

CPD SG01	<p style="text-align: center;">Co-ordination of Notified Bodies for the Construction Products (NB-CPD) on Council Directive 89/106/EEC</p>	<p style="text-align: center;">NB-CPD/SG01/04/013 rev1 Issued: 23 May 2005 Approved - Guidance</p>
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GNB-CPD position paper from SG01 - EN 13964:2004

Suspended ceilings - requirements and test methods: overview of standard clauses that require further detailing and proposed solutions

This document presents an overview of clauses from EN 13964:2004 that have been identified as being unclear. Proposed solutions are presented to ensure equivalent approaches by SG01 Notified Bodies.

1) Scope

The standard potentially covers light fittings in the case of suspended ceiling kits. The standard foresees no provisions for such features. However, in this case the LVD would apply in addition to the CPD.

SG01 Guidance: When approached, NBs should inform manufacturers of this potential additional CE Marking requirement, i.e. all kit components that fall under the Low Voltage Directive must be CE Marked.

2) Scope, clause 3.3.2

When referring to 'membranes', the standard refers to 'e.g. tiles or planks'. This standard can be used to CE Mark these products individually, with the intended use 'Internally, to produce an installed suspended ceiling'. Other harmonised standards also cover products with potentially the same intended use. This situation could lead to manufacturers choosing the most 'suitable' means to CE Mark their products.

SG01 Guidance: None. The standard shall be used as foreseen. If 'membrane' manufacturers want to CE Mark their product as a 'membrane intended to be used internally to produce an installed suspended ceiling' they have to use this standard. Obviously, if the ceiling supplier buys membranes for which some characteristics (e.g. reaction to fire) have already been declared, then this testing does not need to be repeated (see guidance on the use of clause 4.4.2, 4.10 and ZA.3.2).

3) Scope

EOTA has developed and published ETA-Guideline 018-4, for fire protective boards and board kits, possibly covering fire protective suspended ceiling kits. This standard might create an alternative route to CE Mark such kits. This situation could lead to manufacturers choosing the most 'suitable' means to CE Mark their products.

SG01 Guidance: None. The standard shall be used as foreseen, but future amendments to the standard clarifying this issue would be welcome. The ETA-Guideline 018 specifies an attestation of conformity system 1 for fire resistance, while system 3 applies for fire resistance in accordance with EN 13964.

3.2) Scope

This standard may also be used by manufacturers which claim "hygienic performances". Should the standard be used for these products?

SG01 Guidance: Since "hygienic suspended ceilings" are not excluded, they are covered by this standard. In case CEN/TC277 considers amending this standard, it should determine whether the fitness for use in the intended use has been determined by compliance with this standard. It may be possible that additional regulatory (and serviceability) requirements apply for products with "hygienic" surfaces. CEN/TC277 might consider this issue when revising or amending this standard.

3.3) Scope

Are suspended ceiling kits including joint filling products and/or renderings/plasters covered by this standard?

SG01 Guidance: Since the scope does not exclude these products, they are covered. Where relevant, their properties and performances should be determined and declared, especially where they might influence performances in assembly tests foreseen in the standard (e.g. impact resistance, reaction to fire, fire resistance), and the kit components should be brought under FPC.

In case of assembly tests, the thickness of renderings/plasters shall be determined as follows (based on the ENV 13381 series):

- *The thickness shall be measured using a 1 mm diameter probe or drill, which shall be inserted into the material at each measurement position until the tip of the probe or drill touches the surface of the test specimen. The probe or drill shall carry a circular steel plate of diameter 50 mm upon it, for accurate determination of the surface level. The thickness shall be measured at 10 uniformly distributed points prior to testing.*
- *The nominal thickness of the test specimen corresponds with the mean of the 10 measurements.*
- *The individual measurements shall not deviate by more than 20% of the mean value.*
- *The individual measurements and the mean value shall be specified in all test reports*

3.4) Scope

Are profiled or corrugated suspended ceiling membranes covered by this standard?

SG01 Guidance: Only suspended ceiling membranes in accordance with EN 13964, Table 3 are covered by this standard.

3.5) Normative references

In case the standard is revised or amended, CEN/TC277 should take into consideration the need to adapt the normative references.

SG01 Guidance: Correct. Some of the standards referred to in EN 13964:2004 have been withdrawn and replaced. EN 10142:2000, EN 10214:1995 and EN 10215:1995 have all been withdrawn and:

- *EN 10327:2004 supersedes EN 10142:2000 and, together with EN 10326, it also supersedes EN 10154:2002, EN 10214:1995 and EN 10215:1995.*
- *EN 10326:2004 supersedes EN 10147:2000 and, together with EN 10327, it also supersedes EN 10154:2002, EN 10214:1995 and EN 10215:1995.*

Therefore, only EN 10327 and (possibly) EN 10326 should be referenced, removing references to EN 10142, EN 10214 and EN 10215.

All draft standards referred to in EN 13964:2004 have been published (EN 520, EN 10327, EN 14190, EN 14195) in the meantime.

4) 3.1.6

The definition of 'designer/manufacturer/supplier' might create confusion as far as CE Marking obligations are concerned.

SG01 Guidance: None, but NBs shall use terms and definitions as foreseen in the CPD and the EC Guidance papers. Future amendments to the standard clarifying this issue would be welcome.

4.2) 4.3.2

This paragraph refers to calculation as the preferred route to determine performances. Should these calculations be performed by Notified Bodies also?

SG01 Guidance: In accordance with EC Guidance paper K, initial type testing can also refer to calculations. The responsibilities for conformity assessment, i.e. the designation of tasks, do not depend on the means to determine the performance. If Notified Bodies are to be used for testing, that applies to calculations as well. The NB's task if calculation is used to determine load-bearing capacity performance is linked with verifying manufacturer's input and manufacturer's calculation means:

- *Selection of representative sample(-s) to be calculated, i.e. samples on which the calculation methods need to be applied to (always a manufacturer's task, unless for AoC system 1, where this will be the NB's task); the concept of product families may be used, where samples should only be subjected to calculation, if the calculation method changes; under system 3, presenting the data (geometrical data and material properties) and not the sample itself, meets the requirement.*
- *Check the manufacturer's input (material properties, dimensions, ... and safety factors);*
- *Perform calculations on the sample;*
- *Verify whether the manufacturer's calculation results (these have to be supplied by the manufacturer together with the samples) correspond with those performed by the NB;*
- *Document the above in an initial type calculation report;*
- *Surveil continuous maintenance of calculation procedures (incl. input), with greater emphasis in case the calculation method changes and/or the calculation means changes (only under AoC system 1)*

4.3) 4.3.2

The first paragraph refers the fact that the loadbearing capacity of the substructure is established by determining the loadbearing capacity of the individual components. The footnote A to Table 6 refers to the maximum deflection being the cumulative value of the deflections of the substructure component and the membrane.

Does it make sense to have information about more than only the substructure component as information accompanying the CE Marking on a substructure component placed on the market individually? Which membrane is being referred to?

SG01 Guidance: If only an individual component is CE Marked and not a kit, regulatory provisions can hardly expect manufacturers to provide such information. Manufacturers wishing to CE Mark individual substructure components should provide the necessary tools for users to determine the loadbearing capacity of the substructure system that they wish to install. Therefore, the loadbearing capacity of the individual component, determined through testing or calculation, should be determined and declared as information accompanying the CE Marking.

5) 4.3.4

In several paragraphs reference is being made to the ENV-versions of the Eurocodes. Are manufacturers able to use the EN-versions instead. Should they?

SG01 Guidance: NBs shall use the EN-versions of the Eurocodes, in accordance with EC Guidance paper L.

5.2) 4.3.4

In 8th paragraph, references to "fire protection" should be replaced by "fire resistance".

SG01 Guidance: Correct.

5.3) 4.4.1

Does the introduction of fire resistance in EN 13964 mean that for suspended ceiling kits after the co-existence period all test reports based on national test and classification standards are no longer valid and should all be replaced by test reports and classification based on European standards?

SG01 Guidance: Suspended ceiling kits, placed on the market by one manufacturer may be composed of a large number of varying kit components in many end-use conditions and it is economically impossible to test the kits under consideration for every conceivable combination and end-use condition during the co-

existence period. Therefore, the first generation of CE Marked kits will only cover a limited number of fire resistance performance declarations. As time progresses, and before the date of withdrawal of the national test and classification standards, the fire resistance test data will gradually be enlarged. In the meantime, and taking into account the transitional arrangements for fire resistance test and classification standards and the corresponding national legislation (EC Guidance paper J), manufacturers will maintain and be able to use - on a national basis - their portfolio of fire resistance test data based on relevant national standards, next to the fire resistance classification specified in their declarations of conformity and accompanying the CE Marking.

6) 4.4.2

No mounting and fixing for SBI have been foreseen in the standard. How should manufacturers perform tests in the following cases, when CWFT provisions and class F cannot be used:

- Suspended ceiling kits (with and without features as referred to in 'scope')
- Suspended ceiling substrate kits
- Substrate components (as an individual product as referred to in 'scope')
- Membranes (as an individual product as referred to in 'scope')

Would the solution suggested in paragraph 4.4.2.1 'for example by conforming to a relevant product standard' be acceptable for CE Marking purposes?

SG01 Guidance: Developing SH02 guidance further, Mounting and fixing arrangements for SBI have been specified in Annex 1 to this document, including guidance for considering products and components of limited size. When approached by manufacturers, NBs shall use the Mounting and fixing provisions that are developed by SH02 and taken into account by SG01. If guidance for specific products is not available yet, NBs shall inform the SG01 chairman (and CEN/TC277) of the Mounting and fixing provisions used.

In accordance with clause 4.4.2.1, "Suspended ceiling kits (with and without features as referred to in 'scope')" are not to be addressed in SBI. In this case, the reaction to fire classification of the components is required. Therefore, the solution suggested in paragraph 4.4.2.1 'for example by conforming to a relevant product standard' is indeed acceptable for CE Marking purposes (e.g. fibre cement panels in accordance with EN 12467).

*NBs are reminded of clause 4.4.2.2 of the standard, saying that the **ceiling membrane component** is to be tested on its own in case a, and in these cases b and c with the defined insulation or other material. There is no mentioning of the substructure being part of the test assembly (which is more or less logical, as ceiling membrane manufacturers will most likely never produce profiles).*

In many cases, suspended ceilings are "suspended" through the use of the substructure components (e.g. "lay-in", "clip-in" or "hook-on") and not mechanically fixed, which makes it impossible to assemble the substructure and membrane in an SBI assembly, representing real end use application.

