



# SLOVENSKI STANDARD

## SIST EN 13830:2003

01-oktober-2003

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### Obešene fasade – Standard za proizvod

Curtain walling - Product standard

Vorhangfassaden - Produktnorm

Façades rideaux - Norme de produit

Ta slovenski standard je istoveten z: **EN 13830:2003**

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#### **ICS:**

91.060.10	Stene. Predelne stene. Fasade	Walls. Partitions. Facades
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**SIST EN 13830:2003**

**en,fr,de**

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ICS 91.060.10

English version

## Curtain walling - Product standard

Façades rideaux - Norme de produit

Vorhangfassaden - Produktnorm

This European Standard was approved by CEN on 24 July 2003.

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 Management Centre 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 Management Centre 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, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, 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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## Contents

Foreword.....	3
Introduction .....	4
1 Scope .....	4
2 Normative references .....	4
3 Terms and definitions .....	5
4 Requirements.....	6
5 Evaluation of conformity .....	8
6 Classification and designation of performances .....	11
7 Marking and labelling.....	11
Annex A (normative) Equipotentiality test .....	12
Annex B (informative) Maintenance.....	13
Annex C (informative) Site tests for watertightness .....	14
Annex ZA (informative) Clauses of this European standard addressing the provisions of the EU Construction Products Directive.....	15
Bibliography .....	22

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(standards.iteh.ai)

[SIST EN 13830:2003  
https://standards.iteh.ai/catalog/standards/sist/bbabd9be-1772-4b19-b1e9-df9e5542d207/sist-en-13830-2003](https://standards.iteh.ai/catalog/standards/sist/bbabd9be-1772-4b19-b1e9-df9e5542d207/sist-en-13830-2003)

## Foreword

This document EN 13830:2003 has been prepared by Technical Committee CEN/TC 33, "Doors, windows, shutters, building hardware and curtain walling", the secretariat of which is held by AFNOR.

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 March 2004, and conflicting national standards shall be withdrawn at the latest June 2005.

This document replaces no existing European standard.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

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

Annex A is normative. Annexes B and C are informative.

This document includes a Bibliography.

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, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

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## Introduction

This European Standard specifies the major technical characteristics of curtain walling and includes a systematic framework of performance requirements and test criteria to ensure conformity to the essential requirements of the Construction Products Directive and to provide appropriate principles in the technical specification of the product.

For the purposes of this standard, curtain walling is defined as an external vertical building enclosure produced by elements mainly of metal, timber or plastic.

Curtain walling embraces many different forms of construction, but generally it comprises one of the following: Stick construction, Unitised construction, Spandrel construction.

## 1 Scope

This European Standard specifies characteristics of curtain walling and provides technical information on the varying performance requirements which apply throughout Europe and the test criteria and sequence of testing to which the product is subjected, in order to demonstrate conformity. Reference is made to other European Standards related to the performance and testing of curtain walling and, where appropriate, attention is drawn to European Standards which relate to products incorporated into curtain walling.

This standard applies to curtain walling ranging from a vertical position to 15° from the vertical, onto the building face. It can include elements of sloping glazing contained within the curtain wall.

Curtain walling is not a product which can be completed in all respects within a manufacturing area, but is a series of components and/or prefabricated units which only become a finished product when assembled together on site.

This standard is applicable to the whole of the curtain walling, including the flashings, closures and copings.

## 2 Normative references

[SIST EN 13830:2003](https://standards.iteh.ai/catalog/standards/sist/bbabd9be-1772-4b19-b1e9-149e5542d207/sist-en-13830-2003)

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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 (including amendments).

### 2.1 Requirement Standards

EN 12152	<i>Curtain walling - Air permeability - Performance requirements and classification.</i>
EN 12154	<i>Curtain walling - Watertightness - Performance requirements and classification.</i>
EN 13116	<i>Curtain walling _ Resistance to wind load - Performance requirements.</i>
prEN 14019	<i>Curtain walling - Impact resistance - Performance requirements.</i>

### 2.2 Test and Calculation Standards

EN 1991-1-1	<i>Eurocode 1: Actions on structures – Part 1-1: General actions – Densities, self-weight and imposed loads for buildings.</i>
EN 12153	<i>Curtain walling - Air permeability - Test method.</i>

