ISO 16283-2:2020 (E)

Acoustics — Field measurement of sound insulation in buildings and of building elements — Part 2: Impact sound insulation

Contents

Foreword

Introduction

1 Scope

2 Normative references

3 Terms and definitions

4 Instrumentation

4.1 General
4.2 Calibration
4.3 Verification

5 Frequency range

5.1 Tapping machine as the impact source
5.2 Rubber ball as the impact source

6 General

7 Default procedure for sound pressure level measurement

7.1 General
7.2 Generation of sound field
7.2.1 General
7.2.2 Impact source positions for the tapping machine as impact source
7.2.3 Impact source positions for the rubber ball as impact source
7.3 Fixed microphone positions for the tapping machine or rubber ball as impact source
7.3.1 General
7.3.2 Number of measurements
7.3.3 Tapping machine operated at more than one position
7.3.4 Rubber ball operated at more than one position
7.4 Mechanized continuously moving microphone for the tapping machine as impact source
7.4.1 General
7.4.2 Number of measurements
7.4.3 Tapping machine operated at more than one position
7.5 Manually scanned microphone for the tapping machine as impact source
7.5.1 General
7.5.2 Number of measurements
7.5.3 Tapping machine operated at more than one position
7.5.4 Circle
7.5.5 Helix
7.5.6 Cylindrical-type
7.5.7 Three semicircles
7.6 Minimum distances for microphone positions
7.7 Averaging times for the tapping machine as impact source
7.7.1 Fixed microphone positions
7.7.2 Mechanized continuously moving microphone
7.7.3 Manually scanned microphone
7.8 Calculation of energy-average sound pressure levels
7.8.1 Fixed microphone positions for the tapping machine as impact source

7.8.2 Mechanized continuously moving microphone and manually scanned microphone for the tapping machine as impact source
7.8.3 Fixed microphone positions for the rubber ball as impact source

8 Low-frequency procedure for sound pressure level measurement for the tapping machine as impact source

8.1 General
8.2 Generation of sound field
8.2.1 General
8.2.2 Impact source positions
8.3 Microphone positions
8.4 Averaging time
8.5 Calculation of low-frequency energy-average impact sound pressure levels

9 Background noise (default and low-frequency procedure)

9.1 General
9.2 Correction to the signal level for background noise

10 Reverberation time in the receiving room (default and low-frequency procedure)

10.1 General
10.2 Generation of sound field
10.3 Default procedure
10.4 Low-frequency procedure
10.5 Interrupted noise method
10.6 Integrated impulse response method

11 Conversion to octave bands

12 Expression of results

13 Uncertainty

14 Test report

Annex A (normative) Impact sources

A.1 Standard tapping machine
A.1.1 Requirements
A.1.2 Regular checks of performance
A.2 Rubber ball
A.2.1 Requirements
A.2.2 Example of construction of the rubber ball
A.2.3 Regular checks of performance

Annex B (normative) Requirements for loudspeakers used for reverberation time measurements

B.1 General
B.2 Qualification procedure for directivity

Annex C (informative) Forms for the expression of results

Annex D (informative) Additional guidance

D.1 General
D.2 Principles
D.2.1 Floor coverings
D.2.2 Calculation of room volumes
D.2.3 Calculation of common partition area
D.2.4 Number of microphone and impact source positions
D.3 Horizontal measurements
D.4 Vertical measurements
D.4.1 General
D.4.2 Partly divided rooms
D.4.3 Non-staggered rooms
D.4.3.1 General
D.4.3.2 Rooms with floor area of the source room equal to or less than the floor area of the receiving room

D.4.3.3 Rooms with floor area of the source room larger than the floor area of the receiving room
D.4.4 Staggered rooms
D.5 Corridors and staircases
D.5.1 Measurements of impact sound insulation from a corridor
D.5.2 Measurements of impact sound insulation from staircases in apartment houses and internal stairs in apartments and terrace houses
D.6 Airborne sound contribution from the tapping machine

Annex E (informative) Horizontal measurements — Examples of suitable impact source and microphone positions

E.1 General
E.2 Symbols

Annex F (informative) Vertical measurements — Examples of suitable impact source and microphone positions

F.1 General
F.2 Symbols

Page count: 44