*For **substructure kits and components**, SG01 NBs should certainly remind manufacturers that in many cases, Member States will not regulate these products as they are not normally exposed, but concealed, behind the membrane.*

6.2) 4.4.2 – CWFT

EC Decisions regarding "Classified Without the need for Further Testing" (CWFT) have not been referred to. Should they be used?

SG01 Guidance: Even though not referred to in the standard, the EC Decisions have a legal status and can be used, as far as already published in the Official Journal of the European Union. In any case, those EC Decisions are usually referred to in the relevant harmonised product specification and the last sentence of the 2nd paragraph of 4.4.2.1 allows products already classified in accordance with those standards to benefit from that class when attesting conformity with EN 13964. CEN/TC277 is suggested to introduce provisions to that effect, preventing confusion.

6.3) 4.4.2 – Jointing products

If jointing products are kit components, how should their reaction to fire be determined?

SG01 Guidance: The reaction of fire of these products shall be determined in accordance with prEN 13963, 4.1.

6.4) 4.4.2 – Rendering/plaster products

If rendering/plaster products are kit components, how should their reaction to fire be determined?

SG01 Guidance: The reaction of fire of these products shall be determined in accordance with prEN 13279-1.

7) 4.5.1

The sentence under this heading makes no sense. How can manufacturers comply with this requirement?

SG01 Guidance: Manufacturers are expected to have at their disposal a declaration that none of the kit components or products contain any asbestos. NBs are not expected to verify the correctness of that declaration.

7.2) 4.5.2

Formaldehyde release is regulated for other products than those referred to in Annex E (e.g. some thermal insulation foams), but a determination method is not presented for products other than wood-based products.

SG01 Guidance: The same method should be used if applicable.

7.3) 4.5.2

For most products (e.g. metals), release of formaldehyde is not regulated. It seems an important and completely unnecessary increase in the burden on manufacturers to introduce this requirement now.

SG01 Guidance: NBs should obtain a manufacturer's declaration, based on documented evidence, that they have examined existing national regulations of destination countries and determined that this requirement does not apply for their product (e.g. deemed-to-satisfy provisions, content product < content regulated, existing approvals prior to CE Marking). In all other cases, manufacturers are expected to comply with this requirement (see also SG01 guidance on clause 4.5.3 and Annex ZA – Dangerous substances).

7.4) 4.5.3

How should manufacturers comply in practice?

SG01 Guidance: This paragraph refers to the note in Annex ZA.1, which says that for other dangerous substances, i.e. not those referred to specifically (asbestos and formaldehyde), in order to meet the provisions of the EU Construction Products Directive, these requirements, i.e. other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions) need also to be complied with, when and where they apply. The AoC system to apply is system 3, i.e. the involvement of Notified laboratory is required. The note in Annex ZA.3 on dangerous substances, adds that "the product should also be accompanied, when and where required and in the appropriate form, by documentation listing any other legislation on dangerous substances for which compliance is claimed, together with any information required by that legislation".

The note in Annex ZA.3 requires manufacturers to continue to comply with national provisions, like they did before CE Marking, but compliance is covered by the CE Marking the affix on or with the product. In case compliance needs to be established (e.g. new regulatory requirements or new or modified products), the following applies:

- *Submitting samples to test laboratories to verify whether these contain or release any regulated substances is not practical. Manufacturers must be able to pin point the substances that may be released before a laboratory is able to verify their release and/or the content. Therefore, if the manufacturer knows that his products do not release regulated substances, he should not be expected to submit any samples to a notified laboratory. A manufacturer's signed declaration that his product does not release any regulated substances and the documented evidence for his statement (e.g. in case the constituents do not lead to the release of any regulated substances, his supporting evidence might be a reference to their specification), as a part of his technical file, should suffice to meet this requirement. It is important that the manufacturer's declaration is linked to the destination country of the product, since that country's regulation is the basis for the declaration.*

- Only in case the manufacturer is aware that the product releases regulated substances (in the country or countries of destination) should he be required to submit samples to Notified laboratories for ITT. The Notified laboratory shall then determine the released amount or content of identified substances and specify this in the ITT report. If the released amount or content meets the threshold requirement, the manufacturer shall declare this as a performance accompanying the CE Marking (if not, the product does not meet the destination country's legislation and cannot be placed on the market).

7.4) 4.6.2

This paragraph states "where relevant [...] tests shall be performed according to Annex F". However, the text above introduces a threshold value which needs to be verified in accordance with Annex F.

In addition, this paragraph requires manufacturers to declare the designation code (e.g. Class 1 / A / 5 N – although this is related to aesthetic aspects, not to safety, and therefore not covered by the CPD), while Annex F requires the performance "adm. M" as well (which is related to safety).

SG01 Guidance: Cases such as "Where characteristic A is required, it shall have a minimum value of X" are not considered to be thresholds, in this case the standard specifies "flexural tensile strength does not apply to all membrane materials". Therefore, the NPD-option can be used for the characteristic flexural strength. It would be convenient if the standard specifies in which cases flexural tensile strength does not apply. Since 4.6.2 only requires the designation code only, not the performance "adm. M", only the designation code is information accompanying the CE Marking.

8) 4.8

Annex ZA refers to 4.8, but surely only 4.8.3 and 4.8.4 were intended for substructure kits, substructure components (products) and membrane components (products). It is not clear whether "service life" and "working life" are synonyms and whether both are to be declared by the manufacturer.

SG01 Guidance: NBs shall take the following approach (applies to AoC system 1 only):

- *Suspended ceiling kits:*
 - §4.8.1: NBs shall verify the availability of the calculations based on EN ISO 6946 and EN ISO 10211-1. Verification of the calculation is not expected
 - §4.8.2: NBs shall verify the availability of the information referred to (wherever). Given that in practice, determining the "working life" and/or the "service life" objectively will be impossible, NBs are suggested not to impose such a statement by the manufacturer. In the absence of a definition of "normal maintenance", this shall be regarded as the state-of-the-art. In the framework of this clause "designer" shall be understood to be the "manufacturer". It is understood that the CE Marking applies to the product/kit as placed on the market (painted or not), no information regarding influences of painting the product/kit after being placed on the market is part of the CE Marking.
 - §4.8.3: NBs shall verify the availability of the statement referred to.
 - §4.8.4: NBs shall verify the availability of supporting evidence for manufacturers to use table 8.
 - §4.8.5: NBs shall verify the availability of supporting evidence in compliance with this clause
 - Note: No requirements have been set for durability of non-metallic components, so none can be set by NBs, other than compliance with clause 4.3.2.2.3 (for timber substructures). For the time being components made out of plastics are "deemed-to-satisfy" the requirement.
- *Suspended ceiling substructure kits, substructure components (products) and membrane components (products)*
 - §4.8.1: Does not apply
 - §4.8.2: Does not apply
 - §4.8.3: NBs shall verify the availability of the statement referred to.
 - §4.8.4: NBs shall verify the availability of supporting evidence for manufacturers to use table 8.
 - §4.8.5: Does not apply
 - Note: No requirements have been set for durability of non-metallic components, so none can be set by NBs, other than compliance with clause 4.3.2.2.3 (for timber substructures).

9) 4.8.2

This paragraph links maintenance, cleaning and even re-painting to 'service life' and 'working life'. Where should the required information be presented (information accompanying the CE Marking or a manufacturer's technical file). Given this link being made, it is awkward that the manufacturer is not required to declare the 'intended working life'.

SG01 Guidance: Any (publicly available) location meets the requirement.

10) 4.8.3 and 4.8.4

As far as metal products or components are concerned, there is a very clear link between 'intended classes of exposure' and their corrosion protection. Such a link is not made for other types of material (e.g. Timber substructure components and gypsum boards). We wonder how in those cases, any claimed intended class of exposure can ever be contested (e.g. by market surveillance authorities). The practical use of these classes of exposure can therefore be questioned.

SG01 Guidance: None. Any claim made shall be accepted.

10.2) 4.10

Membranes already CE Marked in accordance with harmonised product standards for thermal insulation products in accordance with EN 13162 to EN 13171 (or ETAs) have declared thermal performances based on a different evaluation method. How should NBs address this requirement in EN 13964?

SG01 Guidance: The declared performances based on EN 13162 to EN 13171 (or ETAs) should be used for thermal insulation products. In accordance with EN 13964, ITT for thermal conductivity is under attestation of conformity system 3. Therefore, thermal conductivity, determined in accordance with EN 13162 to EN 13171 (or ETAs), used to determine the product performances of a product covered by EN 13964, is a task for the manufacturer (a NB may be used, but it is not obligatory). See also any SG19 guidance on determining thermal performances and guidance on ZA.3.2 in this document.

11) 5 – Test Reports (1)

SG01 Members are reminded of an earlier recommendation to foresee the following in test reports (where relevant).

SG01 Guidance: Foresee the following in test reports in case of assembly tests:

"Within the context of Attestation of Conformity System 3 the test results in this test report enable manufacturers (or their agents established in the EEA) to establish a declaration of conformity with EN 13964 in the framework of the Construction Products Directive (89/106/CE).

To perform this test, the manufacturer's specifications to mount the product into the test assembly have been taken into account. To this effect, the manufacturer has made a declaration, specifying the assembly, which is held on file, a copy of which is kept by the test laboratory.

The manufacturer shall, as a consequence, indicate the composition and arrangement of the test assembly in the accompanying information for the CE-marking.

The test laboratory has played no part in sampling, nor in the way the product or kit is being installed for the test¹

1) Footnote:

This does not mean that the laboratory is not allowed to install the product or kit in the assembly, if the sponsor of the test so wishes.

12) 5 and 5.2.4 – Test Reports (2)

The requirements in 5.2.4 are not complete.

SG01 Guidance: In addition to the specifications in clause 5.2.4, and in general for all reports issued, the test laboratory shall report in accordance with EC Guidance paper K.

12.2) 5.2.1, 4th para

Reference is being made to table 6 regarding deflection classes. However, table 6 targets the maximum deflection (accumulative value of the deflection).

SG01 Guidance: The text should be adapted.

12.3) 5.2.2, 2nd para

“Test seven further sections under the conditions of the least favourable case involving the smallest bending moment”. This text should be clarified. We suppose this paragraph concerns the bending stiffness, otherwise it means that it is always the longest span that is to be tested.

SG01 Guidance: The text is considered to cover the bending stiffness.

