SLOVENSKI STANDARD
SIST EN 12825:2001

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Dvignjeni podi

Raised access floors

Doppelböden

Planchers surélevés

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This European Standard was approved by CEN on 21 July 2001.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 323 "Raised Access Floors", the secretariat of which is held by SNV.

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of an identical text or by endorsement, at the latest by February 2002, and conflicting national standards shall be withdrawn at the latest by February 2002.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

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

1 Scope

This standard specifies the characteristics and performance requirements of raised access floors for which the main intended use is the internal fitting out of buildings, providing full access to the services to the plenum. This standard does not cover requirements related to dangerous substances which may be subject to regulations.

It is applicable to modular, factory made flooring elements, comprising panels and pedestals and defines the test methods and measurement.

It provides for the evaluation of conformity of the product to this European Standard.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to other revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 1081

Resilient floor coverings - Determination of electrical resistance.

EN ISO 140-12

Acoustics – Measurement of sound insulation in buildings and of building elements – Part 12: Laboratory measurement of room to room airborne and impact sound insulation of an access floor (ISO 140-12:2000).

EN 1815

Resilient and textile floor coverings – Assessment of static electrical propensity.

prEN 12524

Building materials and products - Energy related properties - Tabulated design values.

EN 12664

Thermal performance of building materials and products – Determination of thermal resistance by means of guarded hot plate and heat flow meter methods – Dry and moist products of medium and low thermal resistance.

EN 12667

Thermal performance of building materials and products – Determination of thermal resistance by means of guarded hot plate and heat flow meter methods – Products of high and medium thermal resistance.

prEN 13501-1

Fire classification of construction products and building elements – Part 1: Classification using data from fire reaction tests.

prEN 13501-2

Fire classification of construction products and building elements – Part 2: Classification using data from fire resistance tests (excluding products for use in ventilation systems).

ENV 61024-1

Protection of structures against lightning – Part 1: General principles (IEC 61024-1:1990, modified).

HD 384.4.41

Electrical installations of buildings – Part 4: Protection for safety; Chapter 41: Protection against electrical shock.

HD 384.4.473

Electrical installations of buildings – Part 4: Protection for safety; Chapter 47: Application of protective measures for safety; Section 473: Measures of protection against overcurrent.

HD 384.5.54

Electrical installations of buildings – Part 5:Selection and erection of electrical equipment; Chapter 54: Earthing arrangements and protective conductors.

HD 384.6.61

Electrical installations of buildings – Part 6: verification; Chapter 61: initial verification.

3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply:

3.1
bridging / beam
load bearing component to accommodate situations where pedestals and stringers/beams (if available) cannot be located in their normal positions

3.2
collapse
state reached when deflection of the element or panel will continue without further increasing the test load

3.3
components
parts of access floor elements, e.g. panels, pedestals, stringers, etc.

3.4
deflection
movement of tested specimen caused by load expressed as a deviation from the former linear level

3.5
deformation
alteration of the shape of a specimen

3.6
deviation
difference between a specified dimension or position and the actual dimension or position

3.7
edge trim
component of the panel, either adhered or mechanically fixed to all four sides to provide protection to the panels and to the floor covering

3.8
element
kit that consists of one completely fabricated panel supported by pedestals together with other components e.g. stringers, conductive pads, etc. fixed as intended for the finished floor

3.9
finished floor height (FFH)
nominal vertical dimension from the specified sub floor level to the specified finished floor level

3.10
indentation
movement of the indentor into the specimen surface

3.11
length of side
overall dimension of any side of a panel

3.12
manufacturer's stated panel size
dimension to which the tolerances are applied

3.13
nominal panel size
theoretical dimension used for commercial description

3.14
panel
load bearing horizontal component of the access floor. It is supported by the under structure (e.g. pedestals and stringers)

3.15
pedestal
vertical component or part of the element which transmits the loading to the subfloor

3.16
plenum
available space between the underside of the panels of the access floor and the sub-floor

3.17
plenum height
distance between the highest point of the sub floor and the lowest point of the underside of the access floor

3.18
raised access floor
factory made flooring system comprising panels supported on understructure of pedestals, and/or stringers or other components as applicable providing a load bearing structure for the fitting out of a building

3.19
safety factor
the factor by which the ultimate load is divided to establish the working load

3.20
ultimate load
maximum load at the time of failure of the element during the specified ultimate load test procedure

3.21
stringer
horizontal component connecting pedestals that may support panels (beams)

3.22
system
assembly of elements forming a complete installed raised access floor

3.23
working load
load given by dividing the ultimate load by the safety factor (ultimate load is sometimes called failure load and working load is sometimes called design load as well as nominal load)

4 Requirements

4.1 General and load classes

The ultimate load is the main criterion for classification.

