
Cementno vezane iverne plošče - Določanje odpornosti proti udarcu s trdim predmetom

Cement-bonded particleboards - Determination of hard body impact resistance

Zementgebundene Spanplatten - Bestimmung des Stoßwiderstandes mit einem harten Körper

Panneaux de particules liées au ciment - Détermination de la résistance au choc de corps dur

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ICS:

79.060.20 Vlaknene in iverne plošče Fibre and particle boards

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EUROPEAN STANDARD

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Cement-bonded particleboards - Determination of hard body impact resistance

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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 112 "Wood-based panels" of which the secretariat is held by DIN.

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of an identical text or by endorsement, at the latest by April 1996, and conflicting national standards shall be withdrawn at the latest by April 1996.

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 the United Kingdom.

1 Scope

This European Standard specifies a method of determining the hard body impact resistance of cement bonded particleboards with a nominal thickness equal to or greater than 9 mm.

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.

EN 326-1 Wood-based panels — Sampling, cutting and inspection — Part 1: Sampling and cutting of test pieces and expression of test results

3 Principle

The resistance to hard body impact is determined by the free dropping, from progressively increased heights, of a hard body with a defined mass onto a rigidly clamped test piece until the test piece is penetrated or cracked.

4 Apparatus

The apparatus shall comprise a frame which at its base will have means of clamping the test piece in a horizontal position, so that there is no possibility of vibration. This can be achieved using a collar which is clamped to the frame. When the test piece is clamped the free distance between its underside and the bottom of the frame shall be at least 50 mm. The free space between the supports shall be (290 ± 5) mm. The upper part of the frame is provided with guides enabling the falling body fixed on a soft non-alloy steel rod to fall freely and vertically onto the centre of the test piece.

The falling body shall have a hemispherical extremity with a radius of $(25 \pm 0,5)$ mm and a mass (m) of $(4,5 \pm 0,05)$ kg, including the associated parts.

The frame or guide(s) should be marked at intervals of 25 mm to enable the height from which the body is dropped to be measured.

An example of the type of apparatus required is given in figures 1, 2 and 3. In figure 1, the guides are fitted with ball bearings to ensure free fall.

