

ISO 13347-1:2025-07 (E)

Fans - Determination of fan sound power levels under standardized laboratory conditions - Part 1: General overview

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.....	10
6.3 Turbulence screens and windshields.....	10
6.3.1 Windshields.....	10
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