All other load bearing characteristics are related to the ultimate load.

Raised access floors are classified according to the ultimate load as given in Table 1.

Table 1 - Classes of elements

Class	Ultimate load kN
1	≥4
2	≥6
3	≥8
4	≥9
5	≥10
6	≥12

4.2 Load bearing capacity

4.2.1 General

The raised access floor shall be designed and manufactured in such a way that it provides mechanical resistance and stability and that the loading that is liable to act upon it during its intended use will not lead to deformation or collapse.

4.2.2 Static loading requirements

The element when subjected to the test procedures as given in 5.2.1 shall meet the following criteria:

a) Before the element collapses it shall have withstood the relevant ultimate load for its class as given in Table 1;

b) When the load applied is equivalent to the working load which is the ultimate load divided by the safety factor, the measured deflection shall not exceed the stated value in accordance to Table 2.

Two classes of the safety factor are specified: 2,0 and 3,0.

Table 2 - Classes of deflection

Class	Maximum deflection, mm
A	2,5
B	3,0
C	4,0

4.2.3 Pedestal vertical load bearing capacity

The understructure has to support 4 times the working load of the system tested.

The pedestal may not become distorted or damaged.

Tests shall be carried out in accordance with 5.2.2.

4.2.4 Permanent deformation after loading

After the application for 30 min of a test load equivalent of the working load at the weakest point of the element, the residual deflection 5 min after the removal of the load shall not exceed 0,5 mm when testing according to 5.4.

4.3 Dynamic loading requirements

4.3.1 Absorption of hard body impacts

Where required, the element shall sustain the hard body impact test as described in 5.5.1. This test shall not cause any parts of the element to collapse, requiring that the test result be stated only if the test has been performed.

4.3.2 Absorption of soft body impacts

Where required, the element shall sustain the soft body impact test as described in 5.5.2.

This test shall not cause any parts of the element to collapse, requiring that the test result be stated only if the test has been performed.

4.4 Dimensional deviations

The panels of a raised access floor shall be manufactured within dimensions which enable their interchangeability.

Deviations of dimensions shall not exceed the values given in Table 3 for one of the appropriate classes.

Table 3 - Deviations on panel dimensions

Identification	Deviation in mm	
	class 1	Class 2
Length of panel sides, see 5.6.3	± 0,2	± 0,4
Squareness of panel, see 5.6.4	± 0,3	± 0,5
Straightness of sides horizontally, see 5.6.5	± 0,3	± 0,5
Thickness of panel without covering see 5.6.6	± 0,3	± 0,5
Thickness of panel with coverings *, see 5.6.6	± 0,3	± 0,5
Panel twist, see 5.6.7	0,5	0,7
Vertical warping of panels, see 5.6.8	0,3	0,6
Difference in height between perimeter trims and panel surface, see 5.6.9	± 0,3	± 0,4
* plus thickness deviation of floor covering only if measured including covering		

4.5 Protection against corrosion

The element shall comply with European standards, if existing, in respect of protection of metallic materials against corrosion if existing. In the absence of such standards, elements shall comply with requirements valid in the place of use of the product.

4.6 Peel resistance of floor covering

Where peel resistance is required, the connection to the floor panel shall have a peel resistance more than 0,8 N/mm. The peel resistance shall be determined by the test method in accordance with 5.7.

4.7 Reaction to fire

Where required, the raised access floor shall be classified for its reaction to fire according to prEN 13501-1. Where the test method permits a representative portion of the raised access floor to be tested, this shall be done in accordance with the provisions of that method (i.e. for the positioning of joints). Where not possible, reaction to fire testing and classification shall be on the basis of the performance of each component and/or material making up the raised access floor. In this case, results for the raised access floor shall be based on stating the reaction to fire classification of each component and/or material.

