



**SLOVENSKI STANDARD**  
**SIST EN 13964:2014**

**01-april-2014**

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**Viseči stropi - Zahteve in preskusne metode**

Suspended ceilings - Requirements and test methods

Unterdecken - Anforderungen und Prüfverfahren

Plafonds suspendus - Exigences et méthodes d'essai

**Ta slovenski standard je istoveten z: EN 13964:2014**

[SIST EN 13964:2014](https://standards.iteh.ai/catalog/standards/sist/1cc3e6fd-27b3-453f-a96c-97a1e53d8757/sist-en-13964-2014)

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**ICS:**

91.060.30      Stropi. Tla. Stopnice      Ceilings. Floors. Stairs

**SIST EN 13964:2014**

**en,fr,de**

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EUROPEAN STANDARD

EN 13964

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2014

ICS 91.060.30

Supersedes EN 13964:2004

English Version

## Suspended ceilings - Requirements and test methods

Plafonds suspendus - Exigences et méthodes d'essai

Unterdecken - Anforderungen und Prüfverfahren

This European Standard was approved by CEN on 29 August 2013.

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COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

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**EN 13964:2014 (E)****Foreword**

This document (EN 13964:2014) has been prepared by Technical Committee CEN/TC 277 “Suspended ceilings”, the secretariat of which is held by NBN.

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of an identical text or by endorsement, at the latest by September 2014, and conflicting national standards shall be withdrawn at the latest by December 2015.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 13964:2004.

Changes introduced in this document compared with the previous version have been indicated in Annex M.

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.

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

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## Introduction

Diagram 1 shows the relationship between this European Standard prepared by CEN/TC 277 "Suspended ceilings" and other European Standards prepared by CEN/TC 241 "Gypsum products" and CEN/TC 112 "Wood-based panels".

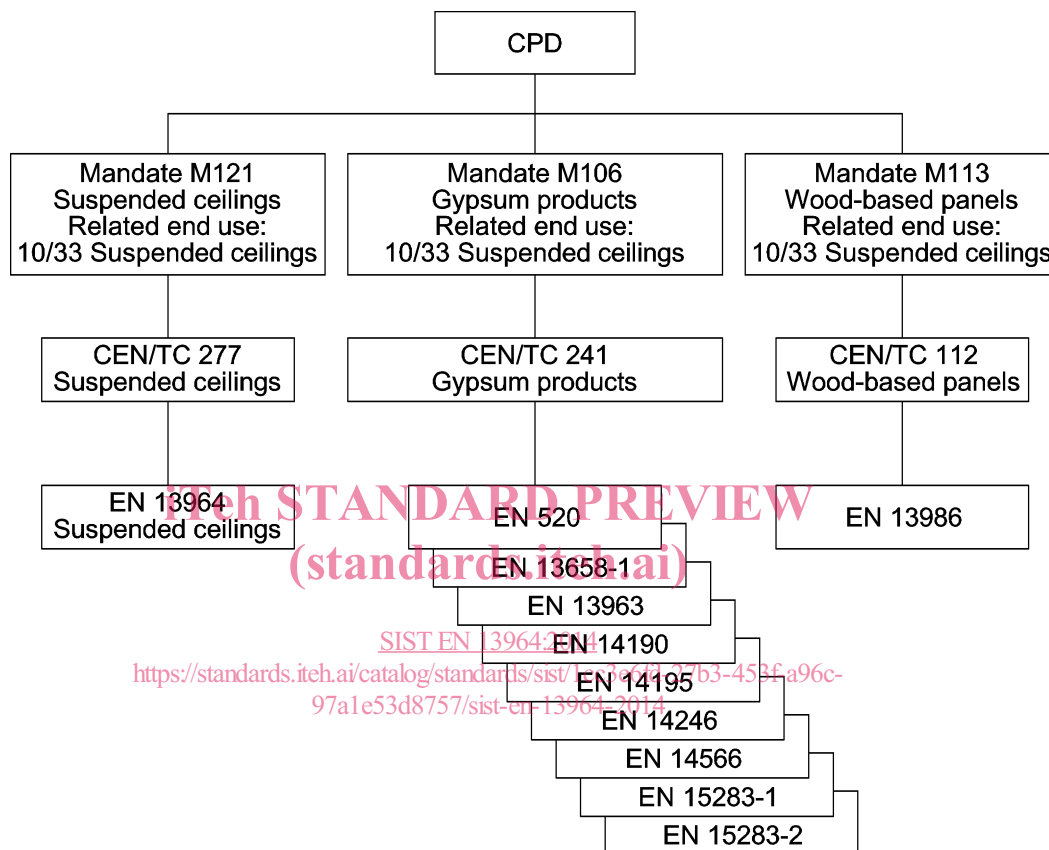


Diagram 1

**EN 13964:2014 (E)****1 Scope**

This European Standard covers membranes, individual substructure components, substructure kits and suspended ceiling kits intended to be placed on the market. It covers suspended ceilings sold as a complete kit, substructures placed on the market as kits, individual components (products) of such substructures, and membrane components. It includes test methods and methods of assessment, as well as provisions for the evaluation of conformity and for the marking of the products to the requirements of this European Standard.

