SLOVENSKI STANDARD
SIST EN 15057:2006

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Vlaknatocementne valovite strešne plošče - Odpornost proti udarcem - Preskusna metoda

Fibre cement profiled sheets - Impact resistance test method

Faserzement-Wellplatten - Schlagfestigkeitsprüfung

Plaques profilées en fibres ciment - Méthode d'essai de résistance au choc

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ICS:

91.060.20	Strehe	Roofs
91.100.40	Cementni izdelki, ojačani z vlakni	Products in fibre-reinforced cement

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EUROPEAN STANDARD

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English Version

Fibre cement profiled sheets - Impact resistance test method

Plaques profilées en fibres ciment - Méthode d'essai de résistance au choc

Faserzement-Wellplatten - Schlagfestigkeitsprüfung

This European Standard was approved by CEN on 24 May 2006.

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.

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Foreword

This document (EN 15057:2006) has been prepared by Technical Committee CEN/TC 128 “Roof covering products for discontinuous laying and products for wall cladding”, the secretariat of which is held by IBN/BIN.

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of an identical text or by endorsement, at the latest by December 2006, and conflicting national standards shall be withdrawn at the latest by December 2006.

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

Introduction

Different fibre-cement profiled sheets on the market incorporate additional features to contribute to security during construction of the roof.

Fibre-cement profiled sheets have been evaluated for impact resistance by a number of national methods, designed to simulate the impact of accidental falling on the roof.

The results from the different existing methods are not directly comparable.

This European Standard establishes an agreed method for evaluation of impact resistance of fibre-cement profiled sheet products, based on the experiences obtained over the last number of years in different countries.

This is a product standard with no classifications, but this test procedure with different drop heights or number of drops may be used by national regulators to set classifications for roof assemblies.

The performance of a roof constructed with these products depends not only on the property of the product as required by this European Standard, but also on the design, construction and performance of the roof as a whole in relation to the environment and conditions of use.

1 Scope

This European Standard specifies a soft body impact test method for fibre-cement profiled sheets for roofing.

This European Standard applies to fibre-cement profiled sheets conforming to EN 494 and of length greater than or equal to 1,04 m.

It applies only to products as delivered.

NOTE This European Standard can be applied, after agreement between manufacturer and purchaser, to curved sheets.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 494:2004, *Fibre-cement profiled sheets and fittings — Product specification and test methods*

ISO 7892, *Vertical building elements — Impact resistance tests — Impact bodies and general test procedures*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
profiled sheet
component the cross section of which consists of corrugations as defined in 3.1 of EN 494:2004

3.2
type test
test carried out to demonstrate conformity with the requirements of this European Standard or for approval of a new product and/or when a fundamental change is made in formulation and/or method of manufacture the effects of which cannot be predicted on the basis of previous experience. The test is performed on the delivered product, but is not required for each production batch

3.3
as delivered
same condition as the producer intends to supply the product after completing all aspects of the process including maturing and, when appropriate, painting

3.4
span
distance between the parallel support axes

3.5
lap (overlap)
amount one sheet overlaps another at either the end (end lap) or the side (side lap)

4 Symbols and abbreviations

For the purpose of this document, the following symbols and abbreviations apply.

E Impact energy in joules

h Impact height in metres

m Mass of the soft body impactor in kilograms

g Acceleration due to gravity in metres per second squared

w_1 Weight of specimen in grams

w_2 Weight of dried specimen in grams

IPN I Beam Profiles Normales

IPE I Beam Profiles European

5 Product requirements

5.1 Composition

Fibre cement profiled sheets shall have a composition according to 5.1.1 of EN 494:2004.

5.2 Appearance and finish

Shall be as defined in 5.1.2 of EN 494:2004.

5.3 Criteria for compliance

When tested in accordance with 7.6 the sheets shall meet the following criteria:

— the sheet under test shall arrest the fall of the impactor and retain it on the test assembly for a period of at least 60 s.

— compliance is required by 8 out of 8 sheets. If 1 of the 8 sheets fails, a further 8 sheets shall be tested with a compliance requirement of 8 out of 8 sheets passing the test.

6 Sampling procedure

6.1 Sampling method

Take an adequate number of full size sheets (16 or 24) drawn at random from a consignment of at least 151 sheets or, in case of continuous production, from a production batch. All sheets used on the test assembly shall be from the same consignment or production batch. The size of the production batch is chosen by the manufacturer up to a maximum of one week's production. If 1 sample out of 8 fails in the first test, the samples for retest are taken in the same manner.

