

SVENSK STANDARD

SS-EN 13964:2014

Fastställt/Approved: 2014-03-16

Publicerad/Published: 2014-03-17

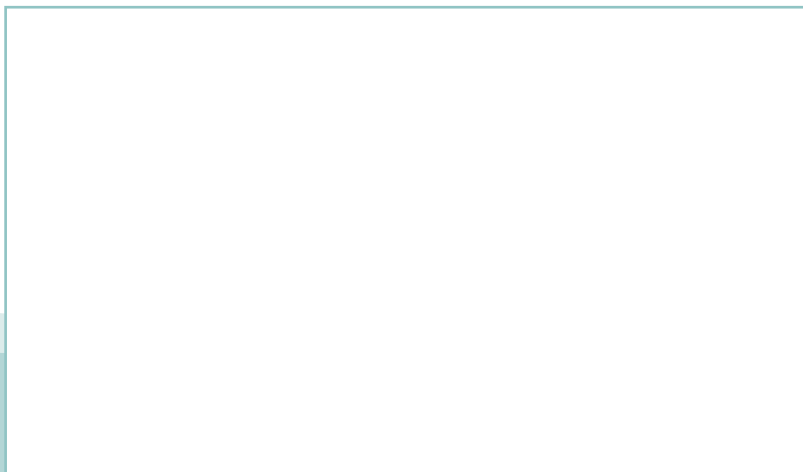
Utgåva/Edition: 2

Språk/Language: engelska/English

ICS: 91.060.30; 92.300.92; 94.100

Undertak – Krav och provning

Suspended ceilings – Requirements and test methods



Standarder får världen att fungera

SIS (Swedish Standards Institute) är en fristående ideell förening med medlemmar från både privat och offentlig sektor. Vi är en del av det europeiska och globala nätverk som utarbetar internationella standarder. Standarder är dokumenterad kunskap utvecklad av framstående aktörer inom industri, näringsliv och samhälle och befrämjar handel över gränser, bidrar till att processer och produkter blir säkrare samt effektiviserar din verksamhet.

Delta och påverka

Som medlem i SIS har du möjlighet att påverka framtida standarder inom ditt område på nationell, europeisk och global nivå. Du får samtidigt tillgång till tidig information om utvecklingen inom din bransch.

Ta del av det färdiga arbetet

Vi erbjuder våra kunder allt som rör standarder och deras tillämpning. Hos oss kan du köpa alla publikationer du behöver – allt från enskilda standarder, tekniska rapporter och standardpaket till handböcker och onlinetjänster. Genom vår webbtjänst e-nav får du tillgång till ett lättnavigerat bibliotek där alla standarder som är aktuella för ditt företag finns tillgängliga. Standarder och handböcker är källor till kunskap. Vi säljer dem.

Utveckla din kompetens och lyckas bättre i ditt arbete

Hos SIS kan du gå öppna eller företagsinterna utbildningar kring innehåll och tillämpning av standarder. Genom vår närhet till den internationella utvecklingen och ISO får du rätt kunskap i rätt tid, direkt från källan. Med vår kunskap om standarders möjligheter hjälper vi våra kunder att skapa verklig nytta och lönsamhet i sina verksamheter.

Vill du veta mer om SIS eller hur standarder kan effektivisera din verksamhet är du välkommen in på www.sis.se eller ta kontakt med oss på tel 08-555 523 00.



Standards make the world go round

SIS (Swedish Standards Institute) is an independent non-profit organisation with members from both the private and public sectors. We are part of the European and global network that draws up international standards. Standards consist of documented knowledge developed by prominent actors within the industry, business world and society. They promote cross-border trade, they help to make processes and products safer and they streamline your organisation.

Take part and have influence

As a member of SIS you will have the possibility to participate in standardization activities on national, European and global level. The membership in SIS will give you the opportunity to influence future standards and gain access to early stage information about developments within your field.

Get to know the finished work

We offer our customers everything in connection with standards and their application. You can purchase all the publications you need from us - everything from individual standards, technical reports and standard packages through to manuals and online services. Our web service e-nav gives you access to an easy-to-navigate library where all standards that are relevant to your company are available. Standards and manuals are sources of knowledge. We sell them.