12.4) 5.2.2, 3rd para

The method to avoid twisting should be more detailed (some methods might modify the results). It is necessary to determine the loading point (example: a T-section in negative position: how to secure against twisting?).

SG01 Guidance: Pending clarification, NBs should use the most suitable method.

12.5) 5.2.3

To enable the test result assessment, 29 tests need to be performed on each profile:

- 12 (4*3) preliminary tests (with permanent deflection measurement)
- 7 further tests (least favourable case, with permanent deflection measurement).
- 10 more tests for the least favourable case and ultimate load

It is impossible to measure the permanent deflection after ultimate load. The test procedure should be more detailed.

SG01 Guidance: Pending clarification, NBs should use the most suitable method.

12.6) 5.2.3

The implementation of the calculation of the bending rigidity presents some problems. The measurement of deflection on a sample cannot be a strict limit of the load (applied on the press). Usually, the result of a bending test is to establish a chart (load-deflection) and to measure the slope (EI).

The way of arriving at the average of the bending stiffness should be more effective. In accordance with this standard, an average of the load is determined which does not produce the same deflection.

SG01 guidance: The standard shall be used as foreseen.

12.7) 5.2.4

Add the following: Number of samples and identification of the sample marking; Test conditions

SG01 Guidance: NBs should add this detail. CEN/TC277 should add this when revising or amending the standard.

13) 5.3

The standard does not specify in detail how the load-bearing capacity of small suspended ceiling substructure components should be determined (e.g. L-profiles).

SG01 Guidance: The standard presents a static and a functional test. Both are specified in very general terms, to take into account the various designs that are available on the market. SG01 members are requested to provide to the SG01 chairman the details they add when applying the standard. If such is feasible, SG01 will provide CEN/TC277 with suggestions to add detail where necessary and possible.

14) 6.1, note 1

There was no need to diverge from the terms used in EC Guidance paper C (kit, consisting of components, and products).

SG01 Guidance: None, but NBs shall use terms and definitions as foreseen in the standard.

15) 6.1, note 2

We question this definition strongly.

SG01 Guidance: None, but in the absence of definitions specific to the CPD, NBs shall use the definition as foreseen in the "Blue book"¹ or other guidance provided in the framework of the CPD.

16) 6.1, 2nd paragraph, 2nd indent

This is wrong. The manufacturer must ensure that his product or kit continues to meet the declared performances.

SG01 Guidance: When approached by manufacturers, NBs should inform manufacturers correctly.

16.2) 6.2.3

Due to the availability of the latest version of EN ISO 354, the test results of tests performed in accordance with earlier versions cannot be used (the test standard has a dated reference). The new test method introduces changes to the method which influence the test results. Are manufacturers obliged to perform all tests again?

SG01 Guidance: The standard shall be used as foreseen. However, CEN/TC277 is requested to take into consideration the following modification to the paragraph referred to: "6.2.3 Tests previously performed in accordance with the provisions of this standard may be taken into account providing that they were made to the same or a more rigorous test method under the same system of attestation of conformity on the same component or components of similar design, construction and functionality, such that the results are applicable to the component in question, with the exception of tests performed in accordance with previous versions of test standards for acoustical performances (see 4.7), which can still be used to calculate the single value performances based on existing test reports, if correlation with the newest versions of the test method standards can be established and the single value performances adapted accordingly." Possibly the CE Marking may need to refer to the dated standard to allow for this modification.

17) 6.2.5

This document does not define 'prototypes', nor does it explain how evaluation and attestation of prototypes should be performed.

SG01 Guidance: In the absence of agreed guidance on the matter, NBs are suggested to be cautious in their approach to prototypes². NBs have to perform their tasks as foreseen in the CPD.

18) 6.3.1

The standard does not provide any technical detail on the FPC of the various possible components and products (e.g. profiles, membranes, fixing, insulation and light features). This will lead to a very unequal approach when comparing different manufacturers and – accordingly – any notified bodies active in attesting conformity.

¹ The manufacturer is any natural or legal person who is responsible for designing and manufacturing a product with a view to placing it on the European Union market under his own name. The responsibilities of the manufacturer apply also to any natural or legal person who assembles, packs, processes, or labels ready-made products with a view to their being placed on the European Union market under his own name. Further, the responsibility of the manufacturer is placed on any person who changes the intended use of a product in such a way that different essential requirements will become applicable, or substantially modifies or re-builds a product (thus creating a new product), with a view to placing it on the European Union market

² Guidance is under development

SG01 Guidance: In cases where other (harmonized) technical specifications are available for the products or kit components addressed in this standard, those shall be used as a guidance, pending detailed and agreed upon provisions in this position paper or the standard itself (e.g. EN 520 for gypsum boards, EN 12467 for fibre-cement boards, EN 14190 for reprocessed gypsum boards, EN 14195 for metal profiles, ...).

18.2) 6.3.1

The minimum frequencies of tests in factory production control have not been determined.

SG01 Guidance: Pending detailed and agreed upon provisions in EN 13964, NBs should use the following as indicative requirements:

Table 1: Minimum product testing frequencies for membranes*

Characteristic	Direct testing		Indirect testing**	
	Test method	Frequency	Test method	Frequency
Reaction to fire – CWFT	Manufacturer's method to determine organic content	Once every 2 hours	Manufacturer's method to determine organic content	Once every 2 hours
Reaction to fire – Classification through testing	-	-	Manufacturer's method (possibly distinguishing between constituents that significantly influence performance and others)	Once every 2 hours (constituents that significantly influence performance)
Dangerous substances			Verification of supplier's declaration regarding constituents	Each delivery
Shatter properties	EN 13964, 4.3.6 or 4.6.1	Once every day	Manufacturer's method	Once every day
Flexural tensile strength	EN 13964, 4.6.2	Once every day	Manufacturer's method	Once every 2 hours
Sound absorption	-	-	Manufacturer's method	Once every 2 hours
Thermal conductivity	EN 13964, 4.10 and SG01 guidance	Once every day***	Manufacturer's method	Once every 2 hours
Durability - Metal membranes	EN 13964, Table 8 (metal membranes)	Once every month	Manufacturer's method to determine thickness protective layer	Once every 500 membranes
Durability – (other materials)	Relevant product standard (e.g. EN 520, EN 12467, etc.), if any		Manufacturer's method	As relevant.
Dimensions, shape and tolerances (incl. edge details)	Relevant product standard (e.g. EN 520, EN 12467, etc.)	Once every 2 hours	Manufacturer's method	Once every 2 hours

*** For thermal insulation products, once every day or once every three months and indirect testing.

Table 2: Minimum product testing frequencies for linear substructure components (profiles)*

Characteristic	Direct testing		Indirect testing**	
	Test method	Frequency	Test method	Frequency
Reaction to fire – CWFT	Manufacturer's method to determine organic content	Once every 5000 profiles	Manufacturer's method to determine organic content	Once every 5000 profiles
Reaction to fire – Classification through testing	See SG01 guidance on clause 4.4.2	Once per month or once per 50000 profiles and indirect testing		
Loadbearing capacity	EN 13964, 5.2	Once every 500 profiles	Manufacturer's method	Once every 500 profiles
Durability - Metal profiles	EN 13964, Table 8 (metal profiles)	Once every 5000 profiles	Manufacturer's method to determine thickness protective layer	Once every 500 profiles
Durability – Plastics profiles	EN 13245, 5.6.2.b and 5.6.3	Once every 5000 profiles	Manufacturer's method to determine deterioration due to radiation	Once every 5000 profiles
Dimensions, shape and tolerances	EN 14195, 5.2	Once every 500 profiles	Manufacturer's method	Once every 500 profiles
Dangerous substances			Verification of supplier's declaration regarding constituents	Each delivery

Table 3: Minimum product testing frequencies for non-linear substructure components (e.g. connecting and suspension elements)*

Characteristic	Direct testing		Indirect testing**	
	Test method	Frequency	Test method	Frequency
Reaction to fire – CWFT	Manufacturer's method to determine organic content	Once every 5000 elements	Manufacturer's method to determine organic content	Once every 5000 elements
Reaction to fire – Classification through testing	-	-		
Loadbearing capacity	EN 13964, 5.3	Once every 5000 elements	Manufacturer's method	Once every 500 elements
Durability - Metal elements	EN 13964, Table 8	Once every 5000 elements	Manufacturer's method to determine thickness protective layer	Once every 500 elements
Durability – Plastics elements	EN 13245, 5.6.2.b and 5.6.3	Once every 5000 elements	Manufacturer's method to determine deterioration due to radiation	Once every 500 elements
Dimensions, shape and tolerances	-	-	Manufacturer's method	Once every 500 elements
Dangerous substances			Verification of supplier's declaration regarding constituents	Each delivery

Table 4: Minimum product testing frequencies for fasteners (screws, clips, hooks, etc.)*

Characteristic	Direct testing		Indirect testing**	
	Test method	Frequency	Test method	Frequency
Reaction to fire – CWFT	prEN 14566	Every batch	Manufacturer's method to determine organic content	Every batch
Reaction to fire – Classification through testing		-		
Dimensions and shape		Every batch	Manufacturer's method	
Mechanical resistance in the intended direction				
Dangerous substances			Verification of supplier's declaration regarding constituents	Each delivery

Table 5: Minimum product testing frequencies for jointing products*

Characteristic	Direct testing		Indirect testing**	
	Test method	Frequency	Test method	Frequency
Reaction to fire – CWFT	prEN 13963, 4.1	Every batch	Manufacturer's method to determine organic content	Every batch
Reaction to fire – Classification through testing		-		
Setting time		prEN 13963, 5.2	Every batch	
Adhesion/cohesion	prEN 13963, 5.5			
Dangerous substances			Verification of supplier's declaration regarding constituents	Each delivery

Table 6: Minimum product testing frequencies for renderings/plasters*

Characteristic	Direct testing		Indirect testing**	
	Test method	Frequency	Test method	Frequency
Reaction to fire – CWFT	EN 13279-2	Every batch	Manufacturer's method to determine organic content	Every batch
Reaction to fire – Classification through testing		-		
Setting time		Every batch	Manufacturer's method	
Adhesion/cohesion				
Flexural strength				
Compressive strength			Verification of supplier's declaration regarding constituents	Each delivery

Table 7: Minimum product testing frequencies for suspended ceiling kits*

Characteristic	Direct testing		Indirect testing**	
	Test method	Frequency	Test method	Frequency
Resistance to fire	-	-	Manufacturer's method	Once per day
Shatter properties (impact resistance)	EN 13964, 4.3.6 or 4.6.1	Once per month	Manufacturer's method	Once per day
Electrical safety	EN 13964, 4.6.3	Once per month	Manufacturer's method	Once per day
Direct airborne sound insulation	EN 13964, 4.7.3	Once per month	Manufacturer's method	Once per day

* Depending on the product that is placed on the market (single product or kit), one or more of the tables might apply. In the case of suspended ceiling kits, tables 1, 2, 3, 4, 5 and/or 6 and table 7 apply. Characteristics for which No Performance Determined was used should not be brought under a mandatory FPC system.