6.2 Type testing

The impact resistance test is a type test and shall be performed to demonstrate conformity to this European Standard.

For continuous production the type test shall be repeated at least once every year.

7 Test method for the determination of soft body impact resistance

7.1 Principle

The soft body impact resistance is determined by dropping a 50kg spheroconical bag with no initial speed from a height of 1200mm perpendiculary into the centre of the mid sheet of a given test assembly (see Figure 2) and measuring the time for which the bag is retained by the same sheet.

NOTE This creates an impact energy which is in excess of the impact energy released by a person falling from a standing position.

7.2 Test apparatus

The apparatus consists of:

a) A frame (see Figure 2) of minimum height 600 mm, made of IPN or IPE 140 bars reinforced by U braces of height 50 mm. These shall be either welded or screwed.

— Minimum length of the frame: 3 000 mm.

— Width of the frame: 1 300 mm, measured at the inside of the IPN or IPE 140.

This frame shall be placed on a flat, solid surface.

b) Supports (see Figure 3) made of 4 IPN or IPE 100 bars of minimum length 1 430 mm. Two steel plates of 200 mm x 60 mm x 10 mm are welded on at each end. The supports are either welded or screwed into position parallel to each other using bolts M 10 x 30. The upper face of the supports shall be in a horizontal plane with a tolerance of ± 1 mm.

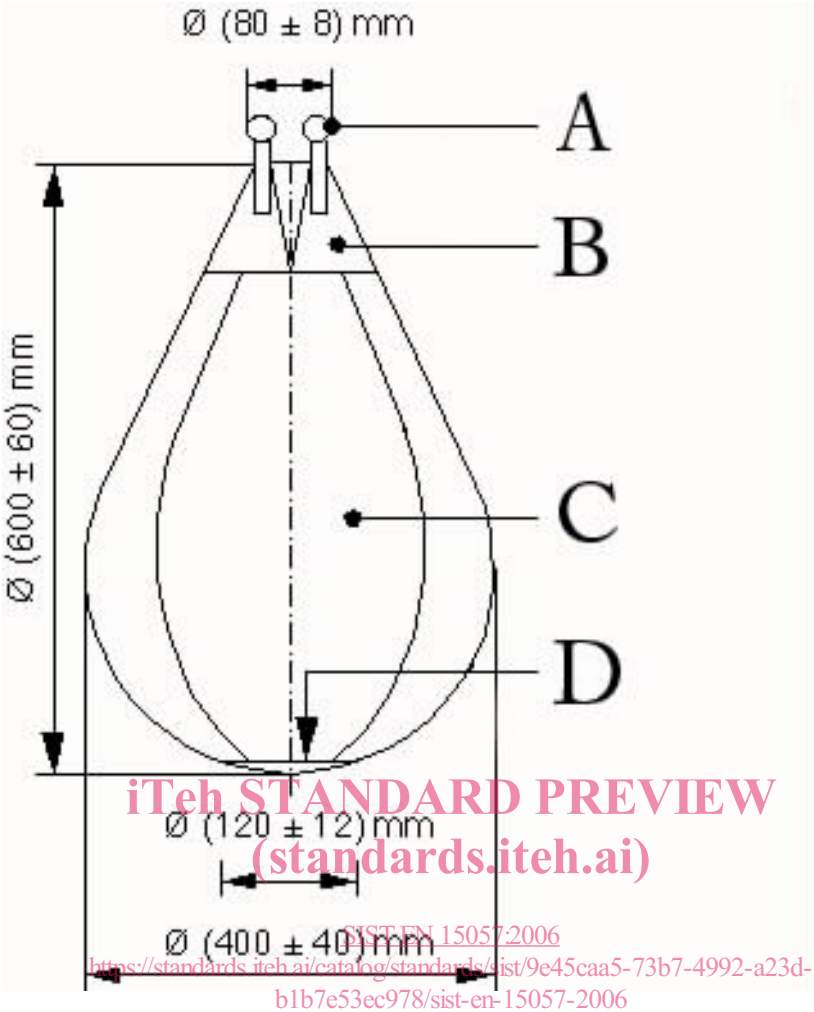
c) A spheroconical canvas or leather bag of diameter (400 ± 40) mm (see Figure 1 and ISO 7892) filled with (3,0 ± 0,3) mm diameter glass spheres to give a total weight of (50 ± 0,5) kg as the soft body impactor.

d) A system for the instant release of the bag without application of initial energy.

e) Hooks of the dimensions described in Figure 4 with a characteristic resistance of 2300 N. The hooks will be fitted with a washer as described in Figure 7.

f) A measuring rod of (1 200 ± 2) mm to measure the distance *h* between the base of the bag and the crown of the corrugation of the sheets to be tested.

g) A torque spanner for adjusting the fittings.

