TAIM TECHNICAL INFORMATION

FIRE PROTECTION WITH METAL CEILINGS

January 2005

Preventive structural fire protection with metal ceilings

The importance of preventive structural fire protection is highlighted through alarming statistics. In Germany alone, around 70,000 buildings burn down each year with approximately 800 people losing their lives and many more injured. The worldwide figures are illustrated below:

Fig. 1 Deaths by fire per year/million pop.:

Europe		Other countries	
Switzerland	4.3	Singapore	2.0
Spain	6.0	Australia	7.1
Netherlands	6.8	Canada	14.6
Austria	7.9	Japan	17.4
Italy	8.2	USA	18.6
Germany	9.8		
France	10.1		
Belgium	12.4		
England	12.9		
Sweden	13.8		
Denmark	17.1		

Source: World Fire Statistics Center 2000

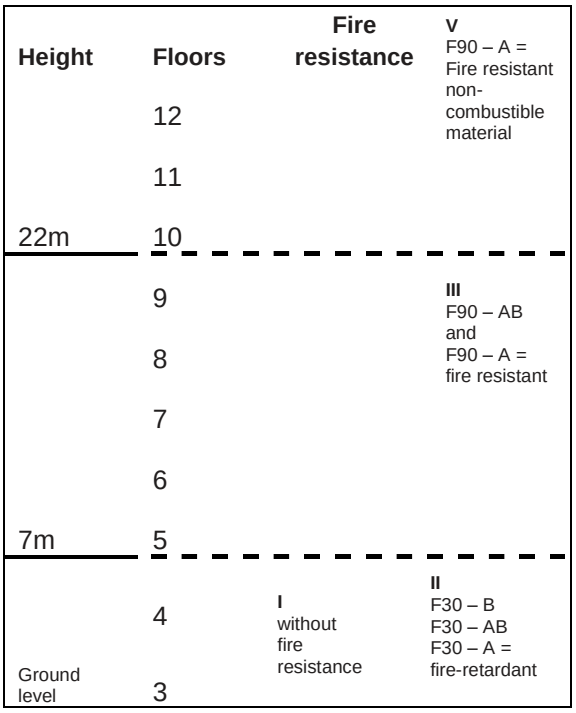
Preventive structural fire protection must mainly serve to protect the life and health of the occupants (personal protection), but must also serve to preserve material assets and protect the environment.

The national legal requirements display very marked differences, but in terms of protection objectives, there is widespread agreement. If it is necessary to increase the safety of a building, the following basic rules can be applied.

- the outbreak of fire must be prevented.
- the spread of fire and smoke must be inhibited.
- the rescue of humans and animals must be facilitated.
- effective fire fighting must be feasible.

As a rule, these are distinguished by building classifications, which are dependent on building height and use.

Fig. 2 Exemplary requirements for fire resistance and building material classes of load bearing and fire resistant components:



Group I	Residential buildings with up to two apartments
Group II	Buildings of low-height
Group III	Buildings of mid-height
Group V	High-rise buildings

Note:
This example is only for illustrative purposes. The exact, specific national requirements for load bearing components and suspended ceilings are to be considered by the building designer. Primarily, the personal protection in terms of rescuing people from burning buildings can be achieved through the following structural measures:

- Arrangement of escape and rescue routes (corridors, stairwells, windows) to evacuate people quickly from burning buildings into the open.
- Measures to prevent the spread of fire through ceilings, walls, doors, compartments and wall linings within a building or for the protection of neighbouring buildings.
- Requirements on building materials (combustibility, flammability, fire side effects)
- Measures to ensure the stability of structural components (load bearing walls, columns, ceilings) for a sufficient period of time.
- Other measures, e.g. sprinklers

The technical fire protection requirements of the building components (e.g. walls, ceilings, stairs) and building areas (e.g. escape routes, stairwells) and the properties of building materials (building material classes) and components (fire resistance) are included in the respective, national regulations and should be taken into account by building designers.

