



International  
Standard

ISO 20145

**Pneumatic fluid power — Test methods for measuring acoustic emission pressure levels of exhaust silencers**

*Transmissions pneumatiques — Méthode d'essai de mesure du niveau de pression d'émission acoustique des silencieux d'échappement*

**Second edition  
2026-02**

iTeh Standards  
(<https://standards.iteh.ai>)  
Document Preview

[ISO 20145:2026](#)

<https://standards.iteh.ai/catalog/standards/iso/4617011c-ddd0-433f-b1ae-82aec409922c/iso-20145-2026>

**iTeh Standards**  
**(<https://standards.iteh.ai>)**  
**Document Preview**

[ISO 20145:2026](#)

<https://standards.iteh.ai/catalog/standards/iso/4617011c-ddd0-433f-b1ae-82aec409922c/iso-20145-2026>



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2026

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier, Geneva  
Phone: +41 22 749 01 11  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

Published in Switzerland

## Contents

	Page
<b>Foreword</b>	iv
<b>Introduction</b>	v
<b>1 Scope</b>	1
<b>2 Normative references</b>	1
<b>3 Terms and definitions</b>	1
<b>4 Symbols and units</b>	3
<b>5 Test set-up</b>	3
5.1 Test bench	3
5.2 Pneumatic pressure measurement	3
5.3 Flow measurement	3
5.4 Sound pressure measurement	3
5.4.1 General	3
5.4.2 Measurement at one position	4
5.4.3 Measurement at three positions	4
5.5 Acoustic instrumentation	5
<b>6 Test procedure</b>	6
6.1 Characterization and validation of the test facilities	6
6.2 Quantities to be measured	6
6.2.1 Basic quantities to be measured	6
6.2.2 Acquisition parameters of basic quantities — Steady-state mode	6
6.2.3 Acquisition parameters of basic quantities — Discharge mode	6
6.3 Measurements	7
6.3.1 General	7
6.3.2 Specimens tested	7
6.3.3 Specific cases	7
6.3.4 Ambient conditions during measurement	8
6.4 The acoustic quantity to be determined	8
6.5 Calculation of background noise correction $K_{1A}$	8
6.5.1 General	8
6.5.2 Case of measurement in steady-state mode	9
6.5.3 Case of measurement in discharge mode	9
6.6 Uncertainty on measurement	10
<b>7 Presentation of test results</b>	10
7.1 Information to be written in the test report	10
7.2 Information to be declared	11
<b>8 Identification statement</b>	11
<b>Annex A (informative) Calculation of environmental correction <math>K_{2A}</math></b>	12
<b>Annex B (informative) Example of the acoustic correction of industrial facilities</b>	14
<b>Annex C (informative) Example of reports</b>	18
<b>Annex D (informative) Uncertainties</b>	20
<b>Annex E (informative) Sound attenuation effect of silencers</b>	23
<b>Bibliography</b>	34

## 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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at [www.iso.org/patents](http://www.iso.org/patents). ISO shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 131 *Fluid power systems*, Subcommittee SC 5, *Control products and components*.

This second edition cancels and replaces the first edition (ISO 20145:2019), which has been technically revised.

The main changes are as follows:

[ISO 20145:2026](http://www.iso.org/iso/20145:2026)

— addition of a new [Annex E](#) on sound attenuation effect of silencers.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

## **Introduction**

This acoustic test procedure is intended to provide a common framework to industrial companies to evaluate the sound pressure levels of pneumatic exhaust silencers.

It defines two methods of measuring the level of acoustic pressure at the outlet of an exhaust silencer. These methods should be capable of being applied by pneumatic equipment manufacturers in their facilities on test benches in accordance with ISO 6358-1 and ISO 6358-2.

The first method, called "steady-state mode", is intended to evaluate the noise level under steady state flow, i.e. constant upstream pressure. This measurement is performed at 630 kPa<sup>1)</sup> at least to permit comparison between silencers at the most frequently used operating pressure (or at the maximum admissible pressure if lower than 630 kPa).

The second method, called "discharge mode", is intended to measure the noise level during the decrease of the pneumatic pressure (discharge test according to ISO 6358-2). To ensure the compatibility with the steady-state flow method, the pressure range includes 630 kPa (or the maximum admissible pressure if lower than 630 kPa).

# **iTeh Standards**

## **(<https://standards.iteh.ai>)**

### **Document Preview**

[ISO 20145:2026](#)

<https://standards.iteh.ai/catalog/standards/iso/4617011c-ddd0-433f-b1ae-82aec409922c/iso-20145-2026>

---

1) 1 bar = 0,1 MPa =  $10^5$  Pa; 1 MPa = 1 N/mm<sup>2</sup>.