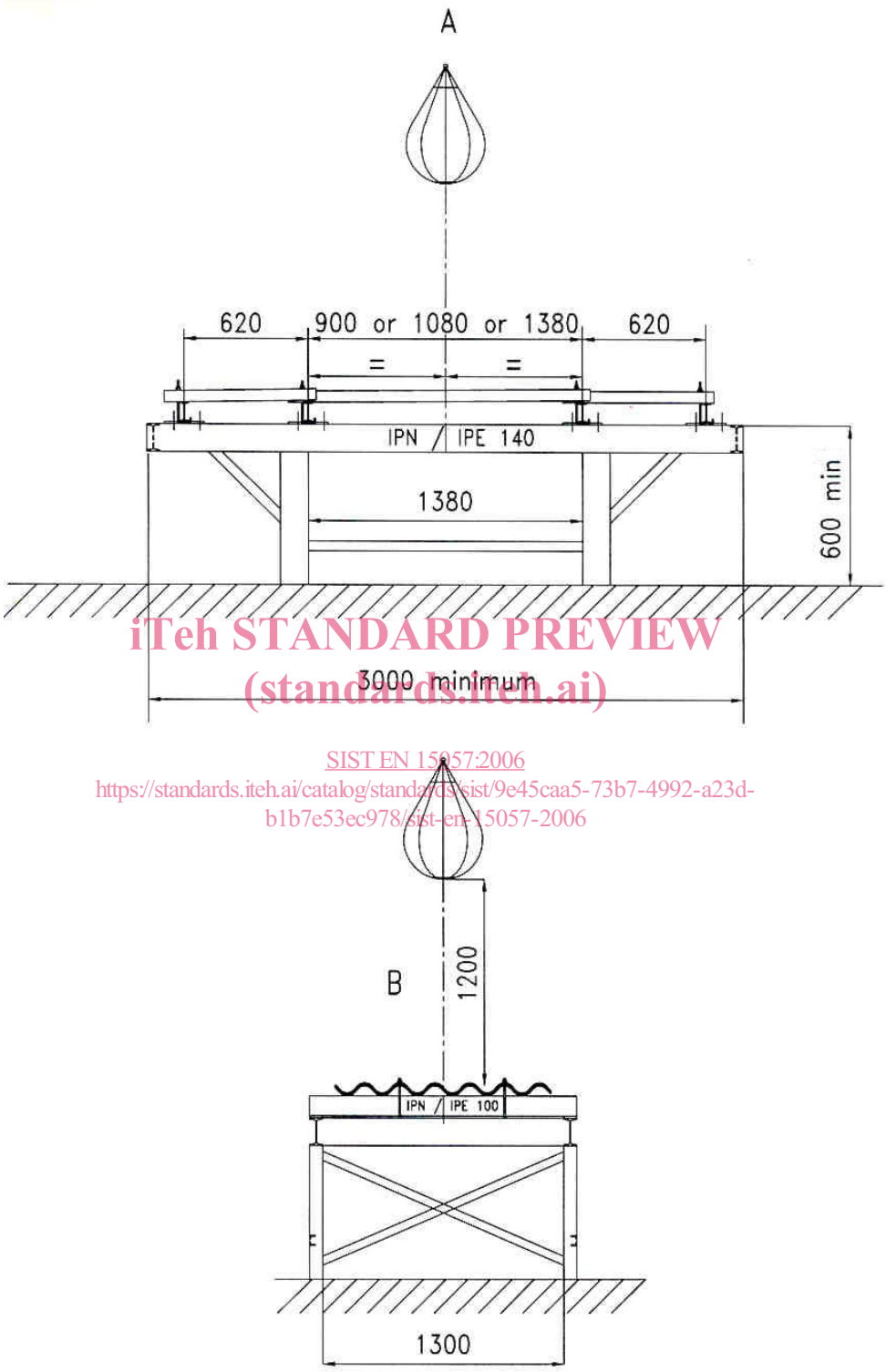


Key

A suspension ring (or rings)
B leather strip
C 8 canvas sections
D leather bottom

Figure 1 — Spheroconical bag

Dimensions in millimetres



Key

A mid span

B mid sheet

Figure 2 — Frame – front and side view