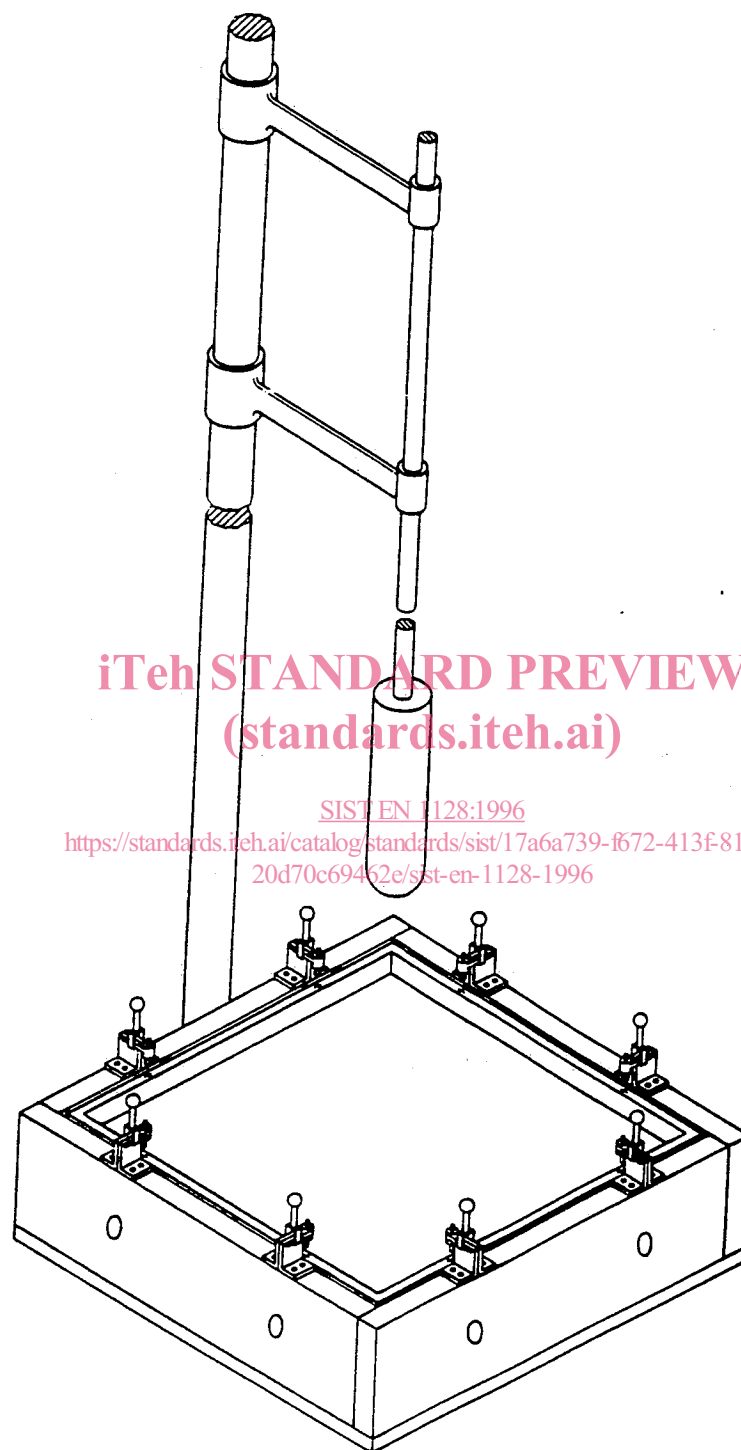


Figure 1: Example of impact test apparatus

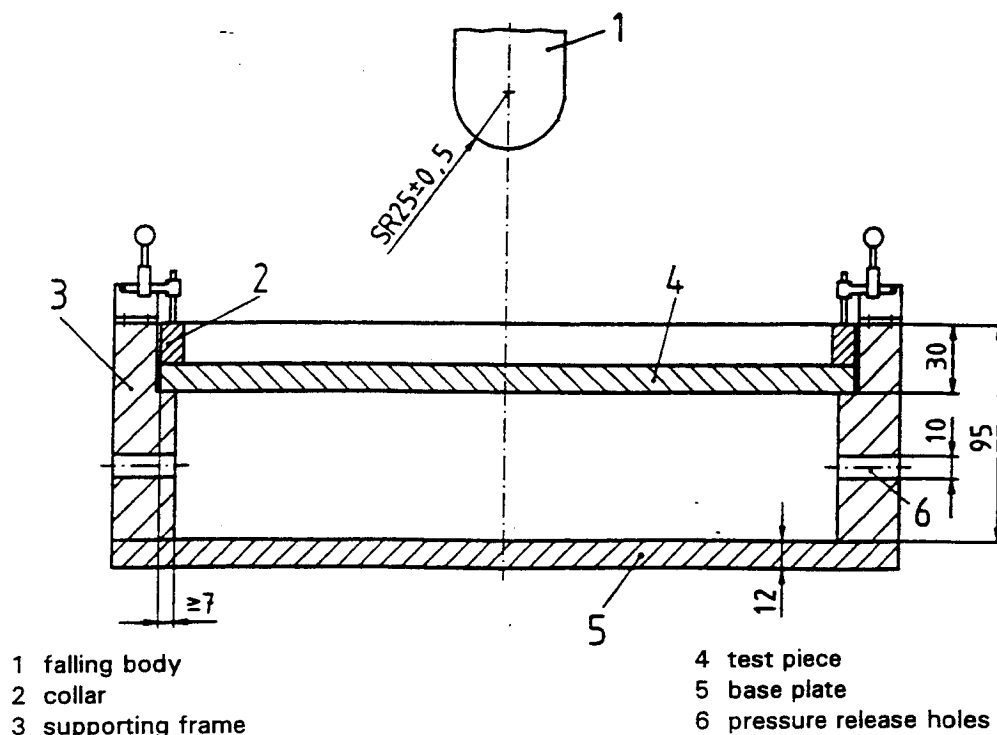


Figure 2: Example of steel frame (cross section) with clamped test piece

Dimensions in millimetres

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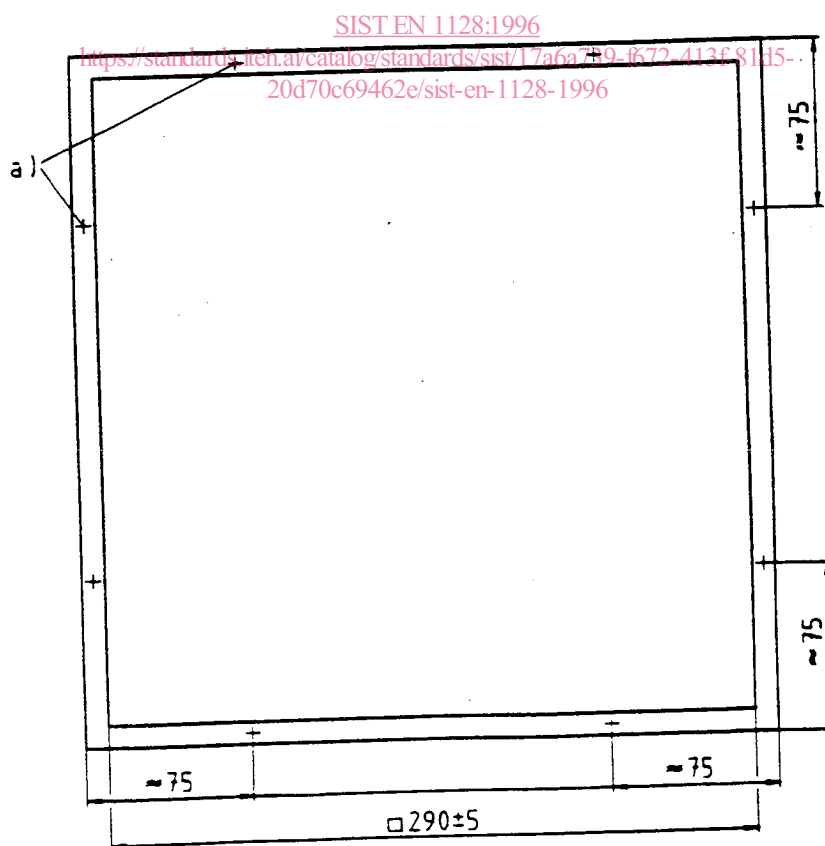


Figure 3: Example of steel collar showing approximate positions of clamping points

5 Test pieces

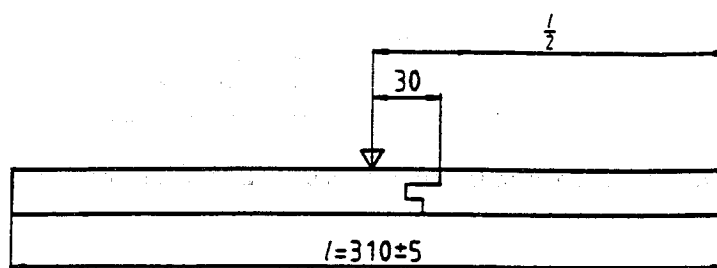
5.1 Sampling and cutting

Sampling and cutting of test pieces shall be carried out in accordance with EN 326-1, with values of m (test pieces per panel) = 4 and n (panels) = 5, ie 20 test pieces.

5.2 Dimensions of test pieces

The test pieces shall be square with a side dimension of (310 ± 5) mm. Where a jointed test piece is to be tested, it shall be assembled so that the point of impact will be on the grooved half of the test piece and 30 mm from the joint line showing on the upper surface of the test piece as shown in figure 4. Where the joint is glued, it should be allowed to cure before conditioning and testing.

Dimensions in millimetres



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Figure 4: Point of impact for testing jointed test pieces

5.3 Conditioning

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The test pieces shall be conditioned to constant mass in an atmosphere with a relative humidity of $(65 \pm 5) \%$ and a temperature of $(20 \pm 2) ^\circ\text{C}$.

NOTE: Constant mass is considered to be reached when the results of two successive weighing operations, carried out at an interval of 24 h, do not differ by more than 0,1 % of the mass of the test piece.

6 Procedure