** Indirect testing often refers to "Manufacturer's method", allowing manufacturers to continue using or start using a method that ensures constant performance of the product or kit component, without having to exactly use the method determined in the standard, or to verify characteristics or product properties that are closely related to the characteristic referred to in the standard (e.g. density as a measure to ensure constant thermal performance). In some cases, such properties can be used to ensure constant performance for more than one such characteristic (e.g. ignition loss as a measure to ensure constant reaction to fire and fire resistance behaviour).

In cases of supplied goods, i.e. the manufacturer who attests conformity is not the manufacturer of the product or kit component, depending on the nature of the products or kit component, and of its significance with regards to health and safety of the product placed on the market, it is acceptable that the requirements in table 1, 2, 3, 4, 5 and/or 6 are met by the supplier of the product or kit component. However, the manufacturer who attests conformity is always fully responsible for the product placed on the market and must be in a position to control that product.

Therefore, any of the following options, or a combination thereof, can be used, taking into account the nature of the products or kit component, and of its significance with regards to health and safety:

- the supplier provides a "supplier's declaration of conformity"
- the supplier provides a report of tests performed on the supplied product(-s) or batch of products
- the manufacturer performs a regular audit to verify compliance with requirements
- the supplier is EN ISO 9001 certified
- the supplier's product is under (third party) certification
- acceptance testing as a part of the manufacturer's FPC system
- the certification body performing audits of the supplier's FPC system

Since this is highly product dependent, in AoC system 1, it is for the certification body and the manufacturer to agree on a case-by-case basis which options apply for which product or kit components.

19) 6.3.3.2

This paragraph refers to "normal FPC". Taking into account the previous comment, it is difficult to guess what "normal FPC" is.

SG01 Guidance: NBs shall expect "normal FPC" to correspond with guidance provided above.

20) 6.3.4.1, 2nd sentence

It is easy to understand what is intended, but surely it is impossible to inspect something that is not there. The later clause 6.3.4.2 certainly does not clarify the situation (how can you verify compliance if it is not there?). This comment is linked with the lack of information on how to treat prototypes.

SG01 Guidance: In the absence of agreed guidance on the matter, NBs are suggested to be cautious in their approach to prototypes.

21) 6.3.4.3, last sentence

Surely this cannot be correct. Presuming that the manufacturer places a suspended ceiling kit on the market, with one FPC system covering all components (e.g. substructure profiles, their fasteners and a membrane product), surely one cannot argue that by checking the FPC for the fasteners it can be taken for granted that that FPC is representative for the FPC covering the membrane.

SG01 Guidance: NBs are suggested – contrary to the standard – not to work in accordance with this clause, as it would prevent a NB from having any confidence in the CE certificate it issues.

21.2) FPC and Annex E

Should FPC provisions regarding Formaldehyde classes and associated test methods referred to in Annex E be complied with for CE Marking purposes?

SG01 Guidance: Since Annex E is not referred to from EN 13964, Tables 3a, 3b or 3c, nor from EN 13964, 6.3, the FPC provisions in Annex E do not apply for CE Marking purposes. CEN/TC277 should consider whether references to Annex E should not be made in future revisions. However, prior to introducing this requirement, it should verify whether manufacturers possess the necessary equipment to perform tests foreseen (EN 120 and EN 717-2). Referring to comments made regarding 4.5.2, similar requirements should apply for other products.

21.3) F.1

Should aesthetic issues be covered in a test method under the CPD?

SG01 Guidance: In principle, the CPD is related to health and safety issues, not to aesthetics. However, the published standard refers from Annex ZA.1.1 and ZA.1.4 to 4.6.2 and subsequently to Annex F and therefore, the whole Annex F forms part of the requirement under the CPD. If CEN/TC277 intends to amend or revise this standard, this reference should be looked at, since the standard creates a regulatory requirement which did not exist before CE Marking.

21.4) F.3.1

Annex F refers to

- A test frame which can be changed to suite the product or kit
- Deflection classes
- Loading type which can be point, linear or evenly distributed load,
- The load is not fixed.
- Environmental conditions as foreseen in Table 7 to apply when subjecting the sample(-s) to the flexural tensile strength test and to report those in the test report(-s).

How should this be reflected in the CE Marking (and the certificate or declaration of conformity), taking into account that

- the designation code in F.6.1 only addresses the deflection class (1, 2 or 3), the exposure class (A, B, C or D) and the load, i.e. the test frame configuration, the loading type and the exposure conditions are not addressed. Note that F.6.1 only addresses an aesthetic requirement which should not be part of CE Marking at all.
- F.6.2 requires adm. M to be determined.

SG01 Guidance: The designation code (e.g. Class 1 / A / 5 N) shall be presented in the CE Marking. The performance and adm. M is not required in 4.6.2 and does not form part of information to be provided as information accompanying the CE Marking. The NPD-option cannot be used, for products where flexural tensile strength is relevant, since F.6.2.2 imposes a threshold value (the ceiling membrane must have sufficient strength to carry its own mass without falling down).

Information referred to above (i.e. the test frame configuration, the loading type and the exposure conditions) should be presented in the declaration of conformity.

To prevent all NBs from performing these tests at different conditions, the following are proposed:

- Class A: Temperature: $(25 \pm 2)^{\circ}\text{C}$ Relative humidity: $(70 \pm 5)\%RH$
- Class B: Temperature: $(30 \pm 2)^{\circ}\text{C}$ Relative humidity: $(90 \pm 5)\%RH$
- Class C: Since determining this class would be ambiguous (temperature has not been indicated), NBs are suggested not to use this class and to use class D instead.
- Class D: As specified in the test report and the declaration of conformity. At least the following should be presented: temperature, relative humidity and environmental information as relevant.

CEN/TC277 should consider whether it is technically relevant to distinguish between classes A and B and whether normal laboratory conditions cannot be used to simulate these conditions. The test corresponding with class C is a very expensive test (large sample and equipment in a chamber kept at specified conditions over a period of at least 28 days + conditioning time).

21.5) Annex ZA – Dangerous substances

Although Annex ZA.2 and Tables ZA.3a to ZA.3c refer to dangerous substances as a general characteristic, Annexes ZA.1 and ZA.3 (CE Marking content) refer to release of asbestos and of formaldehyde only. Manufacturers desire not to refer to asbestos and/or formaldehyde in any way if the corresponding regulations do not apply to their products, since it draws attention to a potential danger that does not exist for their products. It is also not clear how to respond to this requirement if the product meets all dangerous substances requirements.

SG01 Guidance: Release of asbestos and formaldehyde were mentioned in the EC mandate to CEN specifically and therefore, these were maintained separately throughout the document (except in tables ZA.2 and ZA.3). It would probably have been preferable if "dangerous substances" had been referred to throughout Annex ZA. If regulations do not apply manufacturers could complete the information accompanying the CE Marking as follows (or similar): "Dangerous substances (incl. release of asbestos and formaldehyde): This product meets the requirements of the following destination countries: Country 1, Country 2 and Country 3".

If CEN/TC277 decides to amend or revise the standard, it should consider requiring the use of such a sentence, preferably without mentioning release of asbestos and formaldehyde specifically (even merely mentioning those terms on packaging might scare of users unnecessarily, considering that "release of asbestos: NPD" is equal to "not tested because not good enough to comply").

22) Annex ZA, Table ZA.1.1

Shatter properties offers three possible verification methods (Annex D and EN 12600 or another EN). How can the user know which one the manufacturer used?

SG01 Guidance: The standard shall be used as foreseen. Annex D determines the impact resistance, EN 12600 or another EN the shatter properties. It can be presumed that it was intended that the performance (impact resistance and/or shatter properties) required in the Member State must be declared, taking into account the intended use of the product (NPD for impact resistance can be used for a ceiling not intended to resist impacts, unless the Member State regulates in all cases). If another harmonized technical specification foresees shatter properties as well and a kit component has been proven to meet the requirements set in that specification, satisfying EN 12600 can be replaced by compliance to that standard. Under these circumstances, it is advisable for the CE Marking to specify the method (and therefore also the characteristic) used.

22.2) Annex ZA, Table ZA.1

Ball impact on suspended ceilings can hardly be related to safety in use, unless the suspended ceiling is made out of brittle material that creates sharp edges when broken. Annex ZA.1.1 should clarify that shatter properties is only relevant for products that create sharp edges when broken (safe breakage).

SG01 Guidance: The standard shall be used as foreseen, but CEN/TC277 should examine whether this requirement makes sense as formulated.

22.3) Annex ZA, Table ZA.1

For clarity, table ZA.1 should refer to "flexural tensile strength (for membrane components only)" as in Annex ZA.3.2.

SG01 Guidance: Correct.

23) Annex ZA, Table ZA.1.1

Durability. The clauses referred to are incorrect. It can be assumed that clauses 4.8.1 (for suspended ceiling kits only), 4.8.3, 4.8.4 and 4.8.5 were intended. It is difficult to understand how 4.8.2 can be addressed in the CE Marking and what to do with the durability of non-metallic materials.

SG01 Guidance: See guidance foreseen for clause 4.8.

23.2) Annex ZA, Tables ZA.1.2, ZA.1.3 and ZA.1.4

It is not logical that release of asbestos and formaldehyde as specified in Table ZA.1.1 applies to suspended ceiling kits, but not to suspended ceiling substructure kits and to suspended ceiling substructure components and that only release of formaldehyde applies to suspended ceiling membranes, whereas Tables ZA.2, ZA.3a and ZA.3b refer to Dangerous substances (the generic name).

SG01 Guidance: The standard shall be used as specified, but CEN/TC277 is requested to check whether these tables do not need modification.

24) Annex ZA, Tables ZA.1.1 to 1.4

For load-bearing capacity, the standard should specify "or", not "and" for the clauses "4.3.2, 4.3.3 or 4.3.4", but should say "and 4.2".

SG01 Guidance: All clauses shall be used as foreseen in the standard, unless irrelevant for the product or kit under consideration.