In the absence of any other European Standard, this European Standard specifies dimensions, tolerances and, where relevant, performance requirements, for commonly available ceiling substructures and membrane components.

This European Standard covers the following characteristics:

- reaction to fire;
- fire resistance (suspended ceiling kits only);
- release and/or content of dangerous substances:
  - release of asbestos (content) (suspended ceiling kits and membrane components only);
  - release of formaldehyde (suspended ceiling kits and membrane components only);
  - other dangerous substances;
- shatter properties (safe breakage)/impact resistance (for suspended ceiling kits and membrane components of brittle materials in suspended ceiling kits only);
- flexural tensile strength;
- load bearing capacity, tolerances and dimensions;
- electrical safety (as adequacy of the product to avoid electrocution from installations that may be part of the assembled ceiling, using electricity, such as ventilation devices and lighting);
- direct airborne sound insulation (suspended ceiling kits only);
- sound absorption (suspended ceiling kits and membrane components only);
- thermal conductivity (suspended ceiling kits and membrane components only);
- susceptibility to the growth of harmful micro-organisms;
- resistance to fixings (relevant for components that are mechanically fixed);
- durability of flexural tensile strength and load bearing capacity against moisture.

This European Standard also covers the following requirements:

- colour and light reflectance;
- installation.

This European Standard does not cover the following:

- ceiling substructures and membrane component covered by other harmonized European Standards, for insitu formed ceilings, covered by other European technical specifications, for which it is the installer, not the component manufacturer, who takes responsibility for ensuring that the complete installed suspended ceiling meets any regulatory requirements to which it is subject;
  - stretched ceilings covered by EN 14716;
  - ceilings in mobile buildings, caravans and other forms of transportation;
  - characteristics needed for special applications, for which additional characteristics other than covered by this European Standard would need to be complied with;
  - suspended ceilings intended for uses in ceilings subject to water penetration requirements;
  - ceilings used externally where requirements other than covered by this standard would apply (tunnels, canopies, petrol stations, arcades, open sports facilities, car parks, etc.);
  - heavy duty suspended ceilings or their supporting construction (e.g. ceilings that can be walked on);
  - ceilings made from fire protective boards;
  - the performance and health and safety requirements of light fittings and other features that, optionally, are included in the suspended ceiling;
  - panels from materials covered in other harmonized European standards already prepared by CEN/TC 241 and CEN/TC 112 (see NOTE 1);
- NOTE 1 These standards have been developed by CEN/TC 241 under the Mandate M/106 "Gypsum products" and by CEN/TC 112 under the Mandate M/113 "Wood-based panels".
- anchors covered by other European technical specifications.

This European Standard also gives certain specifications for the installed suspended ceiling system (see NOTE 2).

NOTE 2 There are two reasons for this:

- the individual components and kits may have to meet certain requirements in order for the installed system to be able to meet the requirement when the system is installed, and
- it is appropriate, for ease of reference, to give both component/kit requirement and installed system requirement in the same document, given the relationship between them.

This European Standard provides information for the various parties responsible for designing, manufacturing and specifying/selecting suspended ceilings used for interior applications in general building and civil engineering structures.

## 2 Normative references

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

EN 120, *Wood based panels — Determination of formaldehyde content — Extraction method called the perforator method*

**EN 13964:2014 (E)**

EN 312, *Particleboards — Specifications*

EN 335, *Durability of wood and wood-based products — Use classes: definitions, application to solid wood and wood-based products*

EN 350 (all parts), *Durability of wood and wood-based products — Natural durability of solid wood*

EN 351 (all parts), *Durability of wood and wood-based products — Preservative-treated solid wood*

EN 460, *Durability of wood and wood-based products — Natural durability of solid wood — Guide to the durability requirements for wood to be used in hazard classes*

EN 573-3, *Aluminium and aluminium alloys — Chemical composition and form of wrought products — Part 3: Chemical composition and form of products*