Increase understanding and improve perception

With SIS you can undergo either shared or in-house training in the content and application of standards. Thanks to our proximity to international development and ISO you receive the right knowledge at the right time, direct from the source. With our knowledge about the potential of standards, we assist our customers in creating tangible benefit and profitability in their organisations.

If you want to know more about SIS, or how standards can streamline your organisation, please visit www.sis.se or contact us on phone +46 (0)8-555 523 00



Europastandarden EN 13964:2014 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av EN 13964:2014.

Denna standard ersätter SS-EN 13964:2004, utgåva 1 och SS-EN 13964:2004/A1:2006, utgåva 1.

The European Standard EN 13964:2014 has the status of a Swedish Standard. This document contains the official version of EN 13964:2014.

This standard supersedes the Swedish Standard SS-EN 13964:2004, edition 1 and SS-EN 13964:2004/A1:2006, edition 1.

© Copyright/Upphovsrätten till denna produkt tillhör SIS, Swedish Standards Institute, Stockholm, Sverige. Användningen av denna produkt regleras av slutanvändarlicensen som återfinns i denna produkt, se standardens sista sidor.

© Copyright SIS, Swedish Standards Institute, Stockholm, Sweden. All rights reserved. The use of this product is governed by the end-user licence for this product. You will find the licence in the end of this document.

Upplysningar om sakinnehållet i standarden lämnas av SIS, Swedish Standards Institute, telefon 08-555 520 00. Standarder kan beställas hos SIS Förlag AB som även lämnar allmänna upplysningar om svensk och utländsk standard.

Information about the content of the standard is available from the Swedish Standards Institute (SIS), telephone +46 8 555 520 00. Standards may be ordered from SIS Förlag AB, who can also provide general information about Swedish and foreign standards.

Denna standard är framtagen av kommittén för Undertakssystem, SIS/TK 194.

Har du synpunkter på innehållet i den här standarden, vill du delta i ett kommande revideringsarbete eller vara med och ta fram andra standarder inom området? Gå in på www.sis.se - där hittar du mer information.

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.

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 CEN-CENELEC 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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 United Kingdom.



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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword.....	6
Introduction	7
1 Scope	8
2 Normative references	9
3 Terms and definitions	12
3.1 General.....	12
3.2 Suspended ceiling and substructure components (see Figure 1)	13
3.2.1 General.....	13
3.2.2 Fixing, connections and supports	14
3.3 Ceiling membranes and ceiling membrane components.....	14
3.4 Typical suspended ceiling systems using volume or thin gauge materials	16
4 Requirements	20
4.1 Dimensions and tolerances – General	20
4.2 Modular dimensions	20
4.3 Mechanical resistance and stability of load bearing components	29
4.3.1 General.....	29
4.3.2 Substructure.....	29
4.3.3 Suspension components and fasteners	31
4.3.4 Resistance to fixings	31
4.3.5 Wind load resistance	31
4.3.6 Impact resistance.....	31
4.3.7 Seismic resistance	31
4.4 Safety in case of fire.....	32
4.4.1 Fire resistance.....	32
4.4.2 Reaction to fire.....	32
4.5 Hygiene, health and environment – Toxic gases and dangerous substances	33
4.5.1 Release of Asbestos (content)	33
4.5.2 Release and/or content of formaldehyde	34
4.5.3 Other dangerous substances	34
4.5.4 Susceptibility to the growth of harmful micro-organisms	34
4.6 Safety in use.....	34
4.6.1 Shatter properties	34
4.6.2 Flexural tensile strength	35
4.6.3 Mechanical strength, safety against failure – baffles	35
4.6.4 Electrical safety.....	35
4.7 Acoustics	35
4.7.1 Test specimen preparation	35
4.7.2 Sound absorption	35
4.7.3 Sound insulation.....	36
4.7.4 Direct field of application	36
4.8 Durability	36
4.8.1 General.....	36
4.8.2 Dampness	36
4.8.3 Service life requirements	37
4.8.4 Classification of ceiling exposure conditions	37
4.8.5 Corrosion protection	37
4.8.6 Contact corrosion protection	38
4.8.7 Durability of non-cellular PVC profiles	38
4.8.8 Durability of wooden products.....	39
4.9 Colour, light reflectance and gloss factor for suspended ceiling components.....	39
4.9.1 General.....	39