25) Annex ZA, Tables 3a to 3c

These tables seem to apply to suspended ceiling kits only. They do not apply (entirely) for the other CE Marking possibilities offered by the standard.

SG01 Guidance: NBs shall select those parts of the tables as relevant for suspended ceiling substructure kits, substructure components (products) and membrane components (products). It would be convenient that in case the standard is amended or revised, these tables would clarify which provisions apply for which CE Marking possibilities.

25.2) Annex ZA.2, Table ZA.2

The table offers a choice through footnotes a, b and c to determine the AoC system. Should SG01 not decide when these notes apply?

SG01 Guidance: Manufacturers will only contact SG01 NBs when they assume that AoC system 1 applies and therefore, including such information in a SG01 position paper would not clarify the situation. Clarification can only be given in the standard itself and therefore CEN/TC277 should consider this situation when revising the standard. However, it must be understood that EN 13964 covers a lot of different products and it will be difficult to find a solution that covers all possible products.

25.3) Annex ZA.3.2

No "standard" designation codes have been foreseen to simplify the CE Marking. Can they be introduced by manufacturers? Translating all the information requested in the standard is expensive.

SG01 Guidance: The information accompanying the CE Marking shall be presented as foreseen in the standard. When CEN/TC277 decides to amend or revise the standard, it should consider using designation codes, simplifying the CE Marking (especially taking into account the cost of producing labels) considerably.

25.4) Annex ZA.3.2

Apart from the performance characteristics, Annex ZA.3.2 does not require manufacturers to complete the information with information as presented in EC Guidance paper D (e.g. number of NB, manufacturer's address, year of affixing CE Marking, etc.). The example which does list this information is not a requirement, only an example.

SG01 Guidance: The information foreseen in EC Guidance paper D should be foreseen, since the amended Directive 89/106/EEC foresees this requirement and therefore also the national legislation transposing the CPD. So even though the standard does not require all the accompanying information, it is still a regulated requirement imposed on all manufacturers. The following information should be presented in addition to the information already required in the standard: the name or identifying mark of the producer, the last two digits of the year in which the marking was affixed (refers to the physical act of affixing the CE marking), where

appropriate, the number of the EC certificate of conformity, the reference to the standard and the product's or kit's intended use.

25.5) Annex ZA.3.2

What happens if the product complies with more than one harmonised technical specification (e.g. a product complies with one of the thermal insulation product standards or ETAs, an ETA for a fire protective product based on ETAG 018 and EN 13964)?

SG01 Guidance: The (only one) CE Marking should refer to both (or more) technical specifications and should cover all requirements for information accompanying the CE Marking from all referenced harmonised technical specifications (harmonised standard and/or ETAs).

It is possible that, for different end uses, the system of attestation of conformity may be different (e.g. systems 2+ and 3). Where this is the case, the CE marking may not indicate or imply that characteristics declared under system 3 have been controlled under system 2+ so, in this case, the different sets of information have to be presented separately.

There are a number of ways in which the information for different uses can be presented together. A minimum of information will always be common irrespective of the intended end use: the CE marking symbol, the description of the product, the last 2 digits of the year of affixing and the name and address of the manufacturer, so this information is presented only once.

Other information may be common in some cases: the number of the certification body (only if the AoC system applies in both cases and only a single body has been used), the FPC certificate number (if a single certificate has been issued) and characteristics where these have been assessed using the same test method and under the same attestation system.

Manufacturers should consider the implications of declaring performances for one characteristic, using 2 (or more, if more than 2 standards apply) different test methods, leading to different performances.


 Any Company Rue du Producteur, 50 Country xx		
xxxx xxxx-CPD-xxxx EN 13964 Suspended ceiling membrane component	EN 14190 General building construction	
Reaction to fire: B-s1, d0 Release of formaldehyde and of asbestos: This product meets the requirements of the following destination countries: Country 1, Country 2 and Country 3 Shatter properties (safe breakage): NPD Flexural tensile strength: Class 1/B/no load Sound absorption, $\alpha_w = 0,7$ Thermal conductivity: 0,10 W/(m.K) Durability: Class C	Shear strength per fastener: NPD Flexural strength: NPD Water vapour resistance factor: 10 Thermal conductivity: NPD	
	Airborne sound insulation Acoustic absorption Impact resistance	See producer's literature

Figure 1: Example CE marking information for a product meeting both EN 14190 and EN 13964 provisions (product under AoC system 1 for EN 13964 and system 3 for EN 14190)

26) Annex ZA.3.2

Apparently, the dimensions and tolerances are to be declared for load-bearing capacity. How are these related, i.e. how can I know the load-bearing capacity if only dimensions and tolerances are provided.

SG01 Guidance: It can be presumed that the performances, based on the ITT performed in accordance with clause 5, should be declared. The declared performances should be clearly related to the substructure components assessed in case of kits. In addition to the load-bearing capacity, the declaration of dimensions (and tolerances) as specified in tables 2, 3, 4 and 5 and clause 7.1 of the standard shall be presumed to be sufficient to meet the requirement (in accordance with the example CE Markings, where only the load-bearing capacity has been presented, not the dimensions, nor tolerances).

27) Annex ZA.3.2

Apparently, the dimensions and tolerances are to be declared for load-bearing capacity. In most cases, this will be an activity for the Notified Body, but the standard does not say how to determine the dimensions and tolerances.

SG01 Guidance: The dimensions of profiles shall be determined in accordance with EN 14195 or EN 14353, clause 5.2, using the sampling regime as specified in clause 5.1 of those standards. The dimensions of membranes shall be determined in accordance with EN 520, clause 5.2, using the sampling regime as specified in clause 5.1 of that draft standard.

28) Annex ZA.3.2 and ZA.3.3

Apparently, only for suspending frames, the load-bearing capacity should be declared, but this is in contradiction with Tables ZA.1.3, where the load-bearing capacity of suspended ceiling substructure components is also required (e.g. top fixing).

SG01 Guidance: NBs shall presume this is a mistake and that the load-bearing capacity should be declared for all substructure components.

28.2) Annex ZA.3.2, Annex ZA.3.3 and Annex ZA.3.4

Should manufacturers declare all characteristics presented in these paragraphs, or should only those for which performances are being declared be declared, i.e. should NPD be declared explicitly.

SG01 Guidance: Since the 1st paragraph of each of the subclauses referred to ends with "... (and where relevant)", it was clearly the intention of CEN/TC277 that characteristics for which no performances are being declared in the framework of CE Marking (and that therefore are not relevant) should not be mentioned.

29) Figures ZA.1 to ZA.3

The examples do not show that dimensions and tolerances shall be declared as well.

SG01 Guidance: NBs shall presume that the example is incomplete and act in accordance with clauses Annex ZA.3.2, ZA.3.3 and ZA.3.4, but allowing the possibility of using clause 7.1 to provide dimensional information.

Annex 1: Fire Testing Methodology for EN 13964 on Suspended Ceilings

Paragraphs 1, 2 and 3 are based on SH02 documents N 312 and N 313. These documents have been adjusted to comply with EN 13964's provisions. Changes compared with the original texts, other than editorial and lay-out related, have been indicated. The figures 1, 2, 3, 4 and 5 have been modified entirely.

1. Dimensions of the test rig in accordance with EN 13823

The test rig consists of a corner with a long and a short wing. The long wing consists of 2 modules, with at least one vertical and one horizontal membrane to membrane joint in the long wing. All membranes shall be tested vertically. The dimensions of the test specimens shall be in accordance with table 1.

Table 1: dimensions of the test specimens

	Assembly dimensions (mm – nominally)	
	Length	Height
Short wing	495	1500
Long wing	200 + t	
	800 - t	

Where t = thickness of the assembly

2. Ceiling membrane components

2.1 Mounting and fixing in accordance with EN 13823

2.1.1 Ceiling membrane components that are to be tested with the specified insulation or other material

2.1.1.1 General

These specification apply for ceiling membrane components in accordance with EN 13964, 4.4.2.2, b) and c).

2.1.1.2 Test specimen

The ceiling membrane component shall be mounted and fixed according to EN 13823.

The test specimen shall fully represent the end use suspended ceiling utilising all the envisaged components in the end use condition as specified by the applicant, as far as possible. The external surface of the membrane used in the test assembly shall include a representative substructure (grid) as a means of fixing the membranes.

Where the ceiling membrane component may be used together with thermal or sound insulation backing materials, the ceiling membrane component shall be tested together with these additional materials under end use conditions, as far as possible.

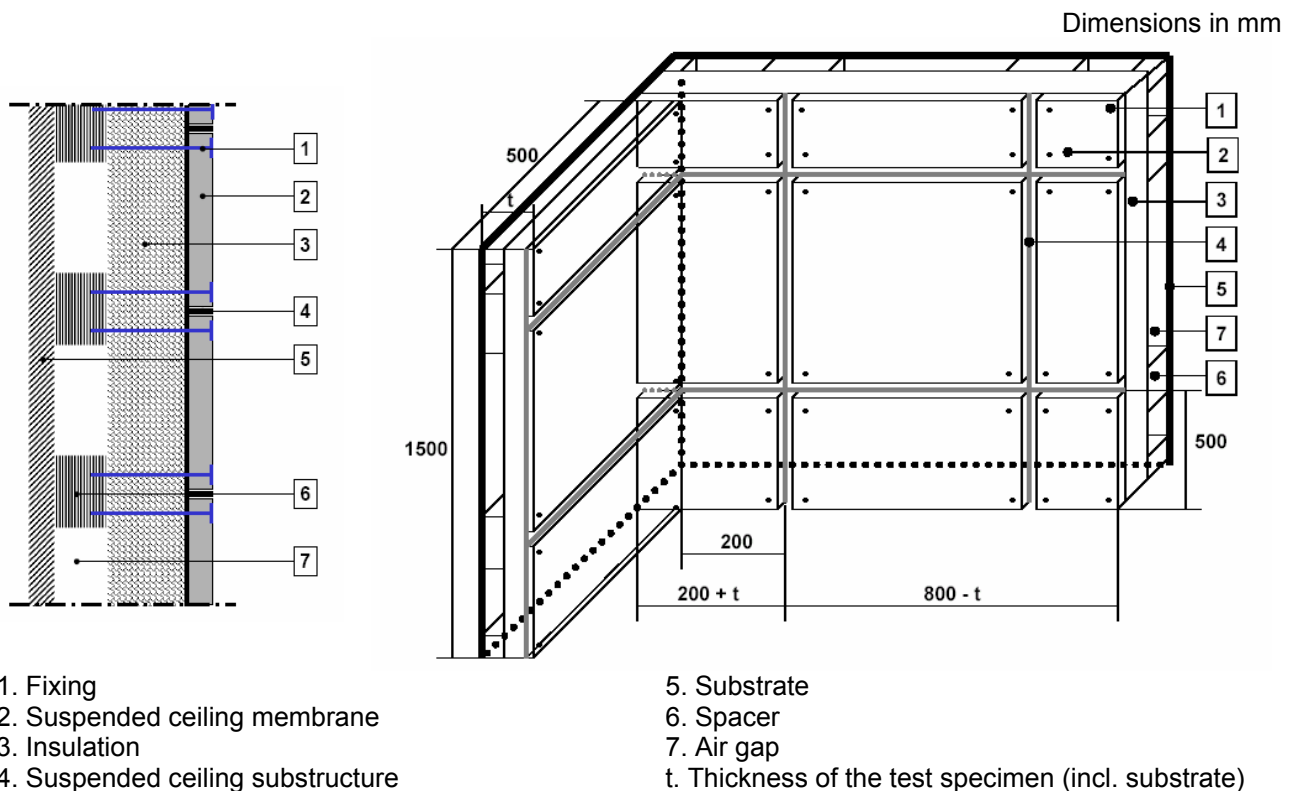
Suspended ceilings, where the ceiling membranes are "suspended" *through the use of the substructure components (e.g. "lay-in", "clip-in" or "hook-on") and not mechanically fixed, making it impossible to assemble the substructure and membrane in an SBI assembly, representing real end use application, shall be fixed with at least 4 metal screws (simulating behaviour in end use conditions as far as possible)*. These screws shall be fixed at least 25 mm from the edges of the suspended ceiling membrane.

