

INTERNATIONAL STANDARD

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140-3**

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AMENDMENT 1
1990-12-15

Acoustics — Measurement of sound insulation in buildings and of building elements —

Part 3:

Laboratory measurements of airborne sound
insulation of building elements

AMENDMENT 1

*Acoustique — Mesurage de l'isolation acoustique des immeubles et des éléments de
construction —*

*Partie 3: Mesurage en laboratoire de l'isolation aux bruits aériens des éléments de
construction*

AMENDEMENT 1



Reference number
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Foreword

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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 International Standard ISO 140-3 : 1978 was prepared by Technical Committee ISO/TC 43, *Acoustics*.

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Acoustics — Measurement of sound insulation in buildings and of building elements —

Part 3:

Laboratory measurements of airborne sound insulation of building elements

AMENDMENT 1

Pages 2 and 3:

Replace subclause 5.2.2 by the text given overleaf.

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5.2.2 Doors, windows, glazings and façade elements

5.2.2.1 General

The test specimen should be tested in the same manner as a partition (see 5.2.1). If the test specimen is smaller than the test opening, a special partition of sufficiently high sound insulation should be built into the test opening and the specimen should be placed in that partition. The sound transmitted through this partition and any other indirect path should be negligible compared with the sound transmitted through the test specimen or the test results must be corrected (see annex E).

If the test specimen is intended to be readily openable, it should be installed for test so that it can be opened and closed in the normal manner. It should be opened and closed at least ten times immediately before testing.

Doors should be so inserted that the lower edge is situated as near to the level of the floor of the test rooms as will reproduce conditions in the actual building.

For glazings, windows, doors, etc., the area *S* is the area of the free opening in which the element (including a possible frame being a part of the test object and sealing) is mounted.

The sound insulation of certain glazing systems or elements, especially those incorporating laminated glass, can be dependent on the room temperature during measurements. It is recommended that the sound insulation measurements on these test specimens be made at 20 °C ± 3 °C in both rooms. The test specimens should be stored for 24 h at the test temperature. In addition it can be advantageous to make measurements at temperatures similar to those for which the window is designed.

NOTES

1 Since the sound insulation of windows, doors and small façade elements depends on the dimensions, the sound insulation in practice could differ considerably if a construction has an area other than the one tested in the laboratory.

It is unlikely that test specimens (especially window panes) whose areas have a ratio of up to 2:1 will show differences in sound insulation greater than 3 dB in the single-number quantity. With an area greater than that which has been tested generally a lower sound insulation will result.

Accurate values can be obtained only by measuring the test object of the size of interest.

2 Measurements on square specimens can yield smaller sound insulation than measurements on rectangular ones.

5.2.2.2 Installation of windows

The installation of a window assembly should be as near as possible to the method which would be used in practice. When the window is mounted in the test opening, the niches on both sides of the windows should have different depths, preferably

in a ratio of about 2:1, unless this conflicts with the particular design of the window. However, it is to be expected that results obtained with niche depths of different ratios will differ.

The gap between window and test opening (about 10 mm to 13 mm on both sides and on top when the window is mounted in the test opening) should be filled with mineral wool and made airtight using an elastic sealant on both sides or in accordance with the manufacturer's instruction.

5.2.2.3 Installation of glass panes

The glass pane shall be installed into the test opening so that the niches on both sides of the glass pane have different depths, with a ratio of 2:1. A gap of about 10 mm shall remain between the glass and the reveal of the test opening. This gap shall be filled with putty as specified in annex D.

Two wooden beads (25 mm × 25 mm) shall be used to fix the test specimen (see figure 1). The space between the pane and the locking ledge shall be filled with putty about 5 mm thick as described in annex D. The beads may cover not more than 15 mm and not less than 12 mm of the glass¹⁾.

The example of figure 1 shows a double-glazed pane installed directly into the (smaller) aperture of a double filler wall (see ISO 140-1, annex B).

NOTE 1 The sound insulation measured for a glazing does not necessarily represent the sound insulation of a window with that glazing. The total windows should therefore preferably be measured as well to obtain information on the sound insulation of the windows and not only of the glazing.

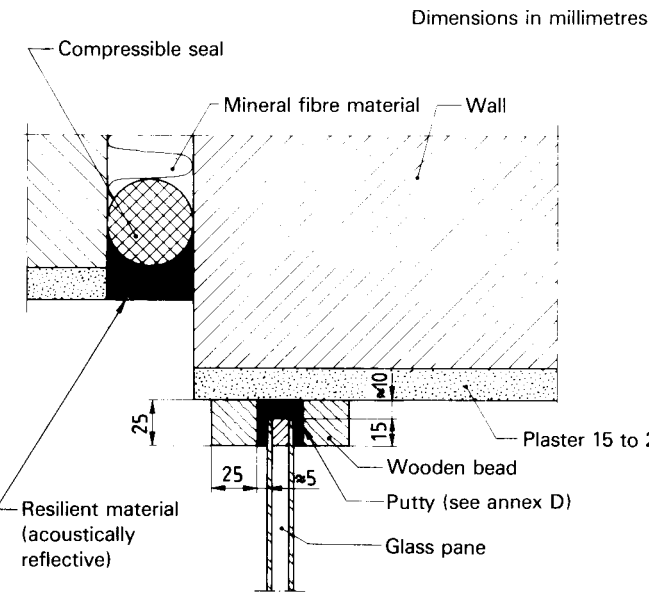


Figure 1 — Installation of a glass pane

1) This method of mounting and sealing a glass pane into the test opening is given as practical, quick, airtight and reproducible solution, although it is not the type of mounting used in practice.

Pages 3 and 4:

Make the following changes in clause **9 Test report**.

Insert the following new item:

“c) the manufacturer’s name and product identification;”

Change the existing c) to d).

Insert the following new item:

“e) the test opening for glazings and windows;”

Change the existing d) to f).

Insert the following new item:

“g) the air temperature in the measuring rooms (if relevant);”

Change the other existing items as follows:

e) to h)

f) to i)

g) to j)

h) to k)

i) to l)

j) to m)

Add the new annexes D and E given on the following pages.

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Annex D

Putty for the mounting of glazings in the test opening

The type of putty used for mounting the test specimen shall be shown to fulfil the following conditions by a measurement complying with this part of ISO 140.

A soda-lime-silica glass pane (float, density 2 500 kg/m³, E -modulus = 7×10^4 MPa) with a thickness of 10 mm $\pm$ 0,3 mm and of dimensions 1 230 mm $\times$ 1 480 mm shall be mounted with this putty in the test opening in accordance with 5.2.2.3. The airborne sound reduction index shall be determined in third octave bands in the range from 1 600 Hz to 3 150 Hz. The first measurement shall begin not later than one hour after mounting.

The results shall be within ± 2 dB of the following values:

1 600 Hz:	$R = 31,3$ dB
2 000 Hz:	$R = 35,6$ dB
2 500 Hz:	$R = 39,2$ dB
3 150 Hz:	$R = 42,9$ dB

A second measurement shall be taken about 24 h later in order to make sure that no hardening process is influencing the measurement results. No systematic deviations ΔR (mean of the four ΔR -values) greater than 0,5 dB are permitted. A test opening in accordance with ISO 140-1, annex B is recommended.

NOTE — Perenator TX 2001 S has been shown to fulfil these conditions.