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

Part 1:

Requirements for laboratory test facilities with suppressed flanking transmission

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

*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*



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Foreword

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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).

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of an identical text or by endorsement, at the latest by June 2005, and conflicting national standards shall be withdrawn at the latest by June 2005.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.

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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.

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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.

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 :

$$m'_L = \rho_L t_L \quad (D.1)$$

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

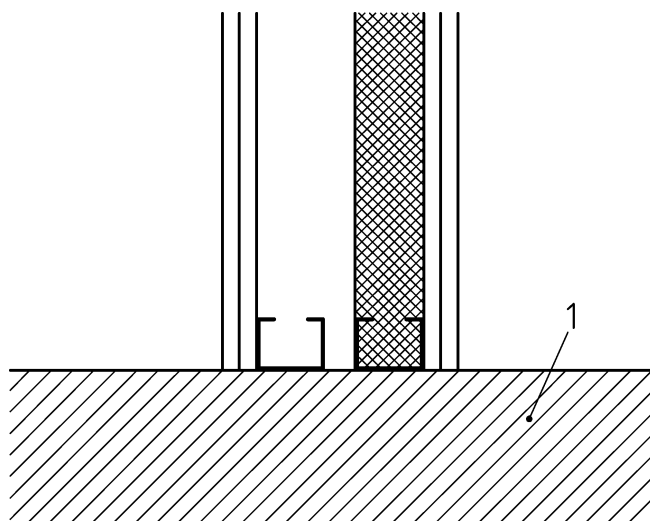
$$m'_e = \rho_e t_e \quad (D.2)$$

where

m'_e surface mass per unit area of the specimen

ρ_e density of the specimen

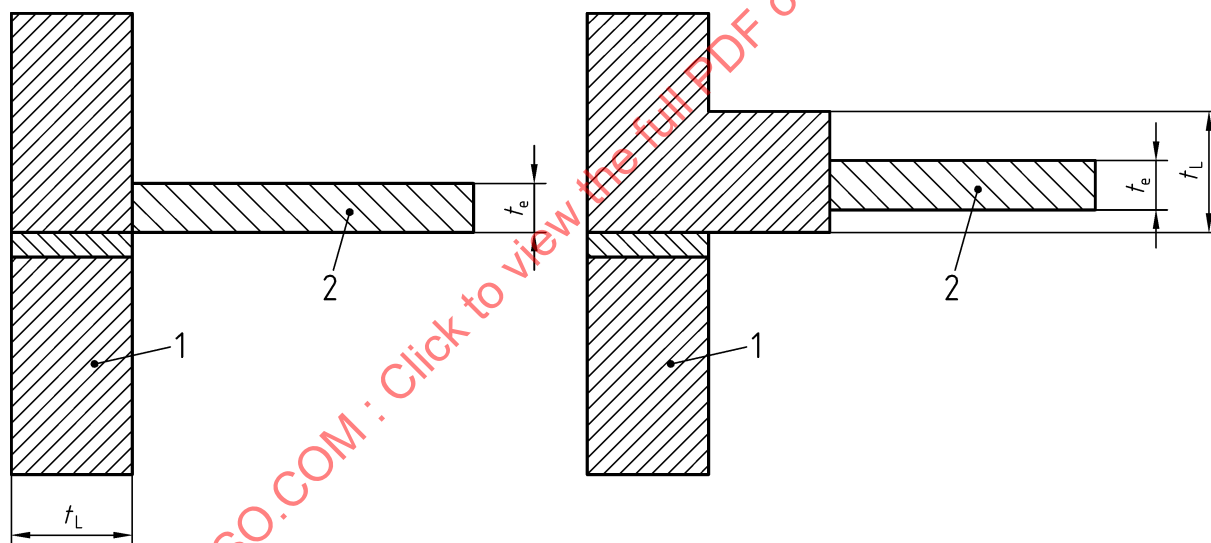
t_e thickness of the specimen



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