EN 12155	<i>Curtain walling - Watertightness – Laboratory test under static pressure.</i>
EN 12179	<i>Curtain walling _ Resistance to wind load - Test method.</i>
EN 12600	<i>Glass in building - Pendulum test - Impact test method and classification for flat glass.</i>
prEN 13119	<i>Curtain walling - Terminology.</i>
EN 13501-1	<i>Fire classification of construction products and building elements - Part 1: Classification using test data from reaction to fire tests.</i>
EN 13501-2	<i>Fire classification of construction products and building elements - Part 2: Classification using data from fire resistance tests, excluding ventilation services.</i>
prEN 13947	<i>Thermal performances of curtain walling - Calculation of thermal transmittance - Simplified method.</i>
EN ISO 140-3	<i>Acoustics – Measurement of sound insulation in buildings and of building elements – Part 3: Laboratory measurements of airborne sound insulation of building elements (ISO 140-3:1995).</i>
EN ISO 717-1	<i>Acoustics – Rating of sound insulation in buildings and of building elements – Part 1: Airborne sound insulation (ISO 717-1:1996).</i>

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### 3 Terms and definitions

For the purposes of this European Standard, the terms and definitions in prEN 13119 and the following apply.

#### 3.1

##### **curtain walling**

usually consists of vertical and horizontal structural members, connected together and anchored to the supporting structure of the building and infilled, to form a lightweight, space enclosing continuous skin, which provides, by itself or in conjunction with the building construction, all the normal functions of an external wall, but does not take on any of the load bearing characteristics of the building structure

#### 3.2

##### **stick construction**

light carrier framework of site assembled components supporting prefabricated opaque and/or translucent infill panels

#### 3.3

##### **unitised construction**

pre-assembled interlinking storey height or multi-storey height modules, complete with infill panels

#### 3.4

##### **spandrel construction**

pre-assembled interlinking part storey height modules, complete with infill panels

## EN 13830: 2003 (E)

### 3.5

#### curtain walling system

collection of components from which a curtain walling kit may be created for subsequent installation on a building. It can give rise to one or more different kits.

### 3.6

#### curtain walling kit

collection of components or pre-fabricated units which, when installed on a building, form a curtain wall

## 4 Requirements

### 4.1 Resistance to wind load

The curtain walling shall be sufficiently rigid to resist the declared wind loads for serviceability (5.2.3. c), both positive and negative, when tested in accordance with EN 12179. It shall transfer the declared wind loads to the building's structure, safely, via the fixings intended for that purpose. The declared wind load results from testing in accordance with EN 12179.

Under the declared wind loads the maximum frontal deflection of the curtain walling's framing members shall not exceed  $L/200$ , or 15 mm, whichever is the less, when measured between the points of support or anchorage to the building's structure, in compliance with EN 13116.

NOTE 1 The design wind loads likely to act upon the curtain walling should be calculated in accordance with technical specifications or other provisions valid in the place of use.

NOTE 2 The stiffness of the curtain walling should be determined by calculation. When calculating the rigidity of the curtain walling no account should be taken of the potential stiffening effect of the glass.

NOTE 3 The engineering stresses induced into framing components and structural brackets shall be no greater than those specified within the appropriate materials standard from which the components and brackets are made.

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### 4.2 Dead load (Self-weight)

The curtain walling shall sustain its self-weight plus any attachments incorporated into it by original design. It shall transfer the weight to the building structure, safely, via the fixings intended for that purpose.

Self-weights shall be determined in accordance with EN 1991-1-1.

The maximum deflection of any main horizontal framing from vertical loads shall not exceed  $L/500$  or 3 mm, whichever is the less.

### 4.3 Resistance against impact

Where specifically required tests shall be performed in accordance with EN 12600:2002, clause 5. The results shall be classified in accordance with prEN 14019. Where glass products are concerned they shall comply with EN 12600.

### 4.4 Air permeability

An air permeability test shall be carried out in accordance with EN 12153. The results shall be expressed in accordance with EN 12152.

### 4.5 Watertightness

A water-tightness test shall be carried out in accordance with EN 12155. The results shall be expressed in accordance with EN 12154.



#### 4.6 Airborne sound insulation

Where specifically required, sound insulation index shall be determined by test in accordance with EN ISO 140-3. The test results shall be determined in accordance with EN ISO 717-1.

#### 4.7 Thermal transmittance

Methods of assessment / calculation of thermal transmittance of curtain walling and appropriate methods of test are defined in prEN 13947.

#### 4.8 Fire resistance

Where specifically required the fire resistance shall be classified in accordance with prEN 13501-2.

#### 4.9 Reaction to fire

Where specifically required the reaction to fire shall be classified in accordance with EN 13501-1.

#### 4.10 Fire propagation

Where specifically required the curtain wall shall incorporate such fire and smoke stops as are necessary to prevent the transmission of fire or smoke through voids in the curtain wall construction at its abutment at all levels with structural floor slabs in accordance with 4.8.

#### 4.11 Durability

Durability of performance of any characteristics of curtain walling is not tested, but is related to the results of the conformance of the constituting materials and finishes to the state of the art, or, where available to European technical specifications specifying the material or finish.

