



**SLOVENSKI STANDARD**  
**SIST EN 14428:2005**  
**01-marec-2005**

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**Zaslони za prhanje – Funkcionalne zahteve in preskusne metode**

Shower enclosures - Functional requirements and test methods

Duschabtrennungen - Funktionsanforderungen und Prüfverfahren

Parois de douche - Prescriptions fonctionnelles et méthodes d'essai

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**Ta slovenski standard je istoveten z: EN 14428:2004**

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ICS 91.140.70

English version

## Shower enclosures - Functional requirements and test methods

Parois de douche - Prescriptions fonctionnelles et méthodes  
d'essai

Duschabtrennungen - Funktionsanforderungen und  
Prüfverfahren

This European Standard was approved by CEN on 2 September 2004.

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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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

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## Foreword

This document (EN 14428:2004) has been prepared by Technical Committee CEN/TC 163 “Sanitary appliances”, the secretariat of which is held by UNI.

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of an identical text or by endorsement, at the latest by May 2005, and conflicting national standards shall be withdrawn at the latest by May 2005.

This document is one of a series of harmonized standards for sanitary appliances which has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports Essential Characteristics of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

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, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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## 1 Scope

This document specifies requirements for shower enclosures for domestic purposes which ensure that the product, when installed in accordance with the manufacturer's installation instructions, gives satisfactory performance when used as intended.

This document does not apply to shower cabinets or curtains and does not specify aesthetic and dimensional requirements.

NOTE For the purposes of this document the term "domestic purposes" includes use in hotels, accommodation for students, hospitals and similar buildings, except when special medical provisions are required.

## 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 12150-1:2000, *Glass in building — Thermally toughened soda lime silicate safety glass — Part 1: Definition and description.*

EN ISO 2409, *Paints and varnishes — Cross-cut test (ISO 2409:1992).*

ISO 7599, *Anodizing of aluminium and its alloys — General specifications for anodic oxide coatings on aluminium.*

ISO 7892:1988, *Vertical building elements — Impact resistance test — Impact bodies and general test procedures.*

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## 3 Terms and definitions

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

### 3.1

#### **shower enclosure**

arrangement of panel(s) and/or door(s) erected on or around a drained shower place, shower tray or bath in conjunction with one or more walls of the main building structure to provide a water retaining area for the purpose of showering

### 3.2

#### **shower cabinet**

prefabricated but not necessarily preassembled unit for the purpose of showering comprising a shower tray or bath and rigid water resistant enclosing wall(s), with or without a roof and with an entry capable of being closed to provide a fully enclosed compartment

## 4 Requirements

### 4.1 General

The manufacturer shall provide with each shower enclosure detailed instructions on installation and use, to include at least the following information:

- description of installation with special consideration of building construction and necessary tools and sealant;
- instructions for appropriate maintenance and care.

## 4.2 Cleanability

When tested visually, the surfaces of the components of the shower enclosures which are accessible during use and cleaning shall be free from sharp corners, edges and burrs.

When using recommended cleaning agents in accordance with the manufacturer's installation and care instructions, there shall be no reduction in safety or function of the shower enclosure.

## 4.3 Impact resistance/shatter properties

### 4.3.1 General

Shower enclosures may be glazed with various materials. Where glass is used, this shall meet the requirements of 4.3.2, and where plastics materials are used, they shall meet the requirements of 4.3.3.

### 4.3.2 Thermally toughened safety glass

Thermally toughened safety glass shall meet the requirements of EN 12150-1:2000, except in respect of Clause 8 which is replaced by 5.1 of this document.

When tested in accordance with 5.1, the minimum particle count shall be 40.

### 4.3.3 Plastics materials

When tested in accordance with 5.2, sheets shall not break or they shall break safely.

## 4.4 Durability

### 4.4.1 General

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Products conforming with the requirements of 4.2 and 4.3 and the following are deemed to be durable.

### 4.4.2 Corrosion resistance

All components shall consist of corrosion-proof materials or shall be corrosion-protected.