If an air gap is to be foreseen, spacers (distance holders), with a thickness of (40 ± 1) mm, made out of calcium-silicate (material as referred to in EN 13238 as one of the possible substrates) shall be used. If screws are used to fasten the substructure and/or the ceiling membrane, they shall penetrate the spacers at least 25 mm from the edge of the calcium silicate spacers.

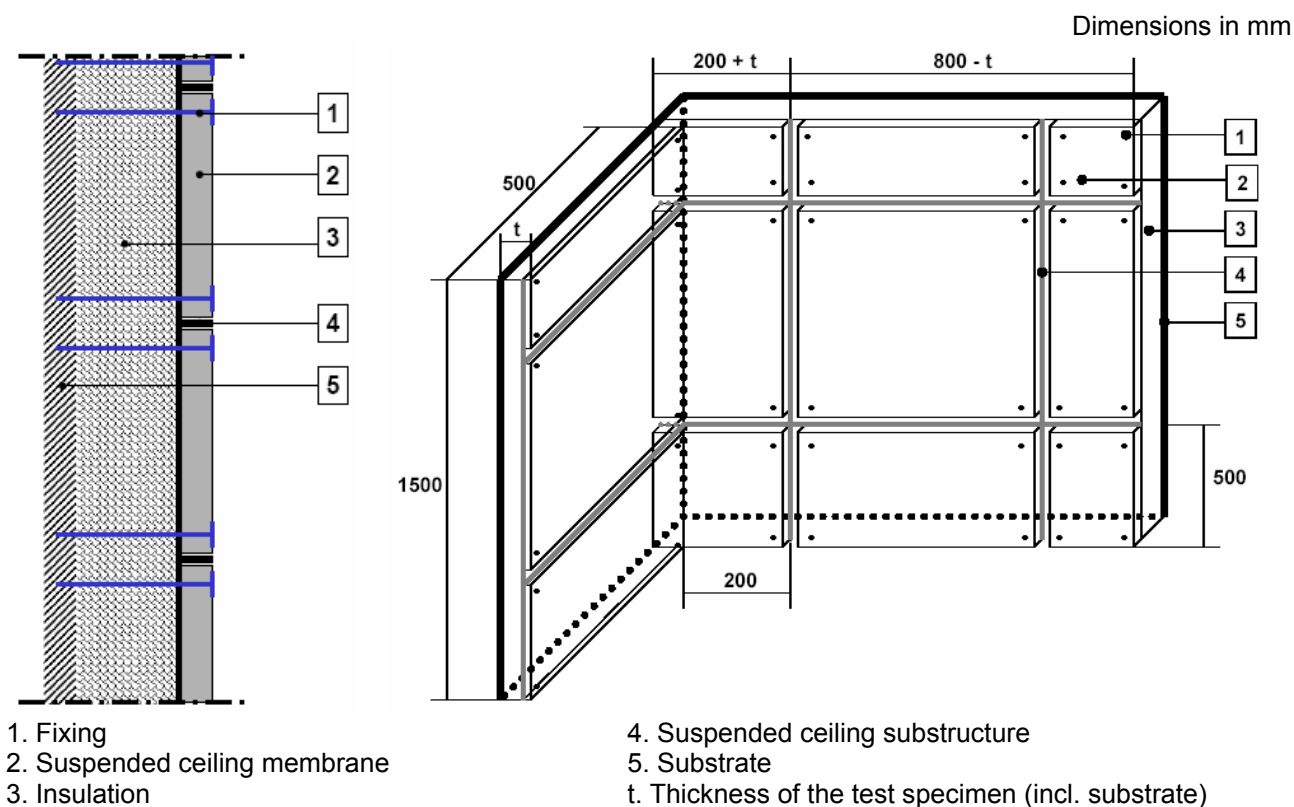
- NOTE 1 The substructure is only representative of the end use fixing. The product being assessed is the ceiling membrane itself, and not a kit. However, in end use, the membrane is held in position by a grid. The grid used therefore needs to have the minimum profile with which the ceiling membrane component can be used.
- NOTE 2 A suitable solution is to fix 4 adjacent suspended ceiling membrane corners in one calcium-silicate board
- NOTE 3 Suspended ceilings are intended to be used horizontally and any air gap between the substrate and the ceiling membrane or insulation does not lead to a "chimney effect". Therefore, the air gap is fixed, by convention, at 40 mm, as specified in EN 13823.
- NOTE 4 In the case of a metallic grid which is not exposed, seen from the membrane front side, the grid could be excluded from being a part of the test specimen as given in figures 1a, 1b, 2a and 2b.

The corner detail between long and short wing shall be sealed with an A1 material, preventing exposure of the internal surface of the suspended ceiling membrane, or other material, to the fire.

The type and dimensions of materials and products used, the dimensions and location of fixings etc. shall be recorded in the test report.



Figures 1a and 1b: Mounting and fixing for SBI in case of suspended ceiling kit test, with insulation and with air gap



Figures 2a and 2b: Mounting and fixing for SBI in case of suspended ceiling kit test, without insulation and without air gap

2.1.2 Ceiling membrane components that are tested and classified on their own

2.1.2.1 General

These specifications apply for ceiling membrane components in accordance with EN 13964, 4.4.2.2, a) and d).

2.1.2.2 Test specimen

The ceiling membrane component shall be mounted and fixed according to EN 13823.

The test specimen shall be composed of the ceiling membrane component fixed as specified by the applicant, where this is possible without using the substructure. Otherwise, the external surface of the membrane used in the test assembly shall be fixed with at least 4 metal screws (*simulating behaviour in end use conditions as far as possible*). These screws shall be fixed at least 25 mm from the edges of the suspended ceiling membrane.

If an air gap is to be foreseen, spacers (distance holders), with a thickness of (40 ± 1) mm, made out of calcium-silicate (material as referred to in EN 13238 as one of the possible substrates) shall be used. The screws shall penetrate the spacers at least 25 mm from the edge of the calcium silicate spacers.

NOTE 1 A suitable solution is to fix 4 adjacent suspended ceiling membrane corners in one calcium-silicate board

NOTE 2 Suspended ceilings are intended to be used horizontally and any air gap between the substrate and the ceiling membrane does not lead to a "chimney effect". Therefore, the air gap is fixed, by convention, at 40 mm, as specified in EN 13823.

NOTE 3 In the case of a metallic grid which is not exposed, seen from the membrane front side, the grid could be excluded from being a part of the test specimen as given in figures 3a, 3b, 3a and 3b.

The corner detail between long and short wing shall be sealed with an A1 material, preventing exposure of the internal surface of the suspended ceiling membrane, or other material, to the fire.

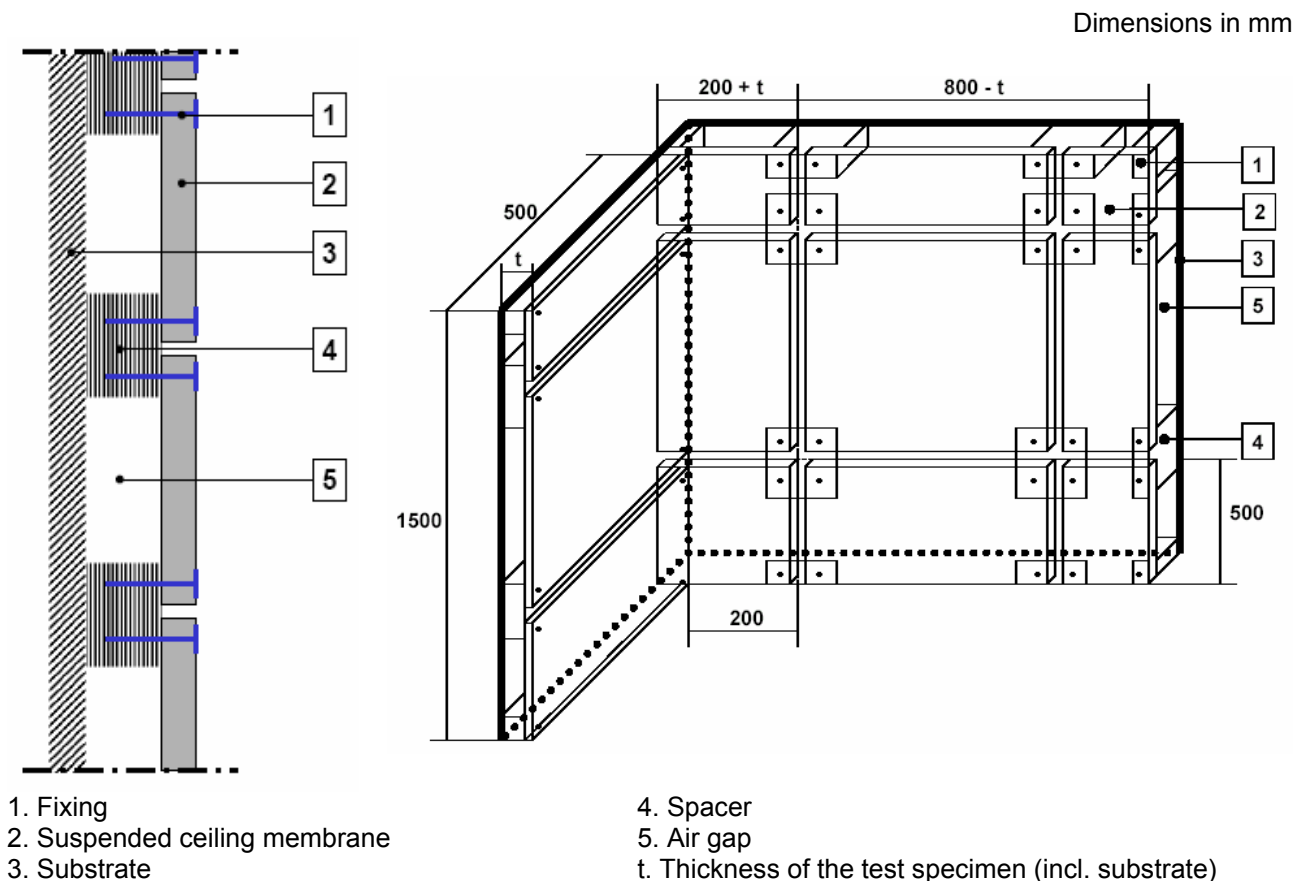
The type and dimensions of materials and products used, the dimensions and location of fixings etc. shall be recorded in the test report.

