



# SLOVENSKI STANDARD SIST EN 1737:2001

01-april-2001

8 c`c Yj Ub^Y'gh]ybY'fXbcgh]`j Uf^yb] `gh]\_cj `Ufa Uli fb] `a fYy`]b`\_cyYj `nUa cbHjybY  
YYa YbH^]n`Uj hc`\_Uj ]fUbY[ U^W^] UghY[ UVYfc bU^U]`VYfc bU]n`U \_Y[ U^U[ fY[ UHn  
cXdfhc`glfi \_hi fc

Determination of shear strength of welded joints of reinforcement mats or cages for prefabricated components made of autoclaved aerated concrete or lightweight aggregate concrete with open structure

**STANDARD PREVIEW**

Bestimmung der Bruchscherkraft von Schweißknoten von Betonstahlmatten oder Bewehrungskörben für vorgefertigte Bauteile aus dampfgehärtetem Porenbeton oder haufwerksporigem Leichtbeton

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Détermination de la résistance au cisaillement des jonctions soudées des treillis ou corbeilles d'armatures pour les éléments préfabriqués réalisés en béton cellulaire autoclavé ou en béton de granulats légers a structure ouverte

**Ta slovenski standard je istoveten z: EN 1737:1998**

**ICS:**

91.100.30      Beton in betonski izdelki      Concrete and concrete products

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EUROPEAN STANDARD

EN 1737

NORME EUROPÉENNE

EUROPÄISCHE NORM

April 1998

ICS

Descriptors: concrete, cellular concrete, aggregates, reinforcing materials, prefabricated elements, welded wire lattice, mechanical tests, shear tests, determination, shear strength, test specimen

English version

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This European Standard was approved by CEN on 25 March 1998.

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.

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



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 Technical Committee CEN/TC 177 "Prefabricated reinforced components of autoclaved aerated concrete or light-weight aggregate concrete with open structure", the secretariat of which is held by DIN.

In order to meet the performance requirements as laid down in the product standards for prefabricated components of autoclaved aerated concrete and of lightweight aggregate concrete with open structure, a number of standardized test methods are necessary.

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 October 1998, and conflicting national standards shall be withdrawn at the latest by October 1998.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

## 1 Scope

This European Standard specifies a method of determining the shear strength of welded joints in reinforcements intended for use in prefabricated components made of autoclaved aerated concrete (AAC) according to prEN 12602 or lightweight aggregate concrete with open structure (LAC) according to prEN 1520.

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## 2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter.

For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

prEN 1520 Prefabricated components of lightweight aggregate concrete with open structure.

prEN 12602 Prefabricated reinforced components of autoclaved aerated concrete

## 3 Principle

The shear strength of welded joints is determined on test specimens consisting of a longitudinal bar and a welded transverse bar or diagonal bar.

In the case of welded joints, where the transverse bar forms an angle of 90° with the longitudinal bar, the test load is applied as a tensile force on the free end of the longitudinal bar, while the welded transverse bar is supported by a device designed to minimize influence from bending and twisting forces (see NOTE 1).

When joints with a diagonal bar are tested, the test load is applied to the free end of the diagonal bar while the longitudinal bar is supported (see NOTE 2).

The test load is increased at a uniform rate until failure of the weld, and the ultimate force is recorded.

NOTE 1: In AAC- and LAC-components transverse bars are predominantly used for anchorage of longitudinal bars, therefore the tensile force which can be transmitted from the longitudinal bar to the transverse bar, is of main interest.

NOTE 2: Diagonal bars are mainly used as shear reinforcement. In this case, the welded joint should be able to transmit the tensile force of the diagonal bar to the longitudinal bar.

