

# SLOVENSKI STANDARD

## SIST EN 596:1996

01-avgust-1996

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**Lesene konstrukcije - Preskusni postopki - Preskus sten z lesenimi okvirji z udarcem mehkega telesa**

Timber structures - Test methods - Soft body impact test of timber framed walls

Holzbauwerke - Prüfverfahren - Prüfung von Wänden in Holztafelbauart bei weichem Stoß

Structures en bois - Méthodes d'essai - Essai de corps mou sur murs à ossatures en bois

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Ta slovenski standard je istoveten z:

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**ICS:**

91.080.20

Lesene konstrukcije

Timber structures

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EUROPEAN STANDARD

EN 596

NORME EUROPÉENNE

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Descriptors: timber construction, structural members, walls, timber frames, panels, impact tests, shock resistance

English version

**Timber structures - Test methods - Soft body  
impact test of timber framed walls**Structures en bois - Méthodes d'essai - Essai  
de corps mou sur murs à ossature en boisHolzbauwerke - Prüfverfahren - Prüfung von  
Wänden in Holztafelbauart bei weichem Stoß**STANDARD PREVIEW**  
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This European Standard was approved by CEN on 1994-12-05. 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.

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.

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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

This European Standard has been prepared by the Technical Committee CEN/TC 124 "Timber structures" of which the secretariat is held by DS.

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 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 September 1995, and conflicting national standards shall be withdrawn at the latest by September 1995.

According to 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 and United Kingdom.

## 1 Scope

This standard specifies a test method for determining the resistance of a timber frame wall panel to impact from a soft body allowed to strike the sheathing of the panel.

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## 2 Normative references

None.

## 3 Definitions

For the purposes of this standard, the following definition apply

**timber frame wall panel:** Wall unit consisting of a timber and/or wood based product framework, sheathed on at least one face with a wood based or other sheet material. A panel may be either structural or non-structural.

## 4 Symbols

- $g$  acceleration due to gravity, in metres per second per second
- $h$  drop height, in millimetres
- $M$  mass of the impact load, in kilograms

$W$  impact energy, in joules

$\alpha$  angle of the support cable between the vertical position and the release position of the impact load, in degrees.

## 5 Requirements

The panels shall have the sheathing fixed to the loaded face of the panel, and the properties of the sheathing material shall be reported. Any sheathing fixed to the unloaded face of the panel shall also be reported.

## 6 Test method

### 6.1 Principle

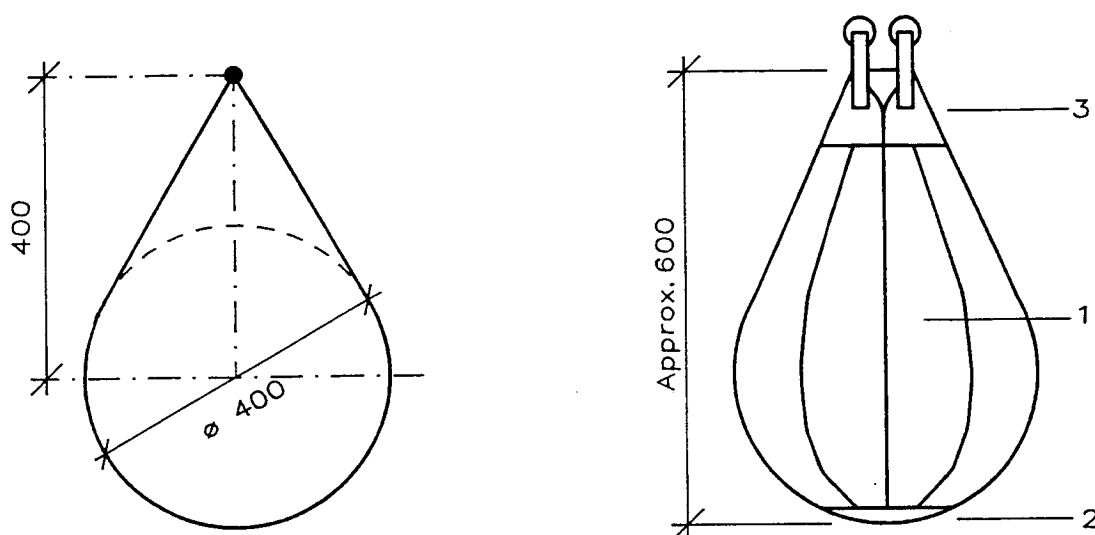
The test method is used to assess the effect of impact energy on the panel. The method deals with wall panels which are supported at top and bottom, but other relevant support conditions may be applicable, and if used shall be reported.

