SLOVENSKI STANDARD
SIST EN 595:1996

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Lesene konstrukcije - Preskusni postopki - Preskus za ugotavljanje trdnosti in deformacijskega obnašanja paličij

Timber structures - Test methods - Test of trusses for the determination of strength and deformation behaviour

Holzbauwerke - Prüfverfahren - Prüfung von Fachwerkträgern zur Bestimmung der Tragfähigkeit und des Verformungverhaltens

Structures en bois - Méthodes d'essai - Essais des fermes pour la détermination de la résistance et de la rigidité

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Timber structures - Test methods - Test of trusses for the determination of strength and deformation behaviour

Structures en bois - Méthodes d'essai - Essais des fermes pour la détermination de la résistance et de la rigidité

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CEN

European Committee for Standardization
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Europäisches Komitee für Normung

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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of an identical text or by endorsement, at the latest by September 1995, and conflicting national standards shall be withdrawn at the latest by September 1995.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 the test procedures for determining the strength and deformation behaviour of trusses.

NOTE: The test methods are based on EN 380.

2 Normative references

None.

3 Definitions

None.

4 Symbols

F applied load, in newtons;

F_{max} maximum applied load, in newtons;

G characteristic permanent load composed of G_1 and G_2, in newtons;

G_1 self weight of truss, in newtons;

G_2 applied permanent load, in newtons;

Q characteristic value of variable load, in newtons;

T loading time, in seconds;

T_r recovery time, in seconds.

5 Requirements

None.

6 Test methods

6.1 Principle

The purpose of the test methods is to measure the deformation behaviour and strength of trusses subjected to the type of loading which may be expected in service. Uniformly distributed test loads may be simulated by applying point loads.

6.2 Apparatus

6.2.1 General. The apparatus used for the test shall simulate the assumed or actual service conditions of the truss in respect of the truss span, the size, position and rigidity of the truss bearing and the lateral stability of the truss.

6.2.2 Lateral restraint. Lateral restraint shall not affect the vertical stiffness of the truss.

6.2.3 Load and deformation measurement. The apparatus shall be capable of continuously applying and recording the loads F with an accuracy of ± 3 % of the load applied, or, for loads of less than 0,1 F_{max} with an accuracy of ± 0,3 % F_{max}.

The deformations shall be measured

- to the nearest 0,1 mm in the deformation test, and
- to the nearest 1 mm in the strength test.

Deformations shall be measured at all points considered important to the serviceability requirements of the truss.

6.3 Preparation of the test pieces

The tests shall normally be carried out on trusses which have been conditioned at the standard environment of (20 ± 2) °C and (65 ± 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 trusses shall be determined.

6.4 Procedure

6.4.1 General

The loading procedures are shown diagrammatically in figure 1. The test loads shall be applied at a constant rate of movement at each loading point, avoiding impact or dynamic effects. A loading rate of 0,25 Q per minute shall be used unless otherwise stated below.