Performance of metal ceilings acc. to TMMC in case of fire

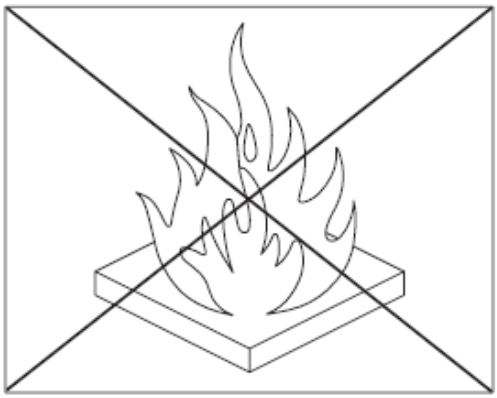
Metal ceilings according to TMMC are ideally suited to meet the above protection requirements, when applied and installed correctly. Metal ceilings can make a valuable contribution, whether being used as “non-combustible“ or “fire resistant“ components, thereby reducing the risk of injury or death to people. Metal ceilings help to implement the general, legal requirements for the prevention of fire and limitation of fire damage in practice.

Material performance of metal ceilings acc. to TMMC

The base materials for suspended ceilings according to TMMC are steel and aluminium.
The base materials make no contribution to fire development or fire propagation as neither steel nor aluminium release thermal energy or fumes, provided they are untreated and not used in combination with combustible materials. Unpainted steel or aluminium is assigned building material class A1 (non-combustible).
As steel and aluminium ceiling panels are usually provided with a surface coating which can influence the fire performance, the influence of such coatings, as with other materials, must be taken into account.
To verify the non-combustibility of metal ceilings with surface coatings or fleece laminated ceiling panels, an appropriate classification according to European or national standards must be presented. It may also be required, dependent upon national regulations, to provide further confirmation to prove suitability of use. Colour coated or acoustic fleece laminated metal ceilings are available on the market as ”non-combustible”.

Note:
The assigned building material class or fire resistance class can be found in the commercial literature of the manufacturers of the member companies.

Fig. 3 Metal ceilings are available as “non-combustible“



Component performance of metal ceilings acc. to TMMC

With the appropriate construction it is possible:

- to design a metal ceiling that meets an “independent“ fire resistance class.
- or to construct in such a way that the fire resistance rating of the soffit is improved with a suspended metal ceiling underneath it (“metal ceiling tested in conjunction with the soffit“).

Metal ceilings that are “independent from above“ can contain fires in the ceiling plenum providing people the possibility to escape. In the case of fire in an escape route, metal ceilings classified as “independent from below“ can maintain the functionality of vital installations, such as emergency power supplies in hospitals, for the assessed period of time.

Fig. 4 Metal ceilings are available with fire resistance class “independent, fire from below “

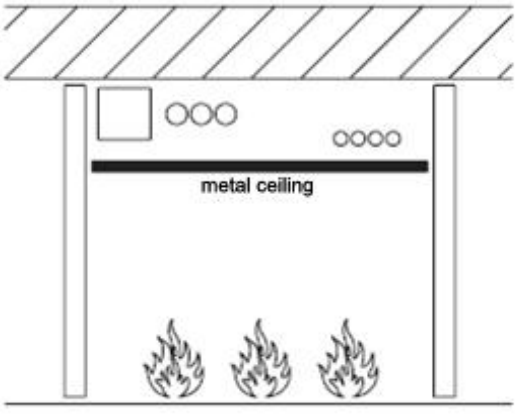
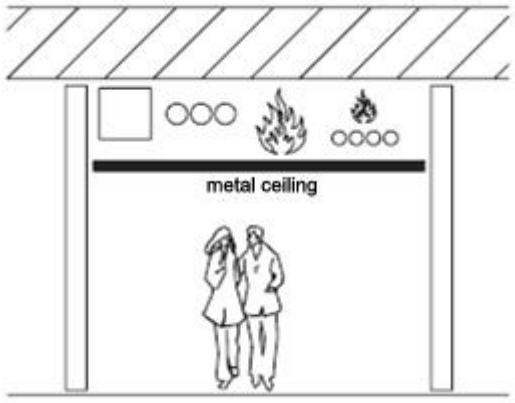


