



SLOVENSKI STANDARD
SIST EN 409:1996
01-avgust-1996

Lesene konstrukcije - Preskusni postopki - Ugotavljanje momenta plastičnosti mehanskih spojnih sredstev - Žičniki

Timber structures - Test methods - Determination of the yield moment of dowel type fasteners - Nails

Holzbauwerke - Prüfverfahren - Bestimmung des Fließmoments von stiftförmigen Verbindungsmitteln - Nägel

Structures en bois - Méthodes d'essais - Détermination du moment plastique des éléments de fixation a chevilles - Pointes

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Ta slovenski standard je istoveten z: EN 409:1993

ICS:

91.080.20 Lesene konstrukcije Timber structures

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EUROPEAN STANDARD

EN 409

NORME EUROPÉENNE

EUROPÄISCHE NORM

July 1993

UDC 694.142.5:621.886.2:620.17

Descriptors: Timber construction, fasteners, pegs, nails (fasteners), bend tests, determination, moments, maximum value

English version

**Timber structures - Test methods - Determination
of the yield moment of dowel type fasteners -
Nails**

Structures en bois - Méthodes d'essais - Holzbauwerke - Prüfverfahren - Bestimmung des
Détermination du moment plastique des éléments - Fließmoments von stiftförmigen
de fixation à chevilles - Pointes Verbindungsmittein - Nägel

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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.

The European Standards exist 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.

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

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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Foreword

This European Standard was prepared by CEN/TC 124 "Timber structures". It was approved for the CEN final voting by the TC on 9th December 1991.

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 NSAI.

NOTE: It is considered desirable to maintain the same clause numbers consistently throughout this series of standards. Consequently, some clauses are void in this edition of this standard, but it is envisaged that future editions may need to include a text in these clauses.

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 January 1994, and conflicting national standards shall be withdrawn at the latest by January 1994.

The standard was approved and in accordance with the CEN/CENELEC Internal Regulations, the following countries are bound to implement this European Standard : Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom.

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No existing European Standard is superseded.

This standard includes an informative Annex describing a suitable test apparatus.

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1 Scope <https://standards.iteh.ai/catalog/standards/sist/a9b1ccde-5ab0-4447-9e03-74cdee46ebc0/sist-en-409-1996>

This Standard specifies a method for determining the yield moment of nails having a maximum diameter of 8 mm.

2 Normative references

None.

3 Definitions

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

3.1 **nail section dimension:** 1) Actual diameter of a plain round nail, or 2) Shank diameter of a profiled nail, or 3) Length of one side of the section of a square nail, or 4) Minimum dimension of the section of an oval or rectangular nail.

3.2 **yield moment of nails:** Bending moment at the maximum load sustained by a nail under test, or the bending moment at which the nail has deformed through an angle of 45, whichever is the lesser.

4 Symbols

d	nominal nail section dimension, in millimetres
F_1, F_3	maximum support loads on the nail, in newtons
F_2, F_4	test loads applied to the nail, in newtons
l_1, l_3	distances between loading points and the nearest support, in millimetres, see figure 1
l_2	free length of the nail, in millimetres, see figure 1
M_y	yield moment of the nail, in newton millimetres
α	bending angle, in degrees, see figure 2.

5 Requirements

None.

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6 Test method

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6.1 Principle

The principle of the test involves the loading of the nail under test as shown in figure 1 in such a manner that the loading points do not move along the nail and the loads remain normal to the axis of the nail during the test. The dimensions l_1 and l_3 shall be at least $2d$. The free length of the nail, l_2 , shall be between d and $3d$.

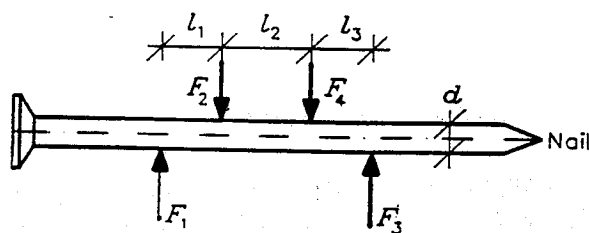


Figure 1: Nail loading

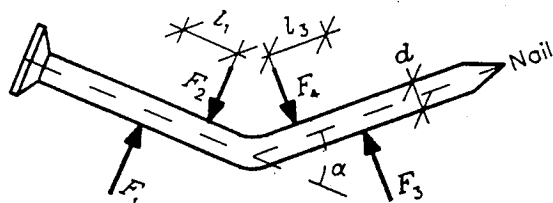


Figure 2: Nail deformation

6.2 Materials

None.