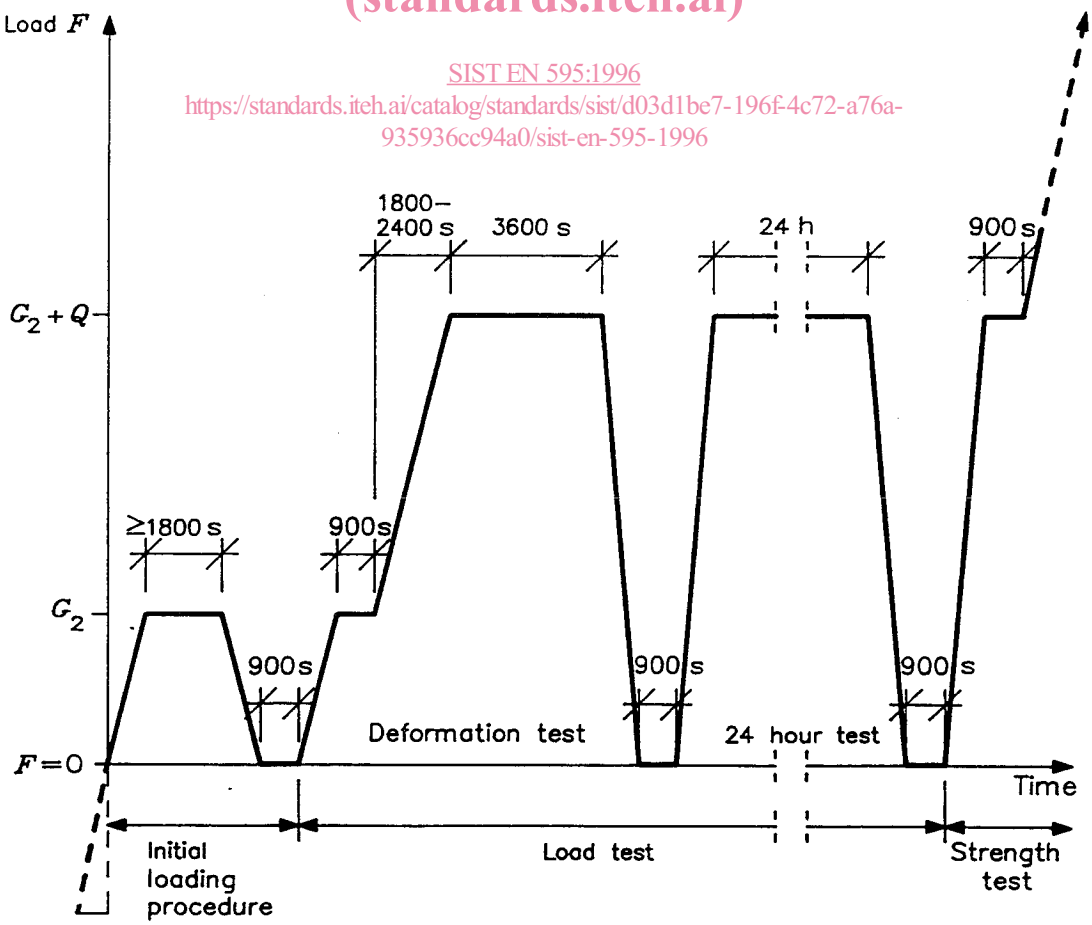

Figure 1: Loading procedures

6.4.2 Initial loading

The initial loading procedure consists of applying the following loading regime to the truss:

a) only G_1 acting and $F = 0$. Read deformation transducers;

b) apply $F = G_2$. Measure deformations;

c) maintain $F = G_2$ for a period of at least 1800 s. Measure deformations;

d) remove F. Measure deformations;

e) allow $T_r = 900$ s. Measure deformations.

6.4.3 Load test

6.4.3.1 General. This test procedure is in two parts: deformation test (see 6.4.3.2), and 24 hour test (see 6.4.3.3), where both are performed immediately after the initial loading procedure.

6.4.3.2 Deformation test. The procedure consists of applying the following loading regime to the truss:

f) re-apply $F = G_2$. Measure deformations;

g) maintain $F = G_2$ for a period of 900 s. Measure deformations;

h) apply $F = G_2 + Q$ where T is between 1800 s and 2400 s. Measure deformations;

i) maintain $F = G_2 + Q$ for a period of 3600 s. Measure deformations after $T = 900$ s, 1800 s, 2700 s, and 3600 s.

j) release $F = G_2 + Q$. Measure deformations immediately and after T_r of 900 s.

The remaining part of the test is then initiated and completed over a period of 24 h.

6.4.3.3 24 hour test. The procedure consists of applying the following loading regime to the truss:

NOTE: The test procedure provides information on the rate of change of deformation, over 24 h, of the truss when subject to characteristic permanent and variable load.

k) re-apply $F = G_2 + Q$. Measure deformations immediately and after $T = 900$ s;

l) maintain F for a period of 24 h. Measure deformations at sufficient intervals to allow a time/deflection curve to be plotted and at the end of the 24 h period;

m) measure deformations;

n) release $F = G_2 + Q$. Measure deformations immediately and after T_r of 900 s.

6.4.4 Strength test

The procedure consists of applying the following loading regime to the truss:

NOTE: The test procedure provides information on the maximum load capacity of the truss.

o) re-apply $F = G_2 + Q$. Measure deformations;

p) maintain $F = G_2 + Q$ for a period of 900 s;

q) increase F at a rate not greater than

- a load of 0,25 Q per minute, or

- a deformation of (0,0005 × span) per minute

until F_{max} is reached. Record F_{max};

r) determine moisture content at the point of failure.

The maximum load F_{max} on a truss may be assumed to have been reached when

- fracture of a truss member occurs, or

- joint failure occurs, or

- substantial deformation continues without a further increase in load.

6.5 Results

The test results shall contain the load and deformation readings measured during the test and the maximum load F_{max}.

6.6 Test report

The test report shall include the following information:

a) sampling procedure;

b) details of the sizes and configuration of the truss members;

c) values of G_1, G_2 and Q;

d) conditioning and test laboratory environment;

e) specification and quality of material used in the manufacture, with a note of any defects;