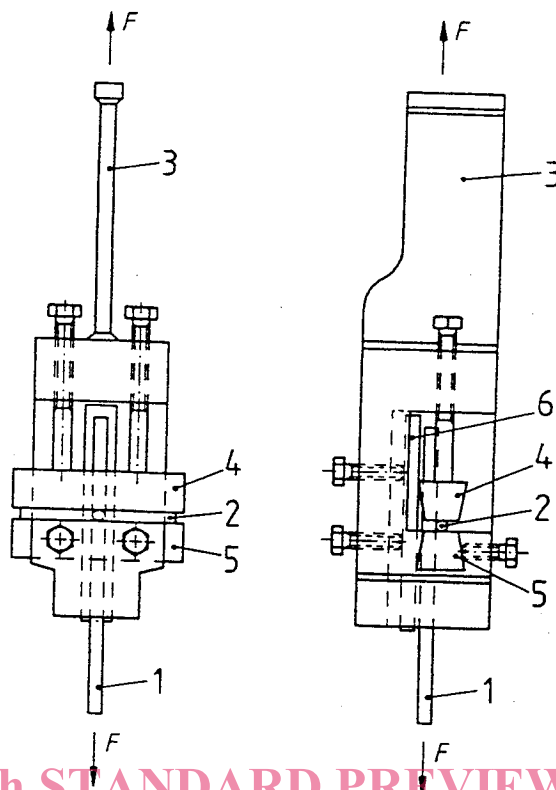
#### 4 Apparatus

- a) a device for cutting reinforcement without influence on the welded joints;
- b) calipers, capable of measuring the diameter of the reinforcing bars and the dimension of the welded joint to an accuracy of 0,1 mm;
- c) a tensile testing machine having a load capacity of at least 20 kN, capable of measuring the load to an accuracy of 1 %; for routine control purposes machines with lower accuracy may be used, provided the actual accuracy is taken into consideration when evaluating the test results.
- d) a device capable of holding the test specimen in such a way that the non-tensioned bar is firmly supported and prevented from bending and twisting as far as possible. The free end of the tensioned bar shall be supported against bending in such a way, that the measured force is not increased by friction (see NOTE).

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NOTE: A typical device is shown in figure 1. An auxiliary for testing welded joints with angles other than 90° between the bars is shown in figure 2.

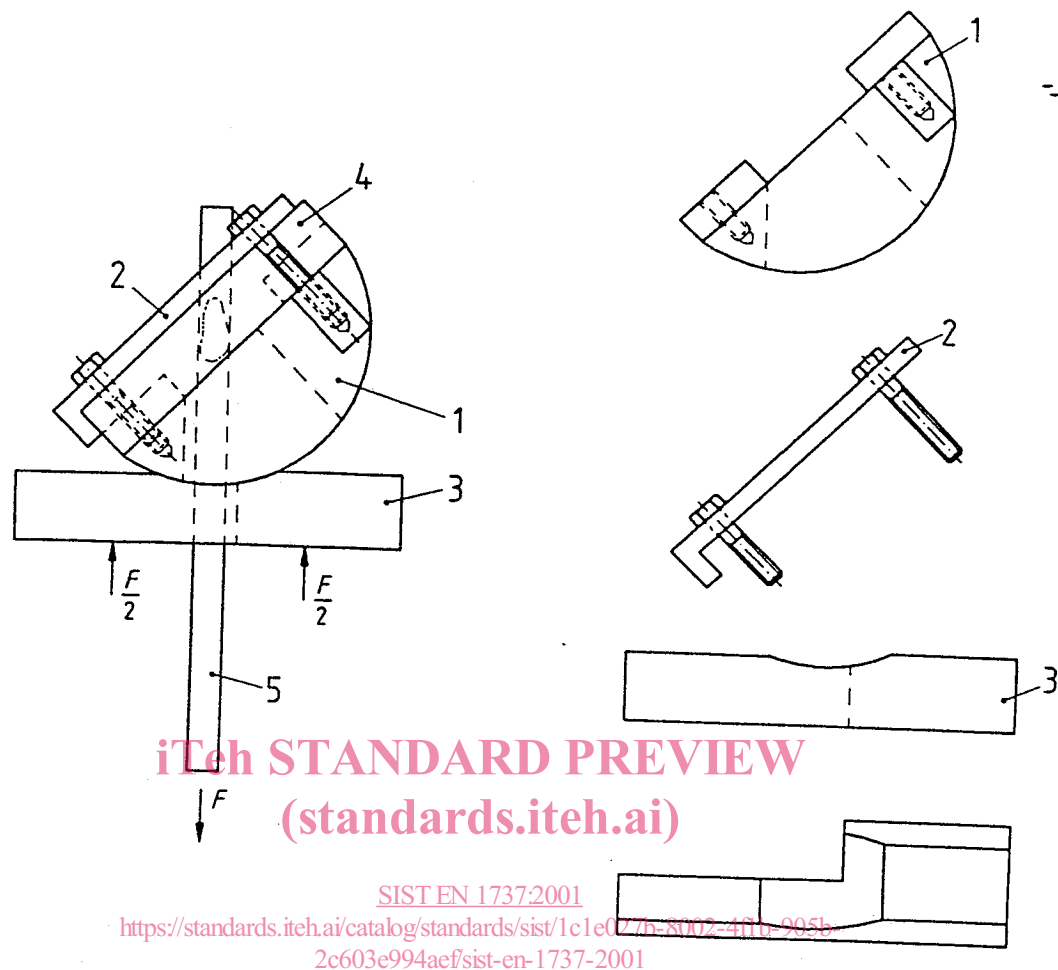
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- |   |  |
|---|--|
| 1 Longitudinal bar (tensioned)            | 4 Fixture for transverse bar   |
| 2 Transverse bar (supported)              | 5 Support of transverse bar  |
| 3 Adapter for jaws of the testing machine | 6 Support to prevent bending of longitudinal bar (sliding bearing with low friction or roller bearing) |

