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Acoustics — Measurement of sound absorption in a reverberation room

AMENDMENT 1: Test specimen mountings for sound absorption tests

Acoustique — Mesurage de l'absorption acoustique en salle réverbérante —

AMENDEMENT 1: Montage des échantillons pour les essais d'absorption acoustique

Reference number
ISO 354:1985/Amd. 1:1997(E)

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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Amendment 1 to ISO 354:1985 was prepared by Technical Committee ISO/TC 43, *Acoustics*, Subcommittee SC 2, *Building acoustics*.

Annex D will form an integral part of ISO 354.

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Add the following annex.

Annex D
(normative)

Test specimen mountings for sound absorption tests

D.1 General

The sound absorption properties of a material depend on how that material is mounted during a test. This annex specifies several different standard mountings for sound absorption tests. Normally a test specimen is tested using only one of the specified mountings.

Designations for type E and type G mountings include a numerical suffix, for example E-200 or G-100. The suffix is equal to a distance characteristic of the mounting, in millimetres, rounded off to the nearest 5 mm.

NOTE — Where applicable, the designations used for each type of mounting have been chosen to match those used in a standard that already existed when this annex was written: ASTM E 795, *Standard Practices for Mounting Test Specimens During Sound Absorption Tests*.

D.2 Type A mounting

The test specimen shall be mounted or placed directly against a room surface, such as the floor of the reverberation room. Measure plane elements (e.g. partition walls) lying on the floor. If an adhesive or mechanical fastening system is required to mount the test specimen, it shall not leave any air space behind the specimen. Include in the test report a complete description of the fasteners and their location or the method of surface preparation and the adhesive used to retain the specimen.

If two or more pieces of material (or separate panels) are butted together to form the test specimen, the edges shall be cut to ensure that there is no gap between them unless the manufacturer recommends some other method. It may be necessary to cover the joints between the adjacent pieces with tape, caulking compound, or another material that is not sound absorbing. The reason for covering the joints is to prevent the side edges of the individual pieces from absorbing sound. If the joints are covered, the test report shall describe the method and material used.

Seal or cover the edges of the test specimen to prevent them from absorbing sound unless the edges are exposed when the material is normally installed in an actual application. Then the edges of the test specimen shall not be sealed or covered during the test. The treatment of the edges of the test specimen shall be described in the test report. If the edges are not covered, the area of the edges not covered shall be reported but not included in the calculation of the test specimen area.

If the perimeter edges of the test specimen are to be covered, use an acoustically reflective frame. The frame shall be solid, not hollow, and shall have no air space between the test specimen and the frame and between the room surface and the frame. Use a frame of 1,0 mm thick steel, 12,5 mm thick plaster board or 12,5 mm wood (minimum thicknesses). The frame shall be tightly butted to the specimen and sealed to the room surface. The exposed face of the frame shall be flush with the surface of the specimen.

If a perforated expanded metal or other open-faced material is used to face the test specimen, a complete description of this facing material shall be given in the test report.

D.3 Type E mounting

Mount the test specimen with an airspace behind it. The suffix of the designation (e.g. type E-200) shall be the distance rounded off to the nearest integral multiple of 5 mm between the exposed face of the test specimen and the room surface behind the specimen. If a type E mounting is used, the specimen shall be tested in an E-200 configuration. If the E-200 configuration is not in use in practice, then the E-300 or E-400 configuration shall be used instead. Other air spaces may be used in addition to the 200 mm, 300 mm or 400 mm distance. If another distance is used, it shall be an integral multiple of 5 mm.

The mounting fixture shall be constructed of metal, wood or other non-porous material with a surface density of at least 10 kg/m^2, and shall enclose an air space behind the sample that does not have any interior partitions unless provided as part of the sample. The joint between the fixture and the room surface shall be sealed to prevent air leaks between the enclosed space and the outside. The fixture shall cover the perimeter edges of the test specimen. The mounting fixture shall not be placed parallel to the reverberation room walls. Avoid parallel mounting fixture panels as far as possible.

D.4 Type G mounting

Hang the test specimen, such as a curtain, drapery, window shade or window blind, parallel to the room surface. The suffix of the mounting designation (e.g. type G-100) shall be the distance from the centreline of the mounting system of the test specimen (e.g. rail) to the room surface. The specimen shall be tested in the G-100 configuration. Other air spaces may be used in addition to the 100 mm distance. If another distance is used, it shall be an integral multiple of 50 mm unless the manufacturer recommends another value. Test the specimen with or without a perimeter frame, depending on how it is used in practice. If a perimeter frame is used, it shall be butted against the specimen and sealed to the room surface.

Other curtain arrangements are allowable and may be tested. Those tests shall be performed in addition to the G-100 configuration unless type G mounting is not used for the specific test object in practice. The report shall describe the specific arrangement in detail.

D.5 Type I mounting

Use this mounting for spray-or-trowel-applied materials, such as plaster. The material shall be applied to 12,5 mm thick plaster board, unless otherwise specified by the manufacturer. Care shall be taken to prevent distortion of the plaster board while the applied material is curing. The plaster board with the material shall be tested in a type A mounting including a frame around the test specimen. Note any unavoidable distortion of the test specimen in the test report.

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