Position the test apparatus on a level, solid, rigid floor, eg concrete. Clamp the test piece to the supporting frame so that it overlaps all four sides equally by not less than 7 mm (see figure 2).

Raise the falling body 25 mm above the surface of the test piece and allow it to drop freely. The falling body or its guide rod should be caught after impact so that the falling body shall not bounce and strike the test piece a second time.

Repeat this step, but increase the drop-height by 25 mm each time until the falling body either penetrates the test piece leaving a clearly visible hole, or leaves a series of cracks (see notes 1 and 2). Record this height.

NOTE 1: Penetration has occurred if, on removal of the test piece from the frame, light can be seen through it at any point around the hemispherical indentation produced by the falling body.

NOTE 2: Exceptionally, cracks can appear, radiating from the point of impact, before the test piece is penetrated. In this case, the drop-height that first produces such cracks is taken as the final measurement.

7 Expression of results

The impact resistance IR of the test piece in millimetres per millimetre of thickness shall be calculated from the equation:

$$IR = \frac{H - 25}{t}$$

where

H is the drop-height required to produce failure of the test piece by penetration or cracking (in millimetres);

t is the nominal thickness of the test piece (in millimetres).

The result for each test piece, as well as the mean for the 20 test pieces, shall be expressed to two significant figures.

8 Test report

This shall be as described in EN 326-1, including the type of failure.

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