**Figure 1: Typical device for testing shear strength of welded joints**



- |   |   |   |                              |
|---|---|---|------------------------------|
| 1 | Specimen holder (inclinable)                  | 4 | Longitudinal bar (supported) |
| 2 | Fixture for test specimen                     | 5 | Diagonal bar (tensioned)     |
| 3 | Support with concave seat for specimen holder |   |                              |

**Figure 2: Typical auxiliary device for testing of joints with a diagonal bar**

## 5 Test specimens

### 5.1 Sample

The sample for the preparation of the test specimens (usually reinforcement mats or cages) shall be taken in such a manner that it is representative of the entire output of the welding equipment used for the manufacture of the prefabricated components.

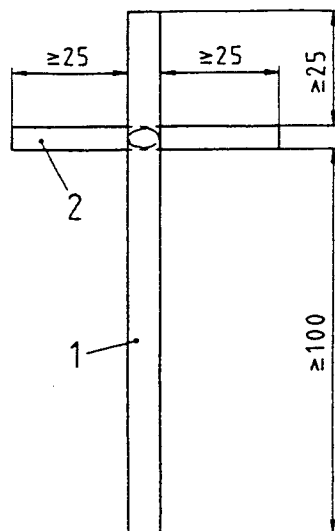
The sampling shall be adjusted to the type of welding machine used if any knowledge exists. The sample shall include welded joints from every longitudinal bar and from different transverse (or diagonal) bars in sufficient number to satisfy the requirements in 5.3.

### 5.2 Shape and size of test specimens

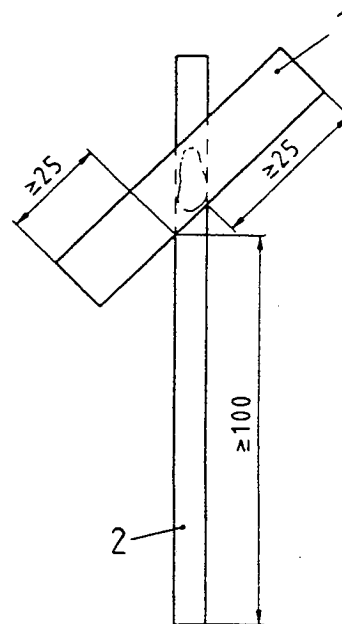
The test specimen consists of a longitudinal bar and a welded transverse bar or diagonal bar with dimensions according to figures 3 or 4, respectively, if possible. If test specimens with other shape or size are used, this shall be indicated in the test report.



Dimensions in millimetres



Dimensions in millimetres



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1 Transverse bar  
2 Longitudinal bar

1 Longitudinal bar  
2 Diagonal bar

**Figure 3: Shape and dimensions of test specimens with welded transverse bars**

**Figure 4: Shape and dimensions of test specimens with welded diagonal bars**

### 5.3 Number of test specimens

A test set shall include at least one test specimen from each longitudinal bar, but not less than three test specimens.

### 5.4 Preparation of test specimens

Test specimens shall be cut in such a manner as to avoid damage to the welds. Burrs and other irregularities should be removed from the bar ends.

### 5.5 Measurement of test specimens

The diameter of both bars shall be measured to an accuracy of 0,1 mm, using calipers.