Where materials or components may be classified as reaction to fire Class A1 without the need for testing[1], this shall be stated for that material or component.

[1] See Commission Decision 96/603/EC

4.8 Resistance to fire

Where required, the raised access floor shall be classified for its resistance to fire according to prEN 13501-2.

4.9 Electrostatic conductivity

The element shall comply with EN 1081, EN 1815 and HD 384.6.61, where relevant.

4.10 Risk of electrocution

The element shall comply with HD 384.5.54, HD 384.4.473, where relevant.

In addition the element shall comply with European Standards in respect of risk of electrocution if existing. In the absence of such standards, elements shall comply with requirements valid in the place of use of the product.

4.11 Acoustic insulation

Where required the impact and/or airborne sound insulation of the raised access floors shall be tested in accordance to EN ISO 140-12.

4.12 Thermal conductivity

Where required, the thermal conductivity shall be determined in accordance to prEN 12524 or by testing to EN 12644 or EN 12667.

5 Test and measurement methods

5.1 General

Testing of the element shall be carried out with reference to the requirements as follows:

The tests in 5.2, 5.3, 5.4, 5.5, 5.6 and 5.7 shall be carried out at a temperature of (20 ± 5) ° C and (55 ± 10) % relative humidity.

If adhesive is used to fix the pedestals the tests in 5.2, 5.3, 5.4 and 5.5 shall begin as determined by the manufacturer but not before 48 hours have elapsed.

Test specimen shall be taken at random from the actual production and shall be representative of actual or intended day to day production.

The test report shall contain the following minimum information for all tests:

1) Name and address of testing body;
2) Name and address of the applicant;
3) Date of submittal of samples or sampling of test specimens;
4) Date of test;
5) Environmental conditions;
6) Description and construction details (include grade and classification details) of materials submitted for tests;
7) Accuracy and precision of test equipment used;
8) Numeric results of measurement of tests as stipulated and the classes or grade reached;
9) Statement of PASS or FAIL for hard body and soft body impact test, if relevant, and any damage which occurred;
10) Signature and designation of person responsible.

5.2 Static load

5.2.1 Load test on element

5.2.1.1 Test conditions

See 5.1.

5.2.1.2 Principle

A steadily increasing load shall be applied to an element until failure of the element occurs. A graph shall be produced showing the deflection of the element against the applied load.

5.2.1.3 Apparatus

A test apparatus in accordance with the layout of Figure 1, together with a deflection measuring device connected to a continuous recording apparatus.

5.2.1.4 Procedure

Panels shall be mounted on the particular pedestals as they would be on site. Pedestals shall be adjusted to their maximum permissible height. If stringers are part of the element they shall be included together with any other fixings such as bolts holding panels to pedestals. If adhesive is used to fix the pedestals to the sub-floors then the test shall not begin until 48 h after the adhesive was first applied.

A steel frame shall be rigidly fixed around the panel without direct connection as shown in Figure 1 to avoid horizontal movement of the element.

The indentor shall be a (25 ± 0,1) mm steel cube, the corners of which shall be rounded to a radius of not more than 2 mm. The test shall be repeated four times placing the indentor in the following positions:

- at the centre of the weakest edge, where this can be identified, if not two adjacent edges shall be tested;
- at the centre of the panel;
- at a diagonal 70 mm from the edge of a pedestal head;
- at any point which the test laboratory considers a point of weakness.

A new panel shall be used for each test. The pedestals may be re-used at the discretion of the test laboratory if they have not been deformed in any manner.

A bedding-in load consisting of the working load stated by the manufacturer shall be applied and maintained for a period of 5 min via the indentor and then released.

The deflection sensor is zeroed after (5 ± 1) min loading of 200 N. This load has to be released before the beginning of the test.

A steadily increasing load shall be applied at a speed of 120 N/s ± 10 % until failure of any part of the element occurs. The deflection on the underside of the panel shall be continuously recorded from the beginning up to the point of failure.

5.2.1.5 Expression of results and precision of test methods

Deflection readings shall be read within a limit of error of ± 0,01 mm and load within an error of ± 1 %.

A graph shall be produced showing deflection against the applied test load.

The deflections at the points where the test load equals the specified working load and failure load shall be specifically marked on the graph. The maximum deflection permitted at the working load shall be indicated on the graph.