



FINAL DRAFT International Standard

ISO/FDIS 13347-1

Fans — Determination of fan sound power levels under standardized laboratory conditions —

Part 1: General overview

*Ventilateurs — Détermination des niveaux de puissance
acoustique des ventilateurs dans des conditions de laboratoire
normalisées —*

Partie 1: Présentation générale

[ISO/FDIS 13347-1](https://standards.iteh.ai/ISO/FDIS-13347-1)

<https://standards.iteh.ai/catalog/standards/iso/608b7480-7244-4b24-8fe9-99de5e6fde5f/iso-fdis-13347-1>

ISO/TC 117

Secretariat: **BSI**

Voting begins on:
2025-05-08

Voting terminates on:
2025-07-03

RECIPIENTS OF THIS DRAFT ARE INVITED TO SUBMIT, WITH THEIR COMMENTS, NOTIFICATION OF ANY RELEVANT PATENT RIGHTS OF WHICH THEY ARE AWARE AND TO PROVIDE SUPPORTING DOCUMENTATION.

IN ADDITION TO THEIR EVALUATION AS BEING ACCEPTABLE FOR INDUSTRIAL, TECHNOLOGICAL, COMMERCIAL AND USER PURPOSES, DRAFT INTERNATIONAL STANDARDS MAY ON OCCASION HAVE TO BE CONSIDERED IN THE LIGHT OF THEIR POTENTIAL TO BECOME STANDARDS TO WHICH REFERENCE MAY BE MADE IN NATIONAL REGULATIONS.

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

ISO/FDIS 13347-1

<https://standards.iteh.ai/catalog/standards/iso/608b7480-7244-4b24-8fe9-99de5e6fde5f/iso-fdis-13347-1>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2025

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
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms, definitions and symbols	2
3.1 Terms and definitions	2
3.2 Symbols — fan sound power levels	4
3.3 Other symbols	5
4 Limitations on use	6
5 Measurement uncertainty	7
6 Instrumentation	9
6.1 Microphone	9
6.1.1 Microphone cable	9
6.1.2 Sound level meter or other microphone amplifier	9
6.2 Frequency analyser	9
6.3 Turbulence screens and windshields	9
6.3.1 Windshields	9
6.3.2 Sampling tube	10
6.3.3 Wind-generated false noise	10
6.4 Reference sound source (RSS)	10
7 Test methods	10
7.1 General	10
7.2 Special considerations	10
8 Fan installation conditions	11
8.1 General	11
8.2 Reverberant room test method	12
8.3 Enveloping surface test method	12
8.4 Sound intensity method	12
8.5 In-duct test method	12
8.6 Limitations	12
8.7 Small fans	13
9 Fan operating conditions	13
9.1 General	13
9.2 Measurement of ambient conditions	13
9.3 Fan rotational speed	13
9.4 Determination of fan aerodynamic operating point	13
9.5 Control of fan operating condition	13
10 Information to be recorded	14
10.1 General	14
10.2 Fan under test	14
10.2.1 Description of the fan under test	14
10.2.2 Operating conditions	14
10.2.3 Mounting conditions	14
10.3 Acoustic environment	14
10.4 Acoustic data appropriate to the method of test	15
11 Calculations and evaluations	16
11.1 Calculation of one-third octave band levels	16
11.2 Calculation of overall sound power levels	17
11.3 Calculation of A-weighted sound power level	17
11.4 Evaluation	17

12	Test report	17
12.1	General.....	17
12.2	Description of test site, arrangement of fan, location of measuring points.....	18
12.3	Instrumentation used	18
12.4	Subjective assessment of the noise character.....	18
12.5	Measured values and test results.....	18
Annex A	(normative) Effect of rotational speed changes	20
Annex B	(informative) Change of gas or air conditions	21
Annex C	(normative) Corrections for end reflection	22
Annex D	(informative) Simplified anechoic termination	26
Annex E	(normative) Uncertainty analysis	27
Annex F	(normative) Calibration of reference sound source	33
Annex G	(informative) Filter weighted measurements	35
Bibliography	36

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

[ISO/FDIS 13347-1](https://standards.iteh.ai/catalog/standards/iso/608b7480-7244-4b24-8fe9-99de5e6fde5f/iso-fdis-13347-1)

<https://standards.iteh.ai/catalog/standards/iso/608b7480-7244-4b24-8fe9-99de5e6fde5f/iso-fdis-13347-1>

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).

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. 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.

This document was prepared by Technical Committee ISO/TC 117, *Fans*.

This second edition cancels and replaces the first edition (ISO 13347-1:2004), which has been technically revised. It also incorporates the Technical Corrigendum ISO 13347-1:2004/Cor 1:2006 and the Amendment ISO 13347-1:2004/Amd 1:2010.

The main changes are as follows:

- inclusion of acoustic methods for installation category E fans;
- symbols harmonized with those used in ISO 5801 and other ISO standards as listed in normative references [2];
- editorial revisions.

A list of all parts in the ISO 13347 series can be found on the ISO website.

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.

Introduction

This document deals with the determination of the fan sound power level appropriate to a particular application. In describing the test and rating procedures, numerous references are made to ISO 5801 as well as to other relevant ISO standards. This general overview should be read in conjunction with the appropriate part of the ISO 13347 series that specifies, in detail, methods for determining the sound power propagated from a fan in specified installation conditions as a function of frequency.

This document primarily deals with the determination of sound power levels of fans used in five installation categories (see [Clause 4](#)) for ducted and non-ducted applications, including jet fans.

The test procedures described in this document relate to laboratory conditions. The measurement of performance under site conditions is not included. Acoustic system effects can be considerable where the airflow into and out of the fan is not free from swirl, nor fully developed.

This document describes methods for determining sound power levels of fans in one-third octave bandwidths and one octave bandwidths.

Data obtained in accordance with this document can be used for the following purposes amongst others:

- a) comparison of fans which are similar in size and type;
- b) comparison of fans which are different in size, type, design, speed, etc;
- c) determining whether a fan is suitable for a specified upper limit of sound emission;
- d) scaling of fan noise from one size and speed to another size and speed of the same type of fan;
- e) prediction of sound pressure level in application of the fan;
- f) engineering work to assist in developing machinery and equipment with lower sound emissions.

This document along with the other parts of the ISO 13347 series specifies a method, based on the ISO 3740 series and ISO 9614-1 and ISO 9614-2, for acoustic testing of jet fans (and partition fans) from the method currently described in ISO 13350.

NOTE The bibliography contains further references for those wishing to explore this subject in greater detail (see References [\[1\]](#) to [\[21\]](#)).