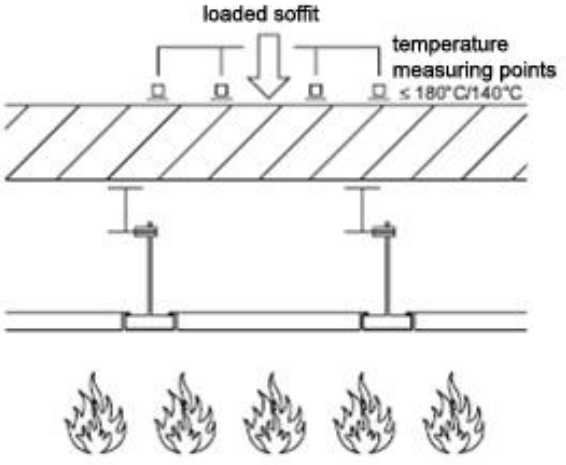
Fig. 5 Metal ceilings are available with fire resistance class “independent, fire from above “



Fire resistance classification of metal ceilings “in conjunction with the soffit”

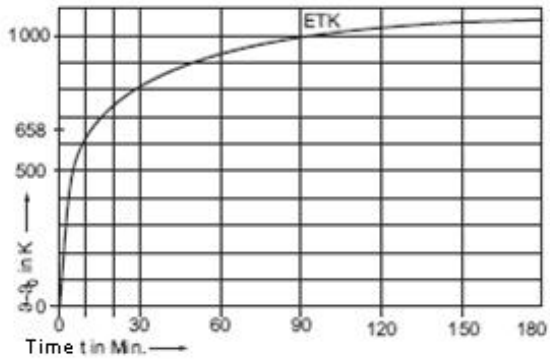
Metal ceilings can be considered in conjunction with the soffit. The metal ceiling protects the soffit in case of fire so that the soffit’s load bearing capacity and ability to contain the fire remains intact for the duration of the assessed time period. During fire tests, the soffit is exerted to the nominal loads that it must support. The details, e.g. which soffits can be improved, can be obtained from the respective classifications. It is essential to take this into consideration when applying such ceilings.

Fig. 6 Diagram of a metal ceiling tested “in conjunction with the soffit”



The fires in all of these tests are simulated as a “model fire” on the basis of the Standard Temperature Time Curve (ETK) according to EN 13501-2/ISO 834.

Fig. 7 Temperature conditions in the furnace reflect the Standard Temperature Time Curve (ETK)



The fire progression simulated here, correlates to a very fast heating-up period and presents a severe demand. In addition, there are further fire models e.g. an extremely high demand for instances such a tunnel fires, but also reduced models e.g. the “500 degree curve“, in which the temperature does not exceed 500 degrees Celsius. For more accurate analysis, the selected model should be scrutinised as the results for each fire model can differ considerably.

Metal ceilings classified “in conjunction with the soffit” are available on the market. Please refer to the members marketing material.

Fire resistance details of metal ceilings with “independent„ classifications

Metal ceilings can provide functional and vital escape routes that still meet practical demands in terms of being easy to maintain and can be retrofitted in buildings. A metal ceiling classified as “independent“ must maintain its fire integrity and the temperature on the side away from the fire may not exceed more than 180°C (single value) or 140°C (average) above the initial value.

It is fundamental to consider that aluminium structures dissolve and melt at around 650 degrees Celsius and are therefore as a rule, not suitable for fire resistant components or constructions. Aluminium constructions often only fulfil optical functions.

