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

Part 1:

**Requirements for laboratory test facilities
with suppressed flanking transmission**

iTeh STANDARD PREVIEW
(standards.itih.ai)

**AMENDMENT 1: Specific requirements on
the frame of the test opening for lightweight
twin leaf partitions**

<https://standards.itih.ai/standards/iso-140-1-1997/Amd.1:2004>
<https://standards.itih.ai/standards/iso-140-1-1997/Amd.1:2004>

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

*Partie 1: Spécifications relatives aux laboratoires sans transmissions
latérales*

*AMENDEMENT 1: Exigences particulières applicables au cadre de
l'ouverture d'essai pour cloisons à doubles parements légers*



PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[ISO 140-1:1997/Amd 1:2004](https://standards.iteh.ai/catalog/standards/sist/915fb07e-7ed1-43fe-a717-badb374e60c0/iso-140-1-1997-amd-1-2004)

<https://standards.iteh.ai/catalog/standards/sist/915fb07e-7ed1-43fe-a717-badb374e60c0/iso-140-1-1997-amd-1-2004>

© ISO 2004

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

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

Amendment 1 to ISO 140-1:1997 was prepared by the European Committee for Standardization (CEN) in collaboration with Technical Committee ISO/TC 43, *Acoustics*, Subcommittee SC 2, *Building acoustics*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

ITEH STANDARD PREVIEW
(standards.iteh.ai)

<https://standards.iteh.ai/catalog/standards/sist/915fb07e-7ed1-43fe-a717-badb374e60c0/iso-140-1-1997-amd-1-2004>

Foreword

This document (EN ISO 140-1:1997/A1:2004) 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, in collaboration with Technical Committee ISO/TC 43 “Acoustics”.

This Amendment to the European Standard EN ISO 140-1:1997 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2005, and conflicting national standards shall be withdrawn at the latest by June 2005.

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

iTeh STANDARD PREVIEW (standards.iteh.ai)

[ISO 140-1:1997/Amd 1:2004](https://standards.iteh.ai/catalog/standards/sist/915fb07e-7ed1-43fe-a717-badb374e60c0/iso-140-1-1997-amd-1-2004)

<https://standards.iteh.ai/catalog/standards/sist/915fb07e-7ed1-43fe-a717-badb374e60c0/iso-140-1-1997-amd-1-2004>

Introduction

Evaluation of the results of a European Inter Laboratory Test in 1998 showed that the requirements given in EN ISO 140-1 are inadequate for lightweight twin partitions therefore the following annex is added.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[ISO 140-1:1997/Amd 1:2004](https://standards.iteh.ai/catalog/standards/sist/915fb07e-7ed1-43fe-a717-badb374e60c0/iso-140-1-1997-amd-1-2004)
<https://standards.iteh.ai/catalog/standards/sist/915fb07e-7ed1-43fe-a717-badb374e60c0/iso-140-1-1997-amd-1-2004>

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[ISO 140-1:1997/Amd 1:2004](#)

<https://standards.iteh.ai/catalog/standards/sist/915fb07e-7ed1-43fe-a717-badb374e60c0/iso-140-1-1997-amd-1-2004>

Annex D (normative)

Specific requirements on the frame of the test opening for lightweight twin leaf partitions

With lightweight twin leaf partitions, the sound reduction index is affected by vibration transmission between the wall leaves across the frame(s) of the test opening (see Figure D.1). This is influenced by the mounting conditions in the laboratory test opening and by the material properties and dimensions of the frame(s). Vibration transmission between the coupled structures of the wall itself (e.g. common or coupled studs) relates to the specific wall construction. This vibration transmission is not handled in this document.

In order to improve the reproducibility of the sound reduction index between laboratories, the mass per unit area of the frame(s) shall be much larger than the mass per unit area of the heaviest leaf of the twin leaf partition. The ratio of the mass per unit area of the heaviest leaf of the double partition to that of the frame of the test opening shall be at least 1:6. The minimum thickness and depth of the frame should be 100 mm and 200 mm respectively. The frame shall have a density of at least 2 000 kg/m³. The cross sectional surface mass shall be greater than 450 kg/m². In addition, the frame(s) shall consist of a homogeneous, massive construction such as dense concrete or masonry. Wood or metal frames connecting the two leaves shall not be used.