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### 6.2 Apparatus

The following apparatus is required:

- a) coarse canvas bag containing a thin polyethylene bag of the same size which, when filled with hardened solid glass spheres each having a diameter of  $(3 \pm 0,5)$  mm shall have a mass  $M$  of  $(50 \pm 0,2)$  kg. Figure 1 shows the form of bag.
- b) arrangement whereby the bag is suspended by a rope in such a way that while vertically at rest the bag is just touching the panel surface at the point of impact. The arrangement is shown in figure 2.
- c) devices for
  - 1) hoisting and
  - 2) instantaneously releasing the bag.
- d) stiff test rig (consisting of a steel frame) with top and bottom beams simulating service conditions.



Sizes in millimetres

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NOTE 1: The sidewall of the spheroconical bag is made of eight sections of coarse linen canvas (approx 600 g/m<sup>2</sup>) sewn together.

NOTE 2: The bottom of the bag is strengthened by a circular piece of leather of 120 mm diameter sewn into it.

NOTE 3: The top of the bag is slightly truncated in order to make an opening of 80 mm diameter. This opening is strengthened by a leather strip sewn into the bag, to which are fixed four equidistant rings held together by a suspension ring.

**Figure 1: Canvas bag**

### 6.3 Preparation of the test pieces

The tests shall normally be carried out on wall panels which have been conditioned at the standard environment of  $(20 \pm 2) ^\circ\text{C}$  and  $(65 \pm 5) \%$  relative humidity, but when other conditions apply, they shall be reported. The test laboratory shall normally be maintained at the standard environment, but when other conditions apply, they shall be reported.

The moisture content of the wall panels shall be determined.

### 6.4 Procedure

The panel shall be erected vertically in the test rig. In the erection process, the fixings of the panel in the rig shall be specified by the manufacturer or supplier.

Unless otherwise specified the point of impact shall be at the weakest part of the panel ( $1500 \pm 250$ ) mm above the intended floor level. Preliminary tests may be necessary to find the weakest part of the panel in this zone or the otherwise specified zone.

Before an impact load is applied, the bag shall be rolled to loosen the spheres. The bag is placed at the impact point in such a way that, when it is suspended from the rope, it just touches the surface of the panel. The bag shall then be drawn away from the panel surface such that the maximum angle to the vertical  $\alpha$  subtended by the movement of the rope shall be not greater than  $65^\circ$ , see figure 2. The bag shall be hoisted to the prescribed height of drop  $h$  measured vertically from the impact point. The bag is then released and allowed to drop freely in an arc onto the face of the panel.

The moisture content of the frame and sheathing (if of a wood based product) at the vicinity of the point of failure shall be determined.

## 6.5 Results

After each drop, the panel shall be visually examined and any damage to the panel sheathing or framing shall be recorded.

The impact energy  $W$  shall be calculated from the following equation

$$W = \frac{M h g}{1000} \quad \text{J}$$

The symbols are as given in clause 4.