All corrosion protection shall conform with the relevant requirements specified in European and International Standards. For example:

- the minimum paint adhesion performance for powder-coated or wet-painted surfaces shall comply with a cross-cut value  $\leq 2$  when tested in accordance with EN ISO 2409;
- the minimum average thickness of coating on aluminium shall be of grade AA 8 when tested in accordance with one of the methods given in ISO 7599. In no cases shall the minimum local thickness be less than 80 % of the minimum average thickness.

### 4.4.3 Resistance to chemicals and stains

When tested in accordance with 5.3 the glazing materials shall not show permanent staining or deterioration.

### 4.4.4 Resistance to wet and dry cycling

When tested in accordance with 5.4, the glazing materials shall not show any cracks, crazing or discoloration.



#### 4.4.5 Endurance

When tested in accordance with 5.5, shower enclosures shall not show any functional deterioration after 20 000 closing-opening cycles.

#### 4.4.6 Stability

When tested in accordance with 5.6, shower enclosures shall withstand an energy representing the impact of a human body on a large impact area (e.g. blow from shoulder, fall) without any functional deterioration which could result in injury to the user.

#### 4.4.7 Water retention

When tested in accordance with 5.7, shower enclosures shall retain water. A few small drops of water on the outside of the water retaining area are acceptable.

### 4.5 Dangerous substances

NOTE See ZA.1 and ZA.3.

## 5 Test methods

### 5.1 Impact resistance/shatter properties

#### 5.1.1 General

The fragmentation test determines whether the glass breaks in a safe manner for a thermally toughened soda lime silicate safety glass.

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#### 5.1.2 Test specimens

##### 5.1.2.1 Flat glass

The test specimen shall have an area of  $(1,7 \pm 0,17) \text{ m}^2$  with a minimum length to width ration of 2:1 without holes, notches or cut-outs.

##### 5.1.2.2 Curved glass

The test specimen shall be as designed for the product.

#### 5.1.3 Procedure

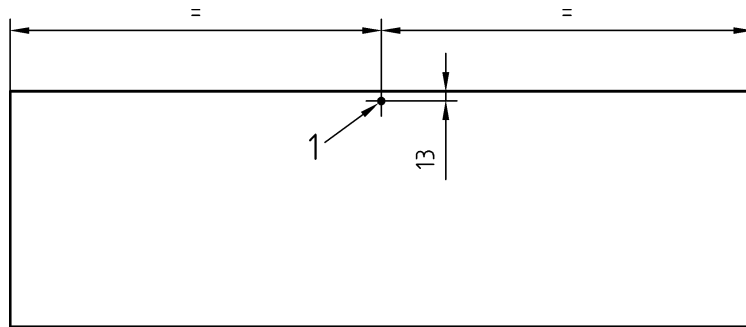
The test specimen shall be impacted, using a pointed steel tool, at a position 13 mm from the longest edge of the specimen at the mid-point of that edge, until breakage occurs (see Figure 1).

NOTE The fragmentation characteristics of glass are unaffected by temperatures between - 50 °C and + 100 °C.

Examples of steel tools are a hammer of approximately 75 g mass, a spring loaded centre punch, or other similar appliance with a hardened point. The radius of curvature of the point should be approximately 0,2 mm.

The test specimen shall be laid with the impact point flat on a table without any mechanical constraint. In order to prevent scattering of the fragments, the flat specimen shall be held at the edges, e. g. by a small frame, adhesive tape etc., the curved specimen shall be covered on its convex surface with an adhesive film so that the fragments remain interlocked after breakage yet extension of the specimen is not hindered.

Dimensions in millimetres



**Key**

- 1 Impact point

**Figure 1 — Position of impact point**

For thermally toughened soda lime silicate safety glass manufactured by vertical toughening, the impact point shall not be on the tong mark edge.

