes several different phases, the noise emission values shall be determined for the complete cycle, unless otherwise specified in the part of ISO 9902 concerned.

The work cycle for measurement shall be representative of the machine in operation and shall exclude the doffing operation and unrepresentative stoppages.

The operating conditions shall be identical for the determination of both L_{WA} and L_{pA} .

Specific operating conditions for the machines are given in the tables in ISO 9902-2 to ISO 9902-7. For a machine belonging to a family to which ISO 9902 is applicable, but not specifically mentioned in those other parts of ISO 9902, the operating conditions shall be those within the range specified by the manufacturer giving rise to the highest noise emission values.

For textile machinery, noise-relevant operating conditions are divided into the following three categories (see the corresponding columns in the tables in ISO 9902-2 to ISO 9902-7).

Prescribed parameters: These are fixed values, defined in the tables of ISO 9902-2 to ISO 9902-7 or in manufacturers' nominal values.

Variable parameters: One or two parameters with the greatest influence on noise emission shall be varied within the practical operating range or ranges. The noise emission values shall then be determined and declared for three values — maximum, medium and low — for each parameter (the maximum of a range is the value of a parameter giving rise to the maximum noise level under production conditions).

Parameters to be reported: The values of these parameters are not prescribed in ISO 9902-2 to ISO 9902-7 but the values used for the test shall be reported.

For a machine belonging to a family to which ISO 9902 is applicable but not specifically mentioned in the other parts of ISO 9902, the following shall apply.

- For a machine with a large industrial operating range, one or two parameters with the greatest influence on noise emission shall be varied within the practical operating range or ranges. The noise emission values shall then be determined and declared for three values — maximum, medium and low — for each parameter (the maximum of a range is the value of a parameter giving rise to the maximum noise level under production conditions).
- For a machine with a narrow industrial operating range (e.g. around 80 % of its maximum speed), the noise emission values shall be determined and declared only for that value of each parameter having the greatest