



SLOVENSKI STANDARD

SIST EN 594:1996

01-avgust-1996

Lesene konstrukcije - Preskusni postopki - Natezna trdnost in togost lesenih stenskih okvirjev s ploščami (panelov)

Timber structures - Test methods - Racking strength and stiffness of timber frame wall panels

Holzbauwerke - Prüfverfahren - Wandscheiben-Tragfähigkeit und -Steifigkeit von Wänden in Holztafelbauart

Structures en bois - Méthodes d'essai - Essai de raideur et résistance au contreventement des murs à ossature en bois

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Ta slovenski standard je istoveten z: EN 594:1995

ICS:

91.080.20 Lesene konstrukcije Timber structures

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EUROPEAN STANDARD

EN 594

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Timber structures - Test methods - Racking strength and stiffness of timber frame wall panels

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CEN

European Committee for Standardization
Comité Européen de Normalisation
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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.

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of an identical text or by endorsement, at the latest by June 1996, and conflicting national standards shall be withdrawn at the latest by June 1996.

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.

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 and United Kingdom.

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1 Scope

This standard specifies the test method to be used in determining the racking strength and stiffness of timber frame wall panels.

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The test method is intended, primarily for panels as described, to provide:

- comparative performance values for the materials used in the manufacture of the panels and
- datum information for use in structural design.

The principle of the test method is suited to other sizes or shapes of panels and to panels which are partially sheathed and to combinations of panels. The requirements for such panels and their testing are given in Annex A.

2 Normative references

None.

3 Definitions

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

- 3.1 timber frame wall panel:** Structural wall panel consisting of timber framing with sheathing material fixed to one or both faces. Such structural wall panels are referred to herein as "panels".
- 3.2 head binder:** Piece of timber fixed to the top of the panel for test purposes.
- 3.3 packer:** Piece of timber fixed to the base of the test rig for test purposes.
- 3.4 racking strength:** Capacity of a panel to resist a horizontal load in the plane of the panel.
- 3.5 racking stiffness:** A calculated stiffness of a panel when it is loaded to approximately 40 % of its racking strength.

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4 Symbols

- F applied racking load, in newtons; [SIST EN 594:1996](https://standards.iteh.ai/catalog/standards/sist/46dbb7b-a4b9-4e47-a5d3-61b5b57205e4/sist-en-594-1996)
- F_{\max} maximum racking load, in newtons; <https://standards.iteh.ai/catalog/standards/sist/46dbb7b-a4b9-4e47-a5d3-61b5b57205e4/sist-en-594-1996>
- $F_{\max,est}$ estimated maximum racking load, in newtons;
- F_v applied vertical load, in newtons;
- R racking stiffness, in newtons per millimetre;
- v panel deformation, in millimetres.

5 Requirements for test panels

The dimensions of panels shall be as given in figure 1. The edges of all sheathing materials shall be supported.

NOTE 1: If the sheathing is unsuitable for joining two sheets on a single stud, that stud may be replaced by two studs adequately connected along their length.

NOTE 2: The number, location and orientation of intermediate studs is not critical to the test panel, and should reflect the normal construction practice. If the construction requires the sheets to be laid long edge horizontal, the vertical joint shown in figure 1 can be replaced by a mid-height horizontal joint. The sheathing to one face of the panel will normally consist of two sheets approximately 1,2 m × 2,4 m. Where other sizes of sheet are used in practice they may be substituted, but must be formatted to suit the

2,4 m × 2,4 m size of the timber frame.

NOTE 3: Test panels may include sheathings on both faces of the panel or more than one layer of sheathing on one face if required by construction practice and if all sheets are considered to contribute to the racking strength or stiffness.

6 Test method

6.1 Principle

The test method measures the resistance to racking load of panels which can deform both vertically and horizontally in the plane of the panel.

In this test method, the bottom rail of the panel is bolted to the test rig and uplift is resisted by the sheathing fixings and also by the vertical loads on the top rail of the panel.

NOTE 1: Different panels should be tested for each condition of vertical load (see 6.4.2 and 6.4.3). Normally it is sufficient to test the maximum and minimum conditions of vertical load appropriate to the design of the panel.

NOTE 2: The number of panels tested will depend on the variability in materials and manufacture, the required level of confidence and the number of loading conditions to be applied. Wherever possible more than one structure of the same design and loading regime should be tested to permit the assessment of the likely variability in performance.