4.9.2	Measurement method of colour composition	39
4.9.3	Measurement method for light reflectance	39
4.9.4	Measurement and value of gloss factor	39
4.10	Thermal insulation	39
5	Loading capacity of substructures components – Test methods	39
5.1	General	39
5.2	Bending test of metal substructure profiles	40
5.2.1	General	40
5.2.2	Procedure for testing	40
5.2.3	Assessment of results	41
5.2.4	Test report	42
5.3	Testing of metal suspension and connecting components	43
5.3.1	General	43
5.3.2	Static test	47
5.3.3	Functional test	48
5.3.4	Assessment of test results (static test)	48
5.3.5	Test report	48
5.4	Acceptance factor k_g	49
6	Evaluation of conformity	50
6.1	General	50
6.2	Initial type testing	50
6.3	Factory production control (FPC)	51
6.3.1	General	51
6.3.2	General requirements	51
6.3.3	Product specific requirements	51
6.3.4	Initial inspection of factory and of FPC	55
6.3.5	Continuous surveillance of FPC	56
6.3.6	Procedure for modifications	56
7	Marking, labelling and packaging	56
7.1	Marking and labelling	56
7.2	Packaging	56
8	Technical documentation	56
Annex A	(informative) Guidance for installation	57
A.1	Introduction	57
A.2	Manufacturer’s instructions	57
A.3	Site conditions	58
A.4	Supply and storage of materials	58
A.5	Measurement and maximum deviations	58
A.5.1	Level mark	58
A.5.2	Flatness	58
A.5.3	Squareness	58
A.5.4	Alignment of linear components	58
A.5.5	Cut to size membrane components	58
A.5.6	Fire resistant ceilings	59
A.5.7	Top fixing and perimeter trim fixing	59
A.6	Mechanical resistance and stability of load bearing components	59
Annex B	(informative) Selection of top fixing and perimeter trim fixing	61
Annex C	(informative) Wind load resistance	63
Annex D	(normative) Impact resistance	64
D.1	Scope	64
D.2	Definitions	64
D.3	Test apparatus	64
D.3.1	Balls	64
D.3.2	Ball gun	64
D.4	Mounting of structural elements	65

D.5	Test procedure	65
D.5.1	General.....	65
D.5.2	Calibration of the ball gun apparatus	66
D.5.3	Testing of ceiling elements.....	66
D.6	Evaluation.....	66
D.7	Test report	66
Annex E (normative) Formaldehyde classes and associated test methods.....		68
Annex F (normative) Membrane components – Flexural tensile strength test		70
F.1	General.....	70
F.2	Test equipment	70
F.2.1	General.....	70
F.2.2	Test frame.....	70
F.2.3	Loading equipment.....	71
F.2.4	Test room/chamber.....	72
F.2.5	Balance	72
F.3	Test conditions	72
F.3.1	Environmental conditions.....	72
F.3.2	Restraints/boundary conditions.....	72
F.4	Test specimen	73
F.4.1	Size and characteristics.....	73
F.4.2	Number of specimens	73
F.4.3	Conditioning.....	73
F.5	Test procedure	73
F.5.1	Types of loading of the specimen.....	73
F.5.2	General.....	73
F.5.3	Test without loading (minimum normative requirement)	73
F.5.4	Test with additional load.....	74
F.6	Test report	75
F.7	Extended field of application.....	76
Annex G (normative) Suspension component – Functional test.....		77
Annex H (normative) Perimeter trim component- Functional test, determination of load bearing capacity.....		80
H.1	General.....	80
H.2	Basic test for perimeter trims.....	80
H.2.1	Test installation.....	80
H.2.2	Fixing the perimeter trims.....	81
H.2.3	Test load	81
H.2.4	Number of tests.....	82
H.2.5	Application of the load	82
H.2.6	Perimeter trim thickness.....	83
H.2.7	Alternative testing.....	83
H.2.8	Test report	83
Annex I (normative) Reaction to fire test - Mounting and fixing		85
I.1	Dimensions of the test rig in accordance with EN 13823.....	85
I.2	Ceiling membrane components	85
I.2.1	Mounting and fixing in accordance with EN 13823.....	85
I.2.2	End use application rules	92
I.3	Substructure components	92
I.3.1	General.....	92
I.3.2	Mounting and fixing in accordance with EN 13823.....	93
I.3.3	End use application rules	94
I.4	Reaction to fire requirements for small products and components	95
I.4.1	Principles.....	95
I.4.2	Small kit components.....	95
I.4.3	Small constituents	95
I.4.4	Linear joint kit components.....	96
I.4.5	Embedded constituents	96

