



# SLOVENSKI STANDARD

## SIST EN 1382:2000

01-april-2000

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**Lesene konstrukcije - Metode preskušanja - Izvlečna nosilnost veznih sredstev za les**

Timber structures - Test methods - Withdrawal capacity of timber fasteners

Holzbauwerke - Prüfverfahren - Ausziehtragfähigkeit von Holzverbindungsmittein

Structures en bois - Méthodes d'essai - Résistance à l'arrachement dans le bois d'éléments de fixation

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Ta slovenski standard je istoveten z: **EN 1382:1999**

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**ICS:**

91.080.20      Lesene konstrukcije      Timber structures

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

EN 1382

August 1999

ICS 91.080.20

English version

## Timber structures - Test methods - Withdrawal capacity of timber fasteners

Structures en bois - Méthodes d'essai - Résistance à  
l'arrachement dans le bois d'éléments de fixation

Holzbauwerke - Prüfverfahren - Ausziehtragfähigkeit von  
Holzverbindungsmiteln

This European Standard was approved by CEN on 11 July 1999.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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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 124 "Timber structures", the secretariat of which is held by DS.

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 2000, and conflicting national standards shall be withdrawn at the latest by February 2000.

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.

This Standard is one of a series of standards for test methods for building materials and components. It was prepared by a working group under the convenorship of National Standards Authority of Ireland, NSAI.

This Standard is based on part of ISO/DIS 9708 'Timber structures - Joints with mechanical fasteners - Testing of joints with nails or staples'.

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## 1 Scope

This standard specifies the test method for determining the withdrawal capacity of fasteners which have been inserted into timber (solid timber and glued laminated timber).

The test method applies to all types of nails, screws and staples.

## 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 or 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.

EN 1381	Timber structures - Test methods - Load bearing stapled joints
EN 26891 1991	Timber structures - Joints made with mechanical fasteners - General principles for the determination of strength and deformation characteristics (ISO 6891:1983)
EN 28970	Timber structures - Testing of joints made with mechanical fasteners - Requirements for wood density (ISO 8970:1989)
ISO 3130	Wood - Determination of moisture content for physical and mechanical tests
ISO 3131	Wood - Determination of density for physical and mechanical tests

## 3 Definitions

For the purposes of this standard, the following definitions apply:

**3.1 staple:** Double-bent, u-shaped piece of round, square, rectangular or oval wire with pointed legs

**3.2 staple crown:** Connection between the two staple legs

**3.3 staple leg diameter:** Diameter of a round staple leg or the smaller dimension of a rectangular or oval staple leg

**3.4 staple length:** Length of each staple leg, including point

**3.5 staple width:** Width across the staple legs, see figure 1

**3.6 withdrawal parameter:** Parameter measuring the resistance of a timber test piece to the withdrawal of a timber fastener.

#### 4 Symbols

For symbols relating to staples, see EN 1381.

$a$	staple width, see figure 1, in millimetres
$d$	diameter of the smooth plain part of a round nail or screw or the smaller dimension of an oval or rectangular fastener, in millimetres
$F_{\max}$	maximum withdrawal load, in newtons
$f$	withdrawal parameter, in newtons per square millimetre
$l_p$	the depth of penetration of fastener, including the point, in millimetres. In the case of profiled fasteners, the depth of penetration of the profiled part.
$\alpha_{\text{cm}}$	angle between the direction of a staple crown and the grain direction or the main direction of the wood based products, respectively, see figure 2, in degrees

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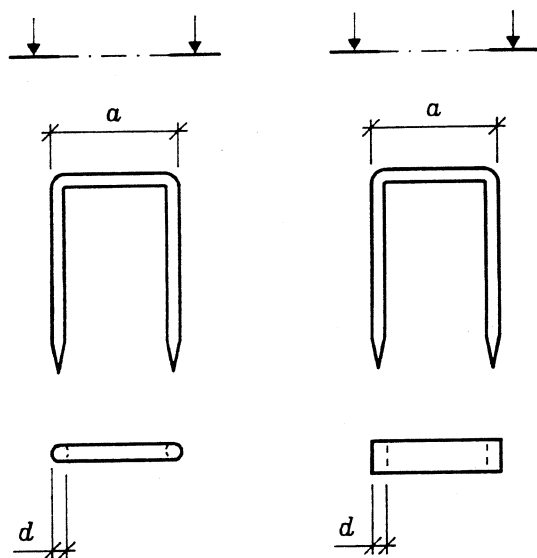


Figure 1: Staple dimensions

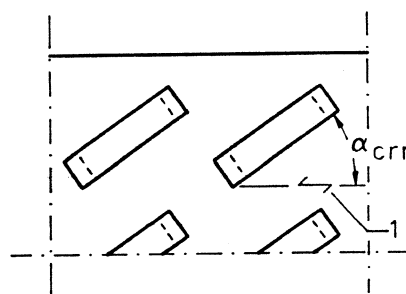


Figure 2: Angle between the staple direction and the grain direction (1)

## 5 Materials

### 5.1 Timber

The timber (solid timber or glued laminated timber) shall be selected in accordance with either of the methods given in EN 28970.

### 5.2 Fasteners

The specification of nails, screws or staples shall be established.

## 6 Test methods

### 6.1 General

The moisture content and density of the timber at test shall be determined as specified in ISO 3130 and ISO 3131 as appropriate.

### 6.2 Conditioning

The test pieces shall be manufactured with the timber or wood-based products at an equilibrium moisture content corresponding to  $(20 \pm 2)$  °C and  $(65 \pm 5)$  % relative humidity. The material is conditioned when it attains constant mass. Constant mass is considered to be attained when the results of two successive weighings, carried out at an interval of 6 h, do not differ by more than 0,1 % of the mass of the material.

For certain investigations other moisture conditioning can be appropriate, and shall be reported.

### 6.3 Fabrication of test pieces

#### 6.3.1 Fastener axis perpendicular to the grain

The axis of the fastener shall be perpendicular to the timber surface. The insertion of fasteners shall follow normal preparation (e.g. preboring) and practice. The width and depth of the test piece in the direction of insertion of the fastener shall be at least  $(l_p + 5d)$ , see figure 3. Where the test pieces are



direction of insertion of the fastener shall be at least  $(l_p + 5d)$ , see figure 3. Where the test pieces are of solid timber, half of the fasteners shall be inserted radially to the growth rings and half tangentially to the growth rings. For staples, half of the tests shall be carried out with  $\alpha_{crn} = 0^\circ$  and the other half with  $\alpha_{crn} = 90^\circ$ .

**NOTE:** This means that where staples are tested in test pieces of solid timber, the total number of test pieces should be quartered, each quarter of the test pieces being as follows:

- Staple inserted radially to growth rings and  $\alpha_{crn} = 0^\circ$ ;
- Staple inserted radially to growth rings and  $\alpha_{crn} = 90^\circ$ ;
- Staple inserted tangentially to growth rings and  $\alpha_{crn} = 0^\circ$ ;
- Staple inserted tangentially to growth rings and  $\alpha_{crn} = 90^\circ$ .

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