6.2 Apparatus

6.2.1 General

The test apparatus shall be as shown in figure 2, and shall be capable of applying, separately, both racking load F , and vertical loads F_v . The method of application of the loads shall be such that no significant resistance to movement in the panel is induced.

The apparatus shall be capable of continuously recording the loads F and F_v with an accuracy of $\pm 3\%$ of the load applied, or, for loads of less than $0,1 F_{\max,est}$ with an accuracy of $\pm 0,3\% F_{\max,est}$. The panel displacements shall be measured to the nearest 0,1 mm.

6.2.2 Base and loading frame

The base of the test rig shall provide a level bed to receive the test panel and packer. The base shall be sufficiently stiff so as not to distort during the test. A rigid datum (independent of the test rig) shall be provided for the measurement of the deformation of the panel.

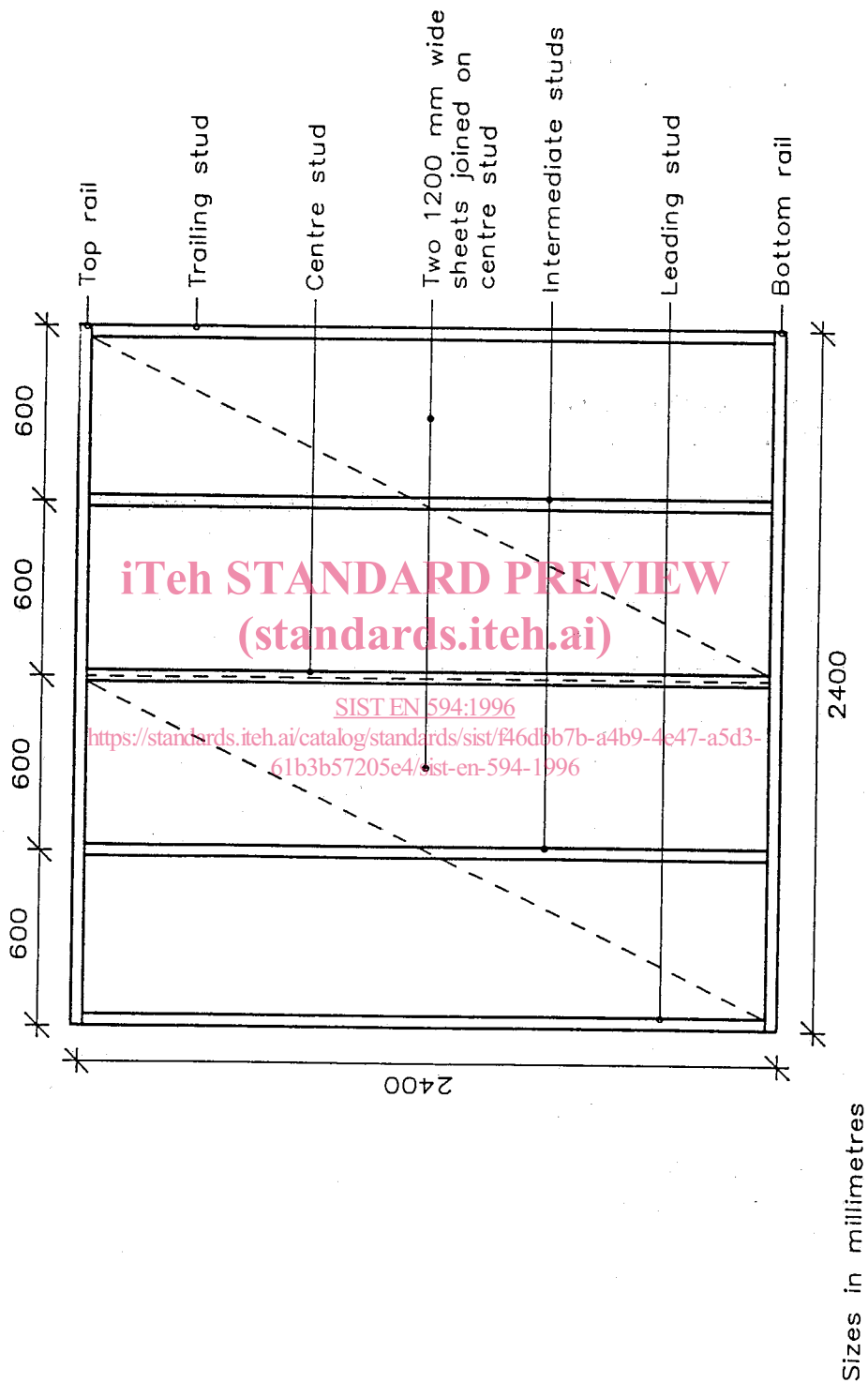


Figure 1: Details of test panels

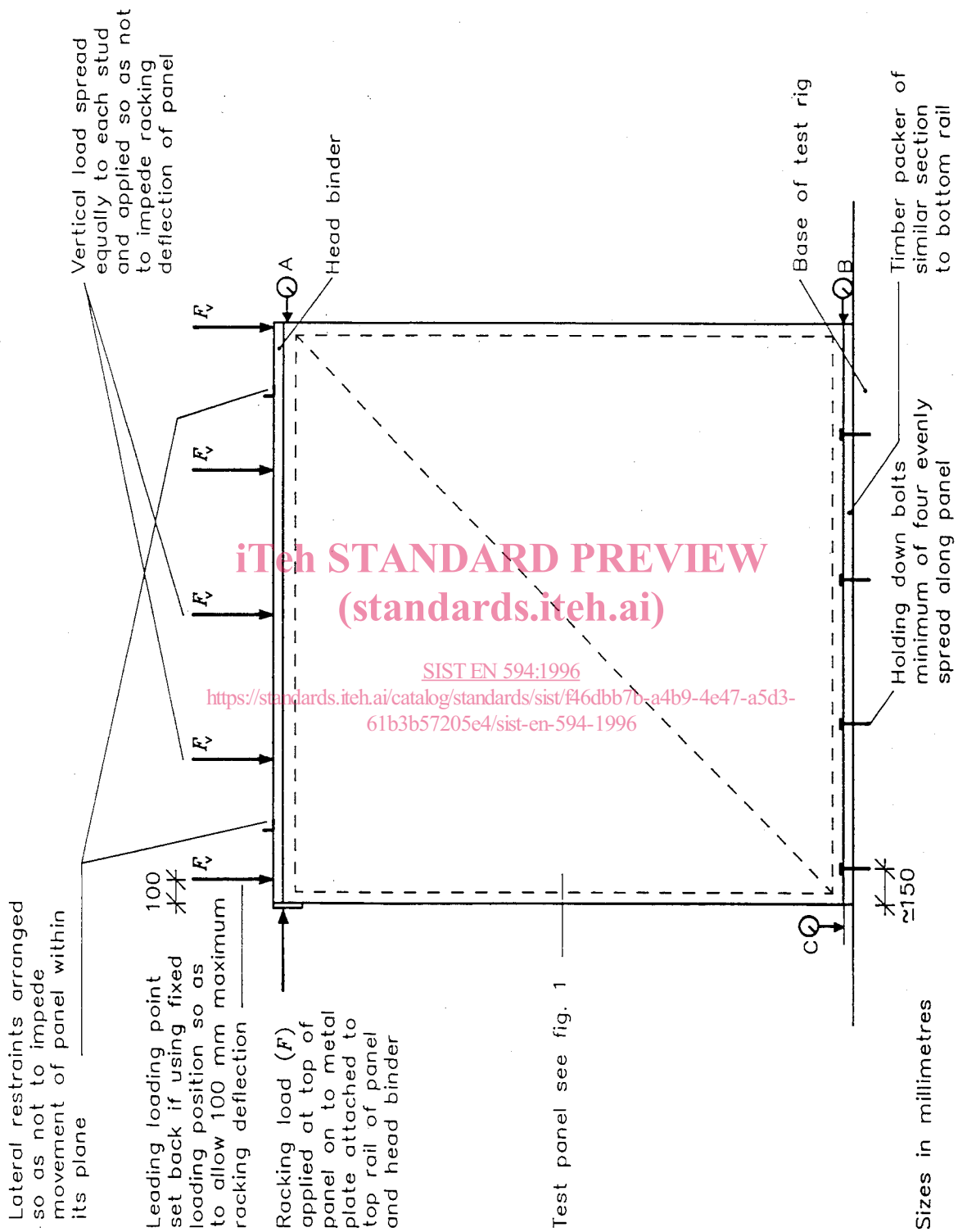


Figure 2: Details of requirements for test apparatus