EN 599 (all parts), *Durability of wood and wood-based products — Performance of preventive wood preservatives as determined by biological tests*

EN 622-1, *Fibreboards — Specifications — Part 1: General requirements*

EN 717-1, *Wood-based panels — Determination of formaldehyde release — Part 1: Formaldehyde emission by the chamber method*

EN 717-2, *Wood-based panels — Determination of formaldehyde release — Part 2: Formaldehyde release by the gas analysis method*

EN 1396:2007, *Aluminium and aluminium alloys — Coil coated sheet and strip for general applications — Specifications*

EN 1912, *Structural Timber — Strength classes — Assignment of visual grades and species*

EN 1991-1-4<sup>1)</sup>, *Eurocode 1: Actions on structures — Part 1-4: General actions — Wind actions*

EN 1995-1-1<sup>2)</sup>, *Eurocode 5: Design of timber structures — Part 1-1: General — Common rules and rules for buildings*

EN 1998-1<sup>3)</sup>, *Eurocode 8: Design of structures for earthquake resistance — Part 1: General rules, seismic actions and rules for buildings*

EN 10143, *Continuously hot-dip coated steel sheet and strip — Tolerances on dimensions and shape*

EN 10152, *Electrolytically zinc coated cold rolled steel flat products for cold forming — Technical delivery conditions*

EN 10169, *Continuously organic coated (coil-coated) steel flat products — Technical delivery conditions*

EN 10346, *Continuously hot-dip coated steel flat products — Technical delivery conditions*

EN 12600, *Glass in building — Pendulum test — Impact test method and classification for flat glass*

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1) Superseded ENV 1991-2-4 in 2005.

2) Superseded ENV 1995-1-1 in 2004.

3) Superseded ENV 1998-1-3 in 2004.

- EN 12664, *Thermal performance of building materials and products — Determination of thermal resistance by means of guarded hot plate and heat flow meter methods — Dry and moist products of medium and low thermal resistance*
- EN 12667, *Thermal performance of building materials and products — Determination of thermal resistance by means of guarded hot plate and heat flow meter methods — Products of high and medium thermal resistance*
- EN 13162, *Thermal insulation products for buildings — Factory made mineral wool (MW) products — Specification*
- EN 13171, *Thermal insulation products for buildings — Factory made wood fibre (WF) products — Specification*
- EN 13245-1:2010, *Plastics — Unplasticized poly(vinyl chloride) (PVC-U) profiles for building applications — Part 1: Designation of PVC-U profiles*
- EN 13245-2:2008, *Plastics — Unplasticized poly(vinyl chloride) (PVC-U) profiles for building applications — Part 2: PVC-U profiles and PVC-UE profiles for internal and external wall and ceiling finishes*
- EN 13501-1, *Fire classification of construction products and building elements — Part 1: Classification using test data from reaction to fire tests*
- EN 13501-2, *Fire classification of construction products and building elements — Part 2: Classification using data from fire resistance tests, excluding ventilation services*
- EN 13823, *Reaction to fire tests for building products — Building products excluding floorings exposed to the thermal attack by a single burning item*
- EN ISO 354, *Acoustics — Measurement of sound absorption in a reverberation room (ISO 354)*
- EN ISO 717-1, *Acoustics — Rating of sound insulation in buildings and of building elements — Part 1: Airborne sound insulation (ISO 717-1)*
- EN ISO 2813, *Paints and varnishes — Determination of specular gloss of non-metallic paint films at 20°, 60° and 85° (ISO 2813)*
- EN ISO 6946, *Building components and building elements — Thermal resistance and thermal transmittance — Calculation method (ISO 6946)*
- EN ISO 9001:2008, *Quality management systems — Requirements (ISO 9001:2008)*
- EN ISO 10140 (all parts), *Acoustics — Laboratory measurement of sound insulation of building elements (ISO 10140)*
- EN ISO 10211, *Thermal bridges in building construction — Heat flows and surface temperatures — Detailed calculations (ISO 10211)*
- EN ISO 10456, *Building materials and products — Hygrothermal properties — Tabulated design values and procedures for determining declared and design thermal values (ISO 10456)*
- EN ISO 10848-2, *Acoustics — Laboratory measurement of the flanking transmission of airborne and impact sound between adjoining rooms — Part 2: Application to light elements when the junction has a small influence (ISO 10848-2)*
- EN ISO 11654, *Acoustics — Sound absorbers for use in buildings — Rating of sound absorption (ISO 11654)*
- EN ISO 11925-2, *Reaction to fire tests — Ignitability of building products subjected to direct impingement of flame — Part 2: Single-flame source test (ISO 11925-2)*

