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Building acoustics - Estimation of acoustic performance of buildings from the performance of elements - Part 5: Sounds levels due to the service equipment

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

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English Version

Building acoustics - Estimation of acoustic performance of buildings from the performance of elements - Part 5: Sounds levels due to the service equipment

Acoustique du bâtiment - Calcul des performances acoustiques des bâtiments à partir des performances des éléments - Partie 5 : Niveaux sonores dus aux équipements de bâtiment

Bauakustik - Berechnung der akustischen Eigenschaften von Gebäuden aus den Bauteileigenschaften - Teil 5: Installationsgeräusche

This European Standard was approved by CEN on 17 April 2023.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (EN 12354-5:2023) has been prepared by Technical Committee CEN/TC 126 “Acoustic properties of building elements and of buildings”, the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 2023, and conflicting national standards shall be withdrawn at the latest by December 2023.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document will supersede EN 12354-5:2009 and EN 12354-5:2009/AC:2010.

EN 12354-5:2009 has been revised in order to extend its application to any type of constructions (heavy or lightweight) and to better predict low frequencies down to 50 Hz. The document has therefore been deeply restructured. The application clause, which considers all the different equipment types and their particularities has been kept and restructured.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

1 Scope

This document describes calculation models to estimate the sound pressure level in buildings due to service equipment. As for the field measurement documents (EN ISO 16032 for the engineering method and EN ISO 10052 for the survey method), it covers sanitary installations, mechanical ventilation, heating and cooling, service equipment, lifts, rubbish chutes, boilers, blowers, pumps and other auxiliary service equipment, and motor driven car park doors, but can also be applied to others equipment attached to or installed in buildings. The estimation is generally based on measured data that characterizes both the equipment (source) and the sound transmission through the building. The same equipment can be composed of different airborne and/or structure borne sources at different locations in the building; the standard gives some information on these sources and how they can be characterized; however, models of the equipment itself are out of the scope of this standard.

This document describes the principles of the calculation models, lists the relevant input and output quantities and defines its applications and restrictions. The models given are applicable to calculations in frequency bands. It is intended for acoustical experts and provides the framework for the development of application documents and tools for other users in the field of building construction, considering local circumstances.

The calculation models described use the most general approach for engineering purposes, with a link to measurable input quantities that specify the performance of building elements and equipment. However, it is important for users to be aware that other calculation models also exist, each with their own applicability and restrictions.

The models are based on experience with predictions for dwellings and offices; they could also be used for other types of buildings provided the dimensions of constructions are not too different from those in dwellings.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 15657:2017, *Acoustic properties of building elements and of buildings — Laboratory measurement of structure-borne sound from building service equipment for all installation conditions*

EN ISO 10052, *Acoustics — Field measurements of airborne and impact sound insulation and of service equipment sound — Survey method (ISO 10052)*

EN ISO 10848-1, *Acoustics — Laboratory and field measurement of flanking transmission for airborne, impact and building service equipment sound between adjoining rooms — Part 1: Frame document (ISO 10848-1)*

EN ISO 12354-1, *Building acoustics — Estimation of acoustic performance of buildings from the performance of elements — Part 1: Airborne sound insulation between rooms (ISO 12354-1)*

EN ISO 12354-2:2017, *Building acoustics — Estimation of acoustic performance of buildings from the performance of elements — Part 2: Impact sound insulation between rooms (ISO 12354-2:2017)*

EN ISO 16032, *Acoustics — Measurement of sound pressure level from service equipment in buildings — Engineering method (ISO 16032)*