**5.1.4 Assessment of fragmentation**

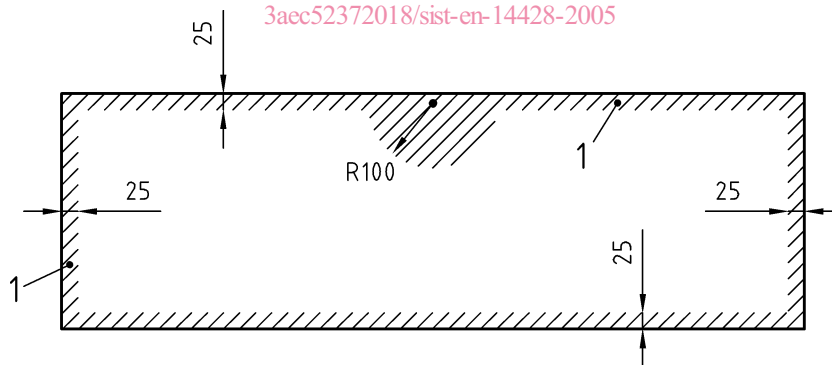
The particle count and measuring of the dimensions of the largest particle shall be made between 4 min to 5 min after fracture. An area of radius 100 mm, centred on the impact point, and a border of 25 mm, round the edge of the test specimen (see Figure 2), shall be excluded from the assessment.

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Dimensions in millimetres



**Key**

- 1 Excluded area

**Figure 2 — Area to be excluded from the particle count determination and largest particle measurement**

The particle count shall be made in the region of coarsest fracture (the aim being to obtain the minimum value). The particle count shall be made by placing a mask of  $(50 \pm 1)$  mm x  $(50 \pm 1)$  mm on the test piece (see Figures 3, 4 and 5). The number of crack-free particles within the mask shall be counted. A particle is 'crack-free', if it does not contain any cracks which run from one edge to another (see Figure 6).

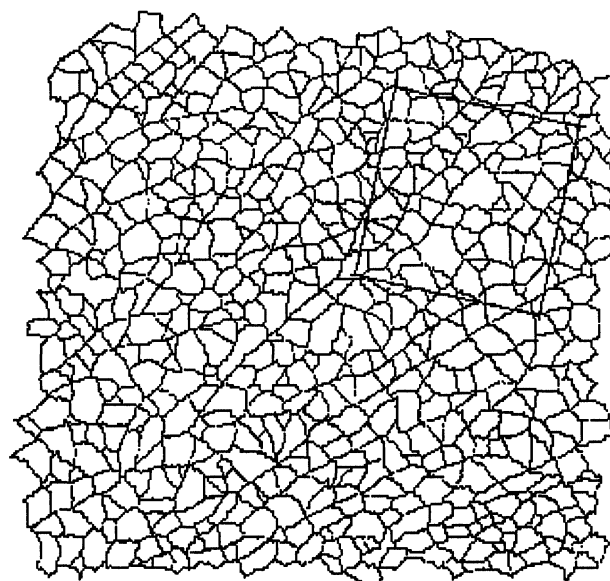
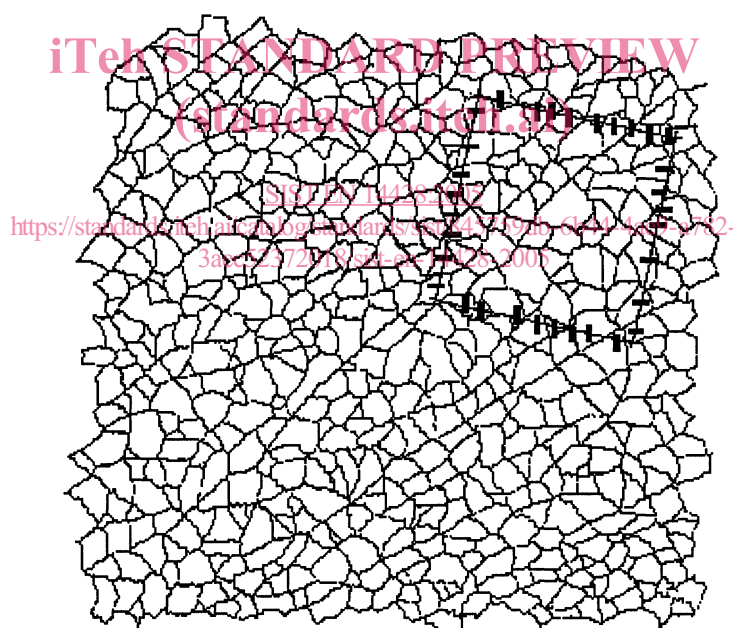
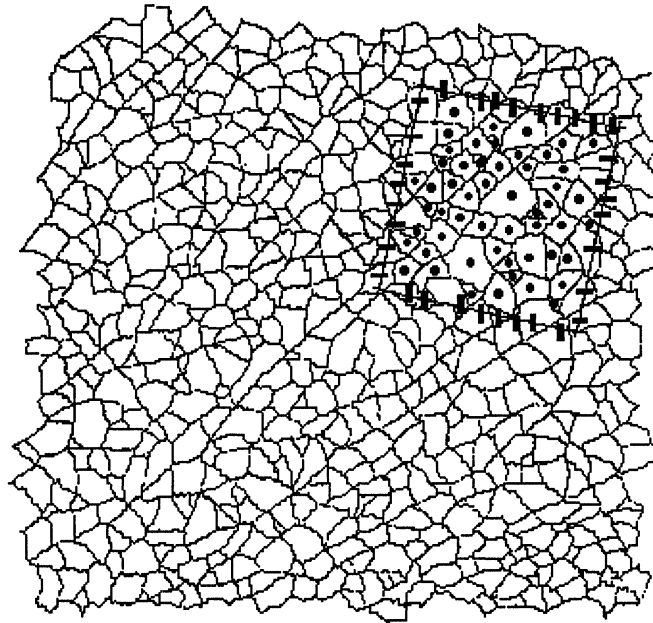