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EN ISO 12944-3, *Paints and varnishes — Corrosion protection of steel structures by protective paint systems — Part 3: Design considerations (ISO 12944-3)*

ISO 1006, *Building construction — Modular co-ordination — Basic module*

ISO 7724-2, *Paints and varnishes — Colorimetry — Part 2: Colour measurement*

ISO 7724-3, *Paints and varnishes — Colorimetry — Part 3: Calculation of colour differences*

**3 Terms and definitions**

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

**3.1 General****3.1.1 ceiling**

construction covering the underside of a floor or roof, providing the overhead surface

**3.1.2 suspended ceiling**

ceiling hung by a suspension from or by a directly fixed substructure or perimeter trim to the load bearing structure (floor, roof, beam and walls) at a distance from the floor or roof above

**3.1.3 suspended ceiling for interior application**

application not exposed to outside weather conditions (wind, rain, humidity, pollution, etc.)

**3.1.4 suspended ceiling kit**

set of components that need to be put together to be installed permanently in the works

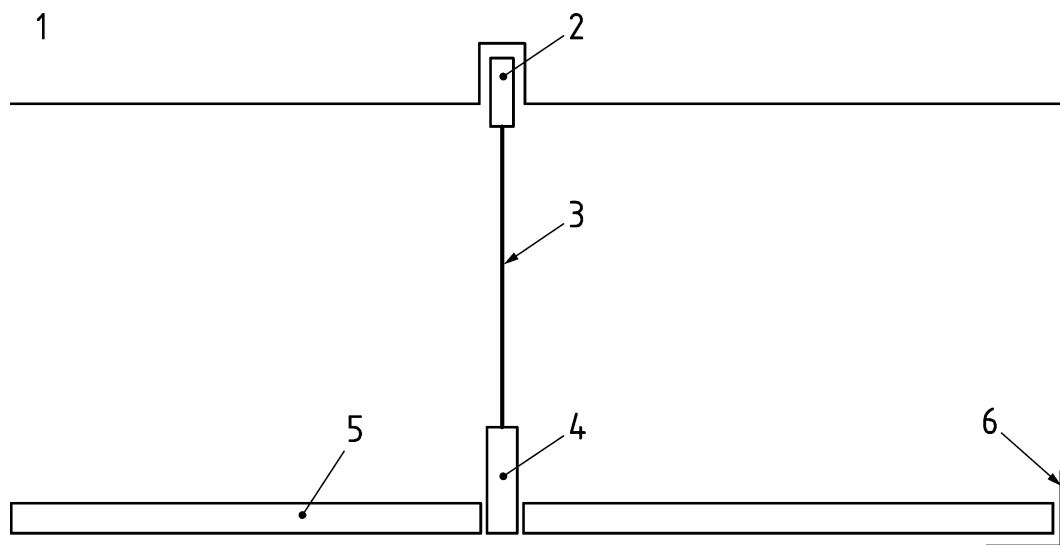
Note 1 to entry: Although the components of the kit may be produced by more than one manufacturer, it has to be placed on the market in a way that enables it to be purchased in one transaction.

Note 2 to entry: The substructure may be a complete kit or made up of individual components.

Note 3 to entry: Although it may contain all necessary components, the kit does not have to contain all the components needed to form an assembled suspended ceiling system.

**3.1.5 assembled suspended ceiling system**

suspended ceiling system components that are adapted to each other, and which may originate from different sources, which have been installed together in the works

**Key**

1	load bearing structure	4	supporting member
2	top fixing	5	ceiling membrane component
3	suspension	6	perimeter trim

Figure 1 — Principal suspended ceiling components (not all components are necessarily used in an installation)

## 3.2 Suspended ceiling and substructure components (see Figure 1)

### 3.2.1 General

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#### 3.2.1.1

##### substructure

suspending frame that supports the ceiling membrane

Note 1 to entry: May be a complete kit or made up of individual components. There are three types of substructure: exposed, concealed and semi-concealed substructures.

#### 3.2.1.2

##### exposed substructure

substructure whose underside is exposed

#### 3.2.1.3

##### concealed substructure

substructure whose underside is not exposed

#### 3.2.1.4

##### semi-concealed substructure

substructure where the underside is exposed in one direction and the intermediate profiles, which are at an angle to the support profiles, are concealed

#### 3.2.1.5

##### suspension component

part of the substructure, connecting it to the load bearing structure

Note 1 to entry: May be part of a kit or part of an assembled ceiling system.