I.4.6	Provisions accompanying performance declarations.....	96
Annex J	(normative) Mechanical strength, safety against failure – baffles.....	97
J.1	General	97
J.2	Test equipment	97
J.2.1	Loading brackets	97
J.2.2	Conditioning chamber	97
J.2.3	Loading device	97
J.3	Test specimen.....	97
J.4	Number of specimen	97
J.5	Conditioning	97
J.6	Test set up (see Figure J.1)	98
J.7	Test procedure.....	99
J.8	Performance criteria, assessment, evaluation and expression of the test result	100
J.9	Test report.....	100
Annex K	(informative) Reaction to fire performance - Classified without the need for further testing (CWFT)	101
Annex L	(informative) Guidance on the choice of attestation of conformity system	102
Annex M	(informative) Significant technical changes between this European Standard and the previous edition	105
Annex ZA	(informative) Clauses of this European Standard addressing essential requirements or other provisions of EU Directives.....	106
ZA.1	Scope and relevant clauses	106
ZA.2	Procedure for attestation of conformity.....	111
ZA.2.1	Systems of attestation of conformity	111
ZA.2.2	EC certificate of conformity and EC declaration of conformity.....	117
ZA.3	CE marking.....	119
ZA.3.1	General	119
ZA.3.2	Examples of CE marking for suspended ceilings products according to EN 13964.....	119
ZA.3.3	Examples of CE marking for products according to EN 13964 and at the same time according also to (an)other harmonized technical specification(s).....	126
Bibliography	128

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.

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".