## 6.6 Test report

The test report shall include the following information as relevant:

- a) sampling procedure;
- b) impact energy  $W$ , the number of drops and drop height, and the results of the visual examination as recorded in 6.5;
- c) number of panels tested;
- d) detailed description of the test panels;
- e) type and specification (or other quality designation) of materials used in the panels, with a note of any defects;
- f) types, surface finish and strength properties of the materials of the mechanical fasteners (including corrosion protection);
- g) dimensions of mechanical fasteners, shapes, quantity and positioning;
- h) description of the fixings of the panel to the test rig;

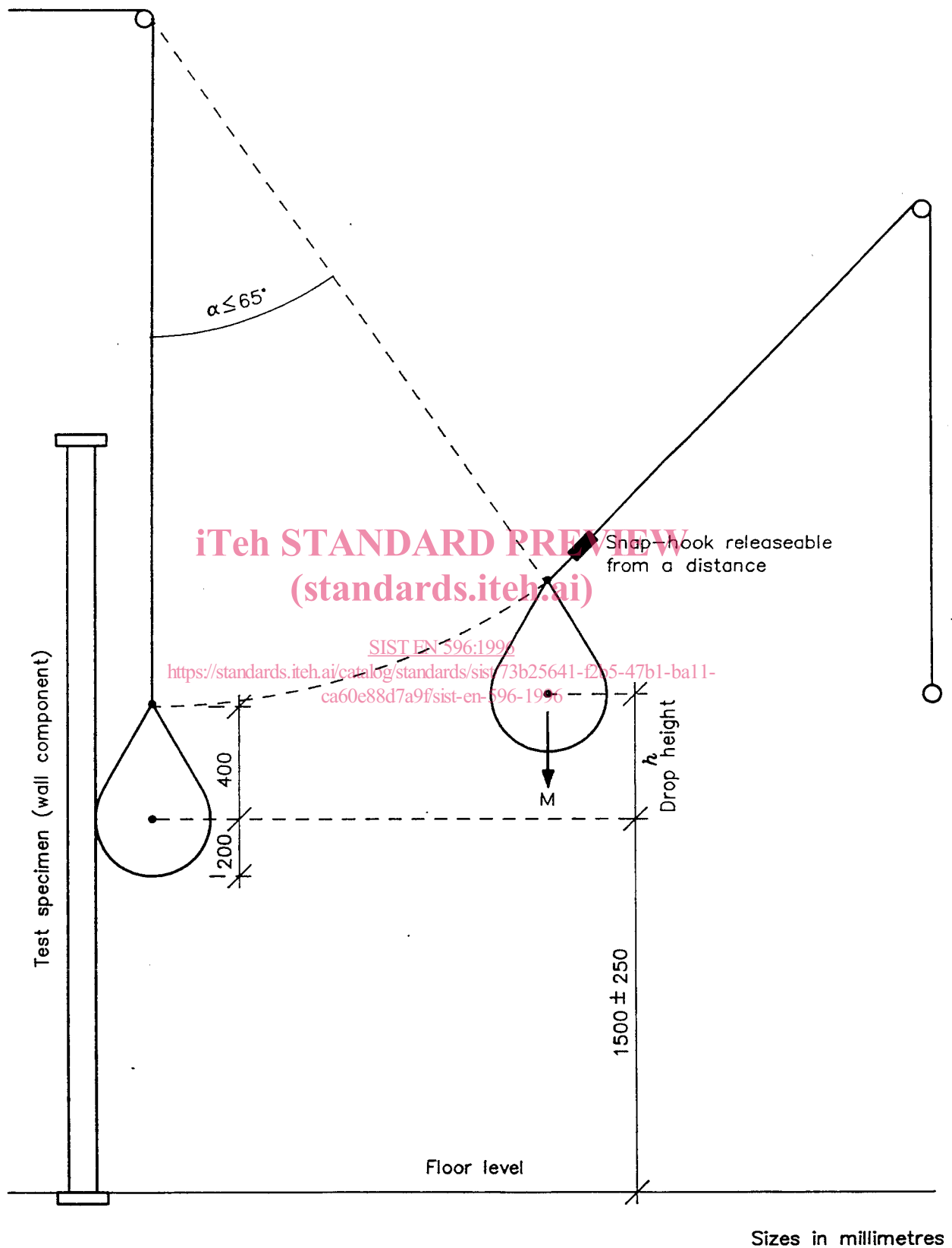


Figure 2: Apparatus for testing soft body impact