iTeh STANDARD PREVIEW

The surface mass per unit area is calculated from the density, ρ , and the thickness, t , of the elements as shown in Figure D.2 using the following equations:

$$m'_L = \rho_L t_L \quad \text{ISO 140-1:1997/Amd 1:2004} \quad (\text{D.1})$$

where

m'_L surface mass per unit area of the test facility wall

ρ_L density of the test facility wall

t_L thickness of the test facility wall

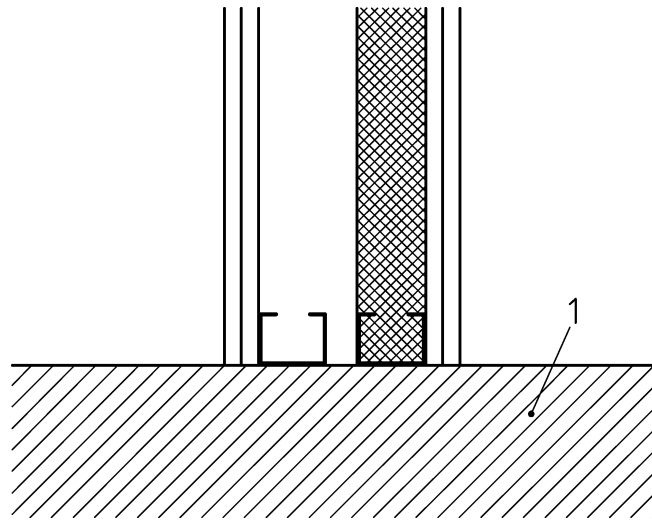
$$m'_e = \rho_e t_e \quad (\text{D.2})$$

where

m'_e surface mass per unit area of the specimen

ρ_e density of the specimen

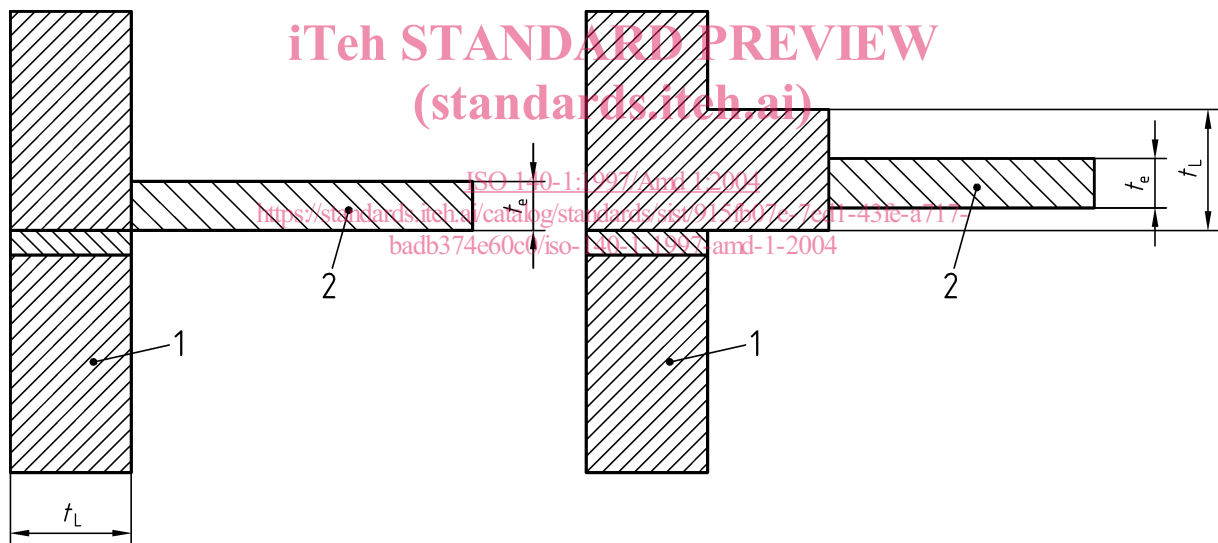
t_e thickness of the specimen



Key

- 1 frame of the test opening

Figure D.1 — Vibration transmission across the frame of the test opening



Key

- 1 test facility wall
- 2 specimen under test
- t_L thickness of the test facility wall
- t_e thickness of the specimen

Figure D.2 — Calculation of the mass per unit area of the elements

Bibliography

- [1] R. Pompoli, University of Ferrara, Italy, R. S. Smith, I. E. N. Galileo Ferraris, Italy, *Possible reasons for the discrepancy in the reproducibility — Results of the inter-comparison of laboratory measurements of airborne sound insulation of walls*, March 1998.
- [2] R. Pompoli, *Intercomparison of laboratory measurements of airborne sound insulation of walls*, Final report, 1990-1994, Contract No. MAT1-CT-940054.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[ISO 140-1:1997/Amd 1:2004](https://standards.iteh.ai/catalog/standards/sist/915fb07e-7ed1-43fe-a717-badb374e60c0/iso-140-1-1997-amd-1-2004)
<https://standards.iteh.ai/catalog/standards/sist/915fb07e-7ed1-43fe-a717-badb374e60c0/iso-140-1-1997-amd-1-2004>