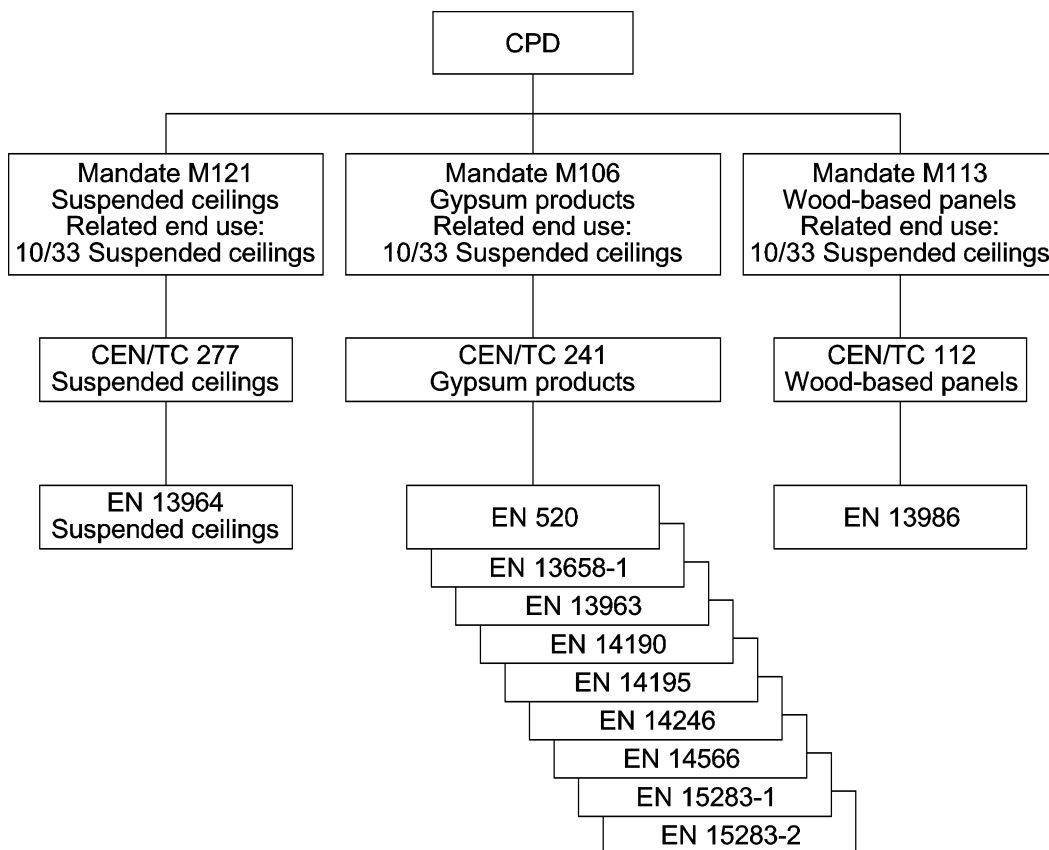


Diagram 1

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 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 1991-1-4¹⁾, *Eurocode 1: Actions on structures — Part 1-4: General actions — Wind actions*

EN 1995-1-1²⁾, *Eurocode 5: Design of timber structures — Part 1-1: General — Common rules and rules for buildings*

EN 1998-1³⁾, *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*

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)*

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

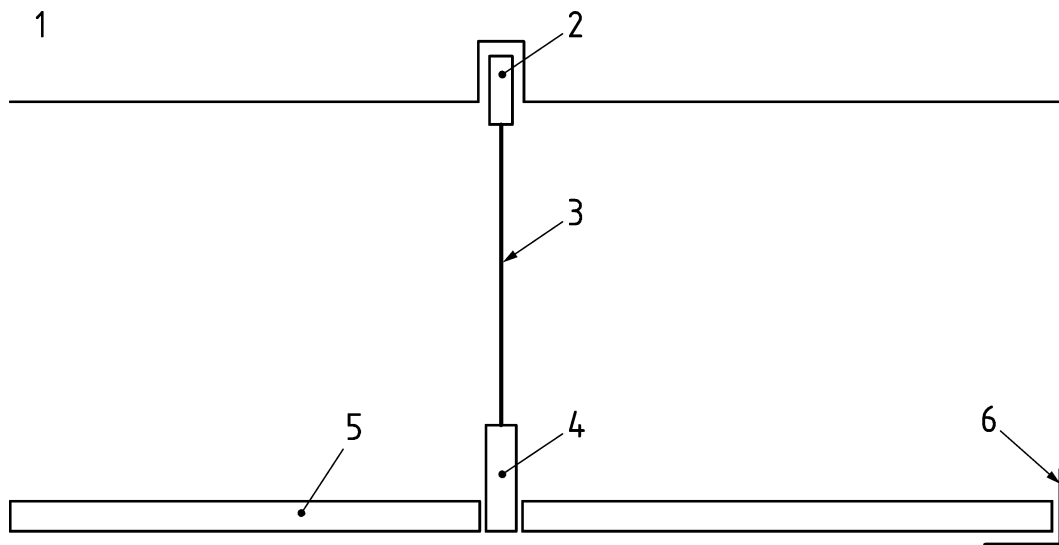
Note 1 to entry: Although the components of the kit may be produced by more than one manufacturer, it has to be placed on the market in a way that enables it to be purchased in one transaction.

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

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.