2.1.3 Product families

In case suspended ceiling membranes are placed on the market with different edge details (e.g. squared, bevelled, rebated, grooved), the membranes may be grouped by material volume, in which case the suspended ceiling membrane with the highest edge detail volume (most extreme being the squared edge) shall be subjected to SBI-testing.

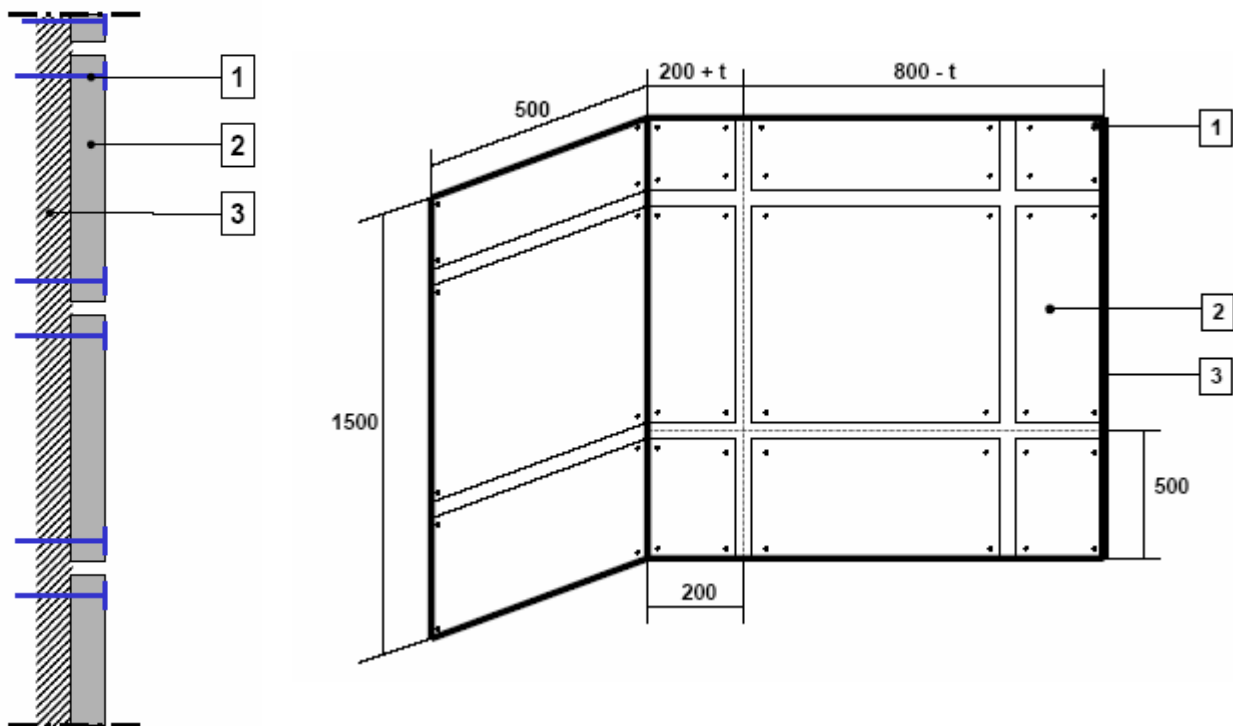
Different faced or coated suspended ceiling membranes, placed as such on the market, shall be classified. Faces or coatings may be grouped by PCS-value, in which case the suspended ceiling membrane with the highest PCS-value face or coating shall be subjected to SBI-testing. If the PCS-value does not lead to differentiation, the suspended ceiling membrane with the darkest coloured face or coating shall be subjected to SBI-testing. Alternatively, the influences of different colours of facings or coatings can be determined by performing SBI-tests on a light, on a dark and on a colour in the middle of the range.

NOTE Directional patterns and surface textures, covered by the scope of EN 13964, do not influence fire behaviour in end use conditions. If suspended ceiling membranes have directional patterns and surface textures, they will be mounted in a pattern, preventing influences on test results, due to the test method, as far as possible.



Figures 3a and 3b: Mounting and fixing for SBI in case of suspended ceiling membrane test, with air gap

Dimensions in mm



- 1. Fixing
- 2. Suspended ceiling membrane
- 3. Substrate
- t. Thickness of the test specimen (incl. substrate)

Figures 4a and 4b: Mounting and fixing for SBI in case of suspended ceiling membrane test, without air gap

2.1.4 Mounting and fixing of the test assembly

When testing to EN 13823, the test assembly shall be representative of end use conditions.

In accordance with manufacturer's specifications, suspended ceiling membrane components shall be tested incorporating an air gap which is ventilated and/or directly against the substrate. The results of testing without air gap cannot be used to classify applications with air gap, and vice versa.

The choice of the substrate is for the manufacturer to decide. This choice will have a direct bearing on the end use application of the product.

In case of testing with air gap, the frame between the backing board and the specimen shall be open at the sides to allow ventilation into the gap.

The assembly may be prepared and fixed together away from the test chamber. The complete assembly can then be transported to the chamber.

NOTE In the case of layered/coated ceiling membrane components, which are perforated, the area (m^2), to be considered for interpreting EN 13501-1 as regards non-substantial components, is the whole area (the overall area), including the area of the perforations.

2.2 End use application rules

2.2.1 General

The manner in which the product is tested has a direct consequence upon the manner in which the product or product family may be classified and used in the works. When determining the testing programme all aspects of the product in terms of its own parameters and its end-use parameters need to be considered. For ceiling membrane components, the following provides guidance on the potential end-use application rules which may apply dependant on the testing programme undertaken.

2.2.2 Influence of substrate

The substrate used behind the ceiling membrane in the EN 13823 determines the type of ceiling below which the ceiling membrane can be used.

If the ceiling membrane component was tested in front of particleboard, the membrane can be used below any wood structure, plasterboard or any other A2 or A1 product in end use.

If the membrane was tested in front of plasterboard the membrane can be used below plasterboard or any other A2 or A1 product. It may also be used beneath a wooden ceiling provided the distance between the membrane and the ceiling is greater than 250 mm.

In the case of testing for class A1 according to EN 13823, footnote, the standard substrate shall be the 11 mm silicate board. There are no end use requirements in this case as class A1 is considered for material properties only.

2.2.3 Influence of colour

Tests should only be conducted on the darkest colours. That classification will apply to all colours.

2.2.4 Influence of coating thicknesses

If the coating to the front and reverse faces varies significantly in mass per unit area ($> 1\%$) and tests conducted on the minimum and maximum quantities yield the same classification, that classification will apply to all coating thicknesses provided the value of each fire test parameter achieved is at least 10 % less than the criteria for that classification.

Note: If different classifications are obtained, additional testing shall be conducted to redefine the product family to which a single classification applies.

2.2.5 Influence of other variables

Other variable parameters such as organic content, type of coating, ceiling membrane component thickness, facings etc may be addressed in a similar manner to 2.2.4.

3. Substructure components

3.1 General

Generally, substructure components are fabricated from either bare or painted metal. The bare metal is deemed to satisfy Class A1 in accordance with EC Decision 96/603/EC, as amended. However, the reaction to fire class of painted metal shall be tested and classified in accordance with EN 13501-1.

NOTE Many paint systems (both powder coatings and wet applied) often have a PCS value greater than 2,0 MJ/kg (although they comply with the 2,0 MJ/m² requirement in note 2 of the Classification tables in EN 13501-1) and therefore the route to A1 lies through tests to EN 13823. Mounting and fixing details must therefore be determined.

3.2 Mounting and fixing in accordance with EN 13823

3.2.1 Dimensions of the test rig

The test to EN 13823 is essentially a test of the performance of the paint finish on the metal of the grid. The method used is to test the paint applied to metal panels, the metal being of the same gauge and having the same treatment for corrosion as the grid itself. Testing of the paint finish to the grid should therefore be conducted on metal panels.

Alternatively, mounting and fixing by placing the grid side by side to form the specimen is permitted.

3.2.2 Test specimen

The metal panels shall be mounted and fixed according to EN 13823.

Each coating applied to the substructure, as placed on the market requires testing. The coatings shall be applied to the metal of the same gauge as the grid, in the same thickness.

Influences of different colours of coatings can be determined by performing tests on a light, on a dark and on a colour in the middle of the range. Test results obtained from performing the test on the darkest colours apply to lighter colours as well.

Where different gauges of metal are used, the influence of this can be determined by performing tests on the thinnest and thickest gauge. Test results obtained from performing the test on the thinnest gauge apply to thicker gauges as well.

Where different thicknesses of paint are used, the influence of this can be determined by performing tests on the thinnest and thickest. Test results obtained from performing the test on the thickest paint apply to smaller thicknesses as well.