6.3 Apparatus

The apparatus used for the test shall be such that the loads F_2 and F_4 , see figures 1 and 2, do not deviate by more than 5 % from each other.

The bending moment diagram for the resulting yield moment M_y is shown in figure 3.

NOTE: A test apparatus which has been found to be suitable for this test is shown in Annex A.

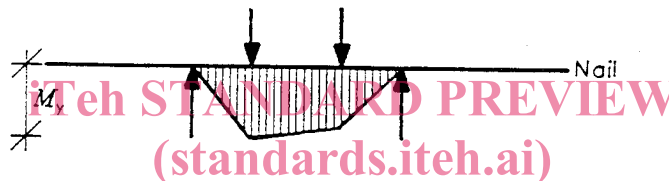


Figure 3: Yield moment M_y on the nail

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6.4 Preparation of specimen

The nail shall be tested about its weakest axis.

6.5 Loading procedure

The load shall be applied to the nail as shown in figure 1, and shall be increased at such a rate that the maximum test load is reached in (10 ± 5) s. The maximum load shall be determined to an accuracy of 1 %.

Record the loads and the corresponding values of the bending angle.

6.6 Results

The value of M_y shall be calculated as the greater of the two expressions $(F_1 \times l_1)$ and $(F_3 \times l_3)$, and shall be determined to an accuracy of 1%.

6.7 Test report

The test report shall include the following:

- a) description of the nails;
- b) description of the test apparatus;
- c) location of the free length of the nail in the test;
- d) graphs plotting the values of σ and load;
- e) value of the yield moment.

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Annex A (informative)**Nail bending apparatus****A.1 Apparatus**

The nail bending apparatus is shown in figure A.1 and it consists of the following

- the nail under test (1) is held at one end in a loose fitting bushing (2) fixed to an arm (3) that can be rotated about point A;
- the other end of the nail is put into a loose fitting bushing (4) which is fixed to a lever (5);
- the lever (5) is suspended on a load gauge (7) by a rod (6) having freely rotating joints at both ends and having its axis perpendicular to the lever.

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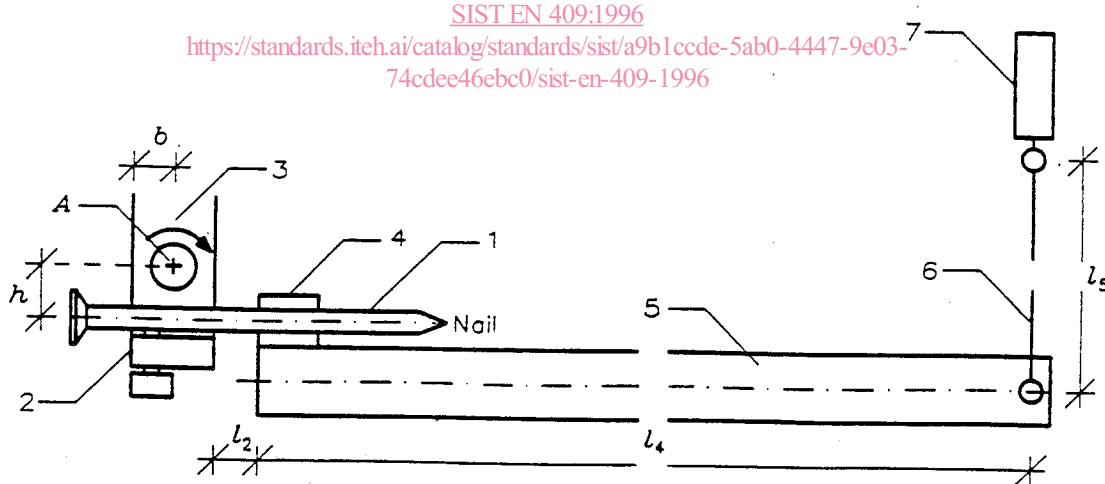


Figure A.1: Nail bending apparatus