3.2.2 Fixing, connections and supports

3.2.2.1

top fixing

fixing which connects the suspension components or the substructure directly to the load bearing structure

3.2.2.2

perimeter trim fixing, including corridor fixing

fixing which connects the perimeter trim directly to the load bearing structure

3.2.2.3

sub-structural connection

fixing component used to connect the anchoring component, suspension component, substructure and ceiling membrane component

3.2.2.4

supporting member

suspended component of the substructure with direct connection to the suspension component or directly fixed component

3.2.2.5

cross/secondary supporting component

component of the substructure which spans between two supporting components and with a direct supporting function for the ceiling membrane component

3.2.2.6

perimeter trim

section fixed at the perimeter of the ceiling to support the components of either the substructure or the ceiling membrane, or both, or fixed to and carried by the ceiling membrane itself

3.2.2.7

access component

component of the substructure or of the substructure and membrane component with a special access facility to enable a particular part of the ceiling membrane to be removed

3.2.2.8

splice

mechanical connection between substructure sections

3.3 Ceiling membranes and ceiling membrane components

3.3.1

ceiling membrane

exposed surface of the ceiling facing the room, excluding any exposed substructure

3.3.2

ceiling membrane component

product forming part of the ceiling membrane (e.g. a tile or plank); the ceiling membrane component can have any form (e.g. solid, open, corrugated, mesh)

3.3.3

volume membrane component

component of which the edges are shaped within the full material thickness (see Figure 3)

3.3.4

thin gauge membrane component

component of which the edges are achieved by forming the basic sheet material (see Figure 4) and where the thickness permits permanent forming

3.3.5

tile

square or rectangular component with the length (l)/width (w) ratio within the range $1 \leq l/w \leq 2$ (see Figure 2)

3.3.6

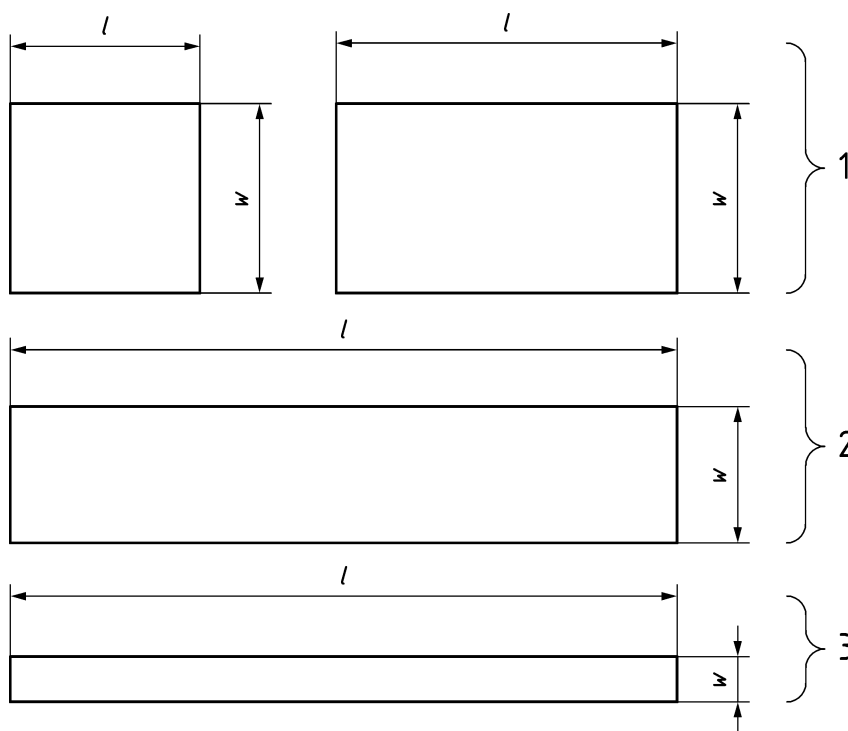
plank

rectangular component with the length (l)/width (w) ratio within the range $2 < l/w \leq n$ (see Figure 2)

3.3.7

linear component

component of relatively narrow width (w) and of which the length (l) is generally made to measure (see Figure 2)



Key

- 1 tile
- 2 plank
- 3 linear component

Figure 2 — Ceiling membrane components