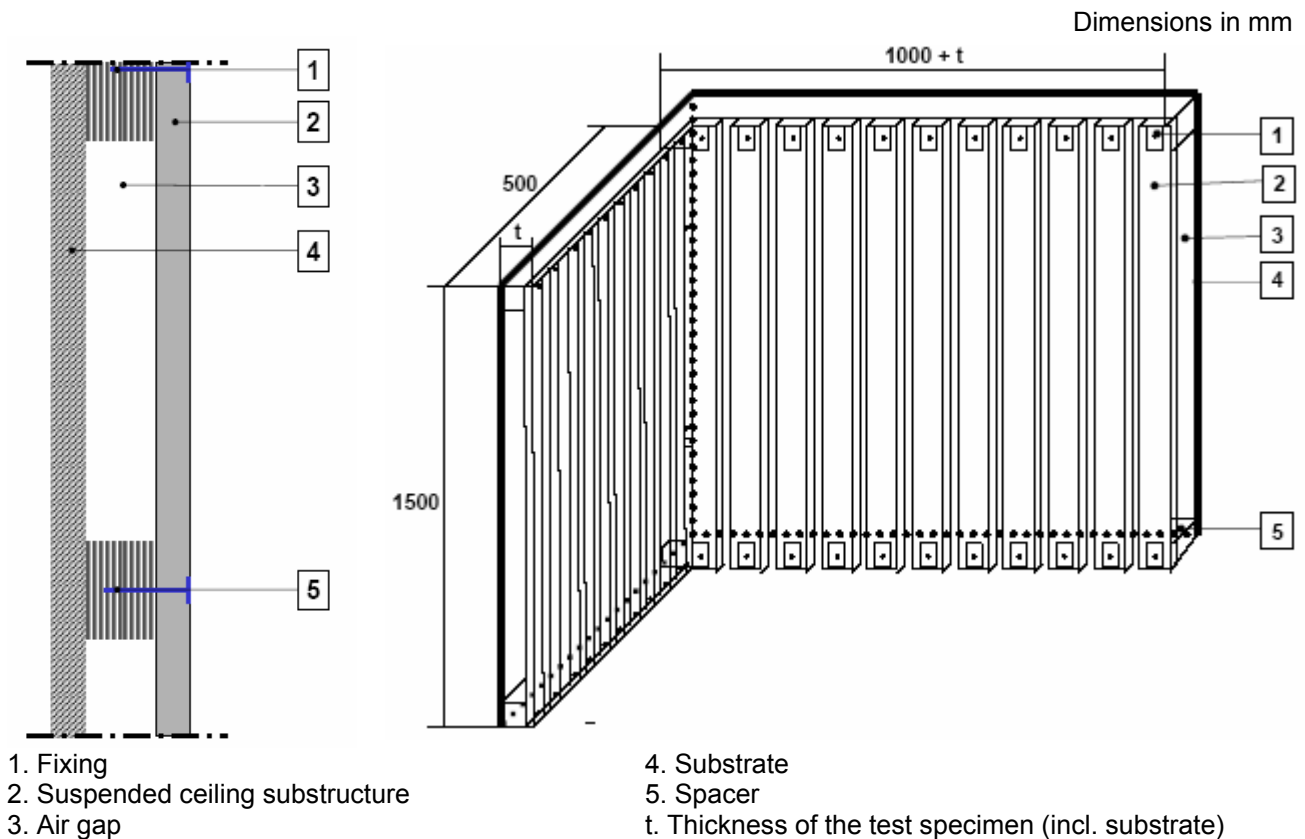
3.2.3 Mounting and fixing of the test assembly

When testing to EN 13823, the test assembly shall be representative of end use conditions. Suspended ceilings incorporate by their very nature air gaps and therefore the coated metal shall be tested incorporating an air gap which shall be ventilated. In end use conditions, above the air gap, a number of different substrates may be found the most common of which are plasterboard, concrete and wood (of several different types).

Therefore the mounting and fixing of the coated metal panels needs to take these rules into consideration and the test specimen should contain an air gap between itself and the chosen substrate which is placed against the backing board. The minimum distance between the substrate and the ceiling membrane shall be 40 mm. The choice of the substrate and the air gap distance is for the manufacturer to decide, however this will have a direct bearing on the end use application of the product

The frame between the backing board and the specimen shall be open at the sides to allow ventilation into the gap.

The assembly may be prepared and fixed together away from the test chamber. The complete assembly can then be transported to the chamber.



Figures 5a and 5b: Mounting and fixing for SBI in case of suspended ceiling substructure test, with air gap

3.3 End use application rules

3.3.1 General

The manner in which the product is tested has a direct consequence upon the manner in which the product or product family may be classified and used within the works. When determining the testing programme all aspects of the substructure component in terms of its own parameters and its end use parameters need to be considered. For this construction product, the following provides guidance on the potential end use application rules which may apply dependant on the testing programme undertaken.

3.3.2 Influence of air gap

The distance (X mm) between the coated metal and the substrate used in the EN 13823 test provides the minimum distance from the end use substrate at which the main runner and cross tees may be placed in end use.

3.3.3 Influence of substrate

The substrate used behind the ceiling membrane in the EN 13823 determines the type of ceiling below which the ceiling membrane can be used.

If the membrane was tested in front of particleboard the membrane can be used below any wood structure, plasterboard or any other A2 or A1 product.

If the membrane was tested in front of plasterboard the membrane can be used below plasterboard or any other A2 or A1 product. It may also be used beneath a wooden ceiling provided the distance between the membrane and the ceiling is greater than 250 mm.

4 Reaction to fire requirements for small products and components

Paragraph 4 is based on the EOTA PT4 document "Reaction to fire requirements for small components".

4.1 Principles

The reaction to fire performance of products and kit components, which have an insignificant influence on the development of a fire, i.e. their contribution to fire spread is insignificant and influences on the fire behaviour of the neighbouring products when assembled is not to be expected, need not be tested. The same applies to constituents of products if their contribution to fire spread is insignificant and influences on the fire behaviour of the neighbouring constituents is not to be expected.

When assessing products or kit components and their contribution to fire growth, distinction has to be made between products or kit components used in, on or to fasten structural elements which fulfil, in addition, resistance to fire requirements and products or kit components used in, on or to fasten structural elements that do not. For elements where the fire resistance performance may be influenced by small products or kit components, the reaction to fire performance of the products or kit components cannot be neglected. In this case, only small combustible surfaces or constituents of kit components or products could be considered as negligible when a contribution to fire propagation clearly is not expected.

4.2 Small kit components

A product or kit component, which is not class A1/A2, need not to be tested and classified separately when it has, in end use application, such a small size or small surface area that a contribution to fire growth or (in a fully developed fire) a contribution to smoke development and/or the production of flaming particles/droplets from this material are not expected. It can be assumed that a kit component with a mass ≤ 50 g and a surface area of ≤ 50 mm x ≤ 50 mm is considered to be a small kit component, which does not need to be tested and classified separately.

NOTE Examples: fixings such as screws, (plastic) anchors, staples, clips, nails, bolts and nuts and rivets having constituents which are not class A1 (e.g. surface coatings, plastic washers); plastic caps of screws or anchors.

Products or kit components, not considered as small products or kit components, shall be tested and classified according to EN 13501-1.

4.3 Small constituents

For small product constituents, which are not class A1/A2 that form part of a composite product and are situated on the surface of a product made of material classes B, C, D or E (e.g. plastic caps of anchors or fillings of small hollow spaces), reaction to fire testing and classification is not necessary when similar products are at a distance of more than 200 mm. However, the reaction to fire class of the product can be influenced by the small constituent and therefore has to be tested and classified as a whole.

4.4 Linear joint kit components

Linear joints, e.g. in or through walls or floors or between building elements or joints extending over the whole façade of a building might have small sizes on the surface of the elements, but can contribute to fire propagation. Fire spread due to the linear joint material on the surface of the element or the façade or to the interior is to be feared. Therefore joints generally cannot be considered as products with small area/surfaces. They do not have small surfaces and are not products of small areas.

Linear joint products or kit components shall be tested and classified according to EN 13501-1.

4.5 Embedded constituents

Small constituents embedded all-round in material of class A1 shall be considered, in the context of end use application, to satisfy any reaction to fire requirement, if this end use situation is assured during the working life of the construction.

NOTE Example: When considering metal anchors with their different parts and components and the influence to the fire behaviour of the surrounding product, the metal parts of metal anchors (torque-controlled expansion anchors, undercut anchors, deformation-controlled expansion anchors) are assumed to satisfy the requirements for reaction to fire class A1, in accordance with the provisions of EC Decision 96/603/EC (as amended) without the need for testing on the basis of its listing in that Decision. The non-loadbearing plastic parts of anchors or any coating (e.g. coating of the cone) are located near the inner end of the anchor and these parts are completely embedded in the concrete in their end use application. Furthermore, the plastic parts and the coating are very thin. Therefore it may be assumed that these parts in connection with the metal anchor in end use application do not make any contribution to fire growth or to the fully developed fire and they have no influence to the smoke hazard. In the context of end use application of the anchors, the plastic parts and the coating can be considered to satisfy any reaction to fire requirements.

The end use application of products shall be assessed, when a small constituent embedded in or on the surface of a construction product, which is not class A1, to determine whether the reaction to fire class of the surrounding product is influenced. Separate testing and classification of the small component is not required when an influence is not expected.

NOTE Example: When considering plastic anchors for use in concrete and masonry, and the influence to the fire behaviour of the surrounding products, the metal parts of the anchors are assumed to satisfy the requirements for reaction to fire class A1, in accordance with the provisions of EC Decision 96/603/EC (as amended) without the need for testing on the basis of its listing in that Decision. The anchors are used to fix a suspended ceiling membrane (or other kit component) which is not class A1 and the plastic constituents of the anchor are located in the drilled hole of the substrate (concrete or masonry) and fixture. Where the plastic constituents of the anchor are embedded in concrete or masonry it may be assumed that they do not contribute to fire growth or to the fully developed fire and they have no influence to the smoke hazard. In the context of this end use application, the plastic constituents embedded in concrete or masonry can be considered to satisfy any reaction to fire requirements.

Where the plastic constituents of the anchor are embedded in the suspended ceiling membrane, which is not class A1, the plastic constituents shall be assumed not to influence the reaction to fire class of the suspended ceiling membrane.

4.6 Declaration of conformity

The manufacturer shall specify in his declaration of conformity which product or kit components have been considered as small kit components that do not need to be tested. In his technical file, he shall specify how the constituent is part of the product and/or how the product or kit component is incorporated in the works.