



**SLOVENSKI STANDARD**  
**SIST EN 28970:1997**

**01-oktober-1997**

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**Lesene konstrukcije - Preskušanje stikov, izdelanih z mehanskimi veznimi sredstvi  
- Zahteve za gostoto lesa (ISO 8970:1989)**

Timber structures - Testing of joints made with mechanical fasteners - Requirements for wood density (ISO 8970:1989)

Holzbauwerke - Prüfung von Verbindungen mit mechanischen Verbindungsmitteln - Anforderungen an die Rohdichte des Holzes (ISO 8970:1989)

Structures en bois - Essai des assemblages réalisés par organes mécaniques - Exigences concernant la masse volumique du bois (ISO 8970:1989)

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**Ta slovenski standard je istoveten z: EN 28970:1991**

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**ICS:**

91.080.20      Lesene konstrukcije      Timber structures

**SIST EN 28970:1997**      **en**

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EUROPEAN STANDARD

EN 28 970

NORME EUROPEENNE

EUROPAISCHE NORM

February 1991

UDC 694.14:624.078:674.03:531.75

Descriptors: Timber construction, joints, structural timber, mechanical tests, density (mass/volume)

## English version

Timber structures - Testing of joints made with mechanical fasteners - Requirements for wood density (ISO 8970:1989)

Structures en bois - Essai des assemblages réalisés par organes mécaniques - Exigences concernant la masse volumique du bois (ISO 8970:1989)

Holzbauwerke - Prüfung von Verbindungen mit mechanischen Verbindungsmitteln - Anforderungen an die Rohdichte des Holzes (ISO 8970:1989)

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This European Standard was approved by CEN on 1991-01-17 and is identical to the ISO standard as referred to.

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

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

Based on the positive result of the Primary Questionnaire procedure, the Technical Board decided by Resolution BT 321/1989 to submit the International Standard

ISO 8970:1989 "Timber structures - Testing of joints made with mechanical fasteners - Requirements for wood density"

to the formal vote. The result was positive.

In accordance with the CEN/CENELEC Internal Regulations, 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 and the United Kingdom.

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### Endorsement notice

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The text of the International Standard ISO 8970:1989 was approved by CEN as a European Standard without any modification.

# INTERNATIONAL STANDARD

**ISO  
8970**

First edition  
1989-07-01

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## Timber structures — Testing of joints made with mechanical fasteners — Requirements for wood density

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*Structures en bois — Essai des assemblages réalisés par organes mécaniques —  
Exigences concernant la masse volumique du bois*

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Reference number  
ISO 8970 : 1989 (E)

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## 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 8970 was prepared by Technical Committee ISO/TC 165, *Timber structures*.

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International Organization for Standardization  
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# Timber structures — Testing of joints made with mechanical fasteners — Requirements for wood density

## 1 Scope

This International Standard specifies two methods for the selection of wood density for specimens which are to be used in determining by testing the strength and stiffness properties of joints made with mechanical fasteners.

The two methods are equally applicable.

It is assumed that the wood density is normally distributed with a coefficient of variation of about 0,15.

It is emphasized that the density is only one of the properties influencing the strength of a joint. Other relevant properties are, for example, growth ring size and slope of grain.

The second method is aimed at getting specimens with a uniform density comparable with the mean density of the timber to which the test results should be applied; normally the characteristic values, etc. of the joints are calculated on the basis of corrected test values,  $F_{cor}$ , determined from the observed values,  $F_o$ , as

$$F_{cor} = F_o \left( \frac{\rho_k}{\rho} \right)^c$$

where

$\rho$  is the density of the wood in which failure took place;

$\rho_k$  is the required characteristic density for the timbers to which the test results should be applied;

$c$  is a power depending on the influence of the wood properties on the properties of the joint. It should be determined by tests or from theoretical considerations.

## 2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 3131 : 1975, *Wood — Determination of density for physical and mechanical tests.*

## 3 General

This International Standard specifies two methods for the selection of wood density.

The first method is based on all specimens having a density comparable with the characteristic density of the timber to which the test result should be applied; normally the test data can be used directly for calculating characteristic values, etc. of the joints.

NOTE — The characteristic value of a material property corresponds in general to a fractile in the assumed statistical distribution of the particular property. The fractile — normally 0,05 or 0,5 — is specified in the relevant design standard.

## 4 Method 1

**4.1** The wood should be of uniform quality and without localized defects that could influence the test results.

**4.2** The mean density,  $\rho_m$ , of all specimens should satisfy the following condition :

$$\rho_m \leq 1,15 \rho_k \quad \dots (1)$$

where  $\rho_k$  is the required characteristic density for the timbers to which the test results should be applied, in kilograms per cubic metre, determined in accordance with ISO 3131 with mass and volume corresponding to equilibrium at a temperature of  $20 \text{ }^\circ\text{C} \pm 2 \text{ }^\circ\text{C}$  and relative humidity of  $(65 \pm 5) \%$ .

**4.3** The density,  $\rho$ , of at least 20 % of the specimens should satisfy the following condition :

$$\rho \leq \rho_k \quad \dots (2)$$

where  $\rho_k$  is as in 4.2.

## 5 Method 2

**5.1** The wood should be of uniform quality and without localized defects that could influence the test results.

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**5.2** The mean density,  $\rho_m$ , of all specimens should satisfy the following conditions :

$$1,05 \rho_k \leq \rho_m \leq 1,25 \rho_k \quad \dots (3)$$

where  $\rho_k$  is the required characteristic density for the timbers to which the test results should be applied, in kilograms per cubic metre, determined in accordance with ISO 3131 with mass and

volume corresponding to equilibrium at a temperature of  $20 \text{ }^\circ\text{C} \pm 2 \text{ }^\circ\text{C}$  and relative humidity of  $(65 \pm 5) \%$ .

**5.3** The density,  $\rho$ , of all single specimens should satisfy the following conditions :

$$0,9 \rho_m \leq \rho \leq 1,1 \rho_m \quad \dots (4)$$

where  $\rho_m$  is the mean density.

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**Descriptors** : timber construction, joints, structural timber, tests, mechanical tests, density (mass/volume).

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