Figure 3 — Select the area of coarsest fracture, place the template on the test specimen and draw round the template



NOTE Number of perimeter particles =  $32/2 = 16$

Figure 4 — Mark and count the perimeter fragments as 1/2 particle each



NOTE      Number of central particles            = 53  
               Total number of particles = 16 + 53    = 69

Figure 5 — Mark and count the central fragments and add these to the perimeter count to obtain the particle count for the specimen

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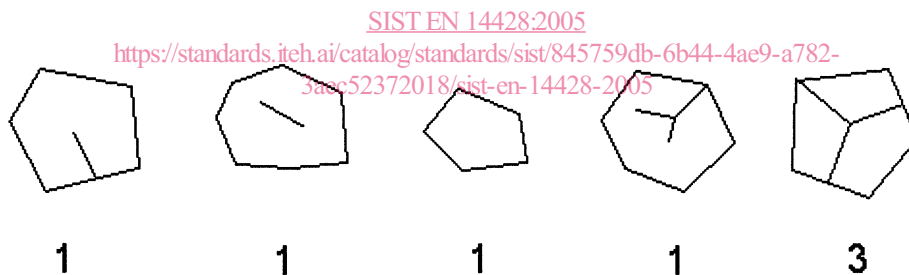


Figure 6 — Examples of crack-free particles and the assessment regarding their number

In the particle count, all particles wholly contained within the area of the mask shall be counted as one particle each and all the particles which are partially within the mask shall be counted as 1/2 particle each (see Figure 4).

## 5.2 Impact behaviour of plastic sheets

### 5.2.1 Apparatus

- a) test frame, constructed of securely welded or bolted sections, designed to present a flat face to the sub-frame. The test frame sections and bracing members shall be steel channel 102 mm x 51 mm, or equivalent material of equal or greater strength and rigidity. This frame shall be securely bolted to the floor and securely braced as shown in Figures 7, 8 and 9.
- b) sub-frame, constructed of wood or other suitable material designed to hold the test piece as shown in Figure 10 so that the test piece can make contact only with the strips of chloroprene or similar material. These strips shall be capable of being compressed by 10 % to 15 % of their original depth without a permanent set being introduced. The edge cover of the chloroprene on the test pieces shall be such that for the nominal 865 mm x 1 930 mm specimens the central area of (845 ± 3) mm x (1 910 ± 3) mm is unsupported.