NOTE The components, materials and finishes from which the curtain walling is fabricated should be maintained due to natural ageing.

The manufacturer shall issue recommendations on the maintenance requirements for the completed curtain walling. (refer to annex B informative).

#### 4.12 Water vapour permeability

Vapour control layers which conform to the appropriate European Standard shall take into account the specified hydro-thermal conditions of the building.

#### 4.13 Equipotentiality

Where specifically required the metal component parts of the curtain walling shall be mechanically connected together with the building structure to provide an equipotential bond to the earth circuit of the building. This is a requirement for all metal based curtain walling installed into buildings with a height greater than 25 m. The electrical resistance of the bond of the curtain walling shall not exceed 10  $\Omega$  when tested in accordance with annex A (normative).

#### 4.14 Seismic shock resistance

Where specifically required, seismic shock resistance shall be determined in accordance with technical specifications or other provisions valid in the place of use.

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## EN 13830: 2003 (E)

### 4.15 Thermal shock resistance

Where it is determined that a glass resistant to thermal shock is required, a suitable strengthened or toughened glass shall be chosen which conforms to the appropriate European Standard(s).

### 4.16 Building and thermal movement

The design of curtain walling shall accommodate thermal and specified building movements without inducing damage to the components or performance. The specifier shall specify the building movements which the curtain walling will be required to accommodate, including movements at joints within the structure.

### 4.17 Resistance to live horizontal loads

The curtain wall shall resist a horizontal live load at sill height as specified in EN 1991-1-1.

NOTE The height (sill height) at which the load is applied, will vary according to National Regulations.

## 5 Evaluation of conformity

### 5.1 General

The compliance of a curtain wall with the requirements of this standard and with the classes and/or declared values shall be demonstrated by:

- Initial Type Testing
- Factory production control by the manufacturer

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### 5.2 Testing and calculation

[SIST EN 13830:2003](https://standards.iteh.ai/catalog/standards/sist/bbabd9be-1772-4b19-b1e9-d9e5542d207/sist-en-13830-2003)

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#### 5.2.1 General

Initial and, if requested, further type testing and/or calculation shall be carried out in accordance with clause 4. The results shall be expressed as stated in clause 6. The decision related to the necessity for further type testing, e.g. in case of product changes, is the responsibility of the manufacturer.

Further tests and/or calculations, e.g. as part of the factory production control, may be carried out in accordance with clause 4 or any suitable part of the relevant test standards. The results may be expressed as stated in clause 6.

Providing the curtain wall's essential design characteristics are retained, further testing may not be necessary when minor modifications are instituted, e.g. design and joint principle is unchanged.

Retesting of components already tested in accordance with European Standard is not necessary.

#### 5.2.2 Initial Type Testing

Depending on the intended applications of the curtain wall, the characteristics in clause 4 shall be subject to initial type testing.

NOTE Initial type testing comprises testing, calculation and assessment.

#### 5.2.3 Sequence of testing

Weather resistance tests are interdependent on each other. The following groups of tests carried out in sequence shall be considered as a single weather test. All tests shall be carried out strictly in sequence, as follows:

- a) Air permeability, for - classification
- b) Watertightness, under static pressure, for - classification
- c) Resistance to wind load - serviceability
- d) Air permeability – repeat to confirm wind resistance classification
- e) Watertightness - repeat to confirm wind resistance classification
- f) Resistance to wind load, increased wind resistance test - safety

Where specifically required, an additional supplementary watertightness test under dynamic wind conditions can be carried out, in accordance with ENV 13050, on completion of test sequence a) to e).

No test in the sequence shall be carried out unless all previous tests have been passed to the acceptance criteria.

#### 5.2.4 Test specimen

The test specimen(s) shall be selected in such a way that it is representative for the product range (Curtain wall system). All of its component parts shall be installed into the test rig.

There is no obligation to retain the test specimen after completion of the test programme.

#### 5.2.5 Test report

A report shall be prepared on any initial and further testing and/or calculation according to this standard. It shall include full information on, but not limited to, the following:

- The product description
- The test specimen [SIST EN 13830:2003](https://standards.iteh.ai/catalog/standards/sist/bbabd9be-1772-4b19-b1e9-d9e5542d207/sist-en-13830-2003)
- type/s of construction
- profile references
- origin of materials type/s of materials
- date/s of manufacture (if known)
- dimensioned drawings of specimens
- The manufacturer or product supplier
- The test laboratory
- The test method and apparatus
- The test results, including declared values of classification.

Further requirements may be derived from individual test standards.

Evaluation reports shall be retained by the manufacturer and the test laboratory as long as the product is still under manufacture and available, otherwise for at least 5 years.