Steel has a high thermal conductivity, begins to glow quickly when heated and expands greatly, which can lead to significant deformation of a ceiling construction. The strength of steel increases when heated up to 200°C, but then reduces quickly to around a sixth of its original strength, a property that

must be considered for ceiling panels, as well as substructures, hangers and fixings.
When fixing to a building structure, only fixings which have been approved as suitable for use in case of fire can be used.

Apertures for services, joints or fixtures must be tested. An unsuitable light fitting, for example, could in the case of fire, overheat or collapse, rendering the ceiling useless in a very short space of time. The same applies for the connections and installations e.g. ventilation systems. Coordination of the components as a system is required to ensure the function of a fire resistant ceiling in case of fire. It can be, for example, that a metal ceiling tested in conjunction with a connection to a solid, brick wall, fails when it is installed with a connection to a plasterboard wall as the connection detail is not designed for the deformation of this wall type in case of fire.

Therefore, metal ceilings that serve to fulfill the requirements of a fire resistance class must be carefully and comprehensively designed in case of fire. The same also applies for ceilings made of other materials.

Fig. 8 Diagram of a metal ceiling tested as “independent from above”

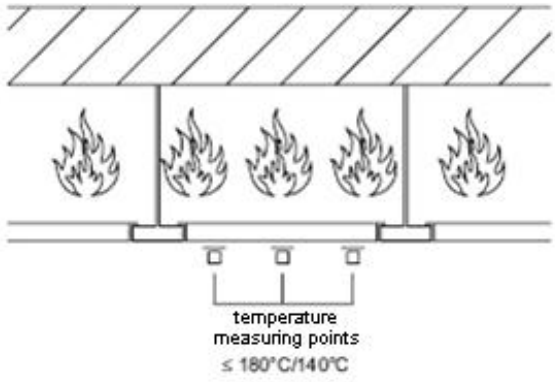
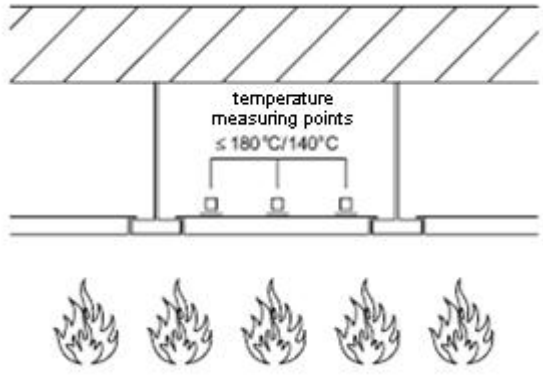


Fig. 9 Diagram of a metal ceiling tested as “independent from below”



Metal ceilings classified as "independent“ are not additionally loaded during the fire test and therefore the introduction of additional loads, e.g. through parts of the soffit or installations collapsing during a real fire, must be ruled out or also tested.

If the construction requires "independent“ components, the national regulations for application should be considered in addition to the test regulations. In Germany, the ceilings must be classified in separate tests, both from above and below with identical ceiling constructions and a general building regulations test certificate (ABP) must be present. The manufacturer must explicitly confirm (with a declaration of conformity, ÜH) conformity to this ABP. For details, see for example the hospitals directive and standard cable systems directive (MLAR).

"Independent“ classified metal ceilings are available on the market, see the members marketing material for details.

Metal ceilings that prevent a suspended ceiling from collapsing, in case of fire

In some European countries it is required that a suspended ceiling, in case of fire, should not collapse for a defined period of time. These tested constructions are simply constructed and can not be compared with constructions classified as „independent“.

The aim of ceilings tested against “collapse“ is solely to apply a protective effect to the supporting structure and installations. However, such ceilings do not limit the increase in temperature, so that extremely high temperatures can occur in the ceiling plenum. A protective effect is only maintained over a short period of time, even when such a ceiling does not collapse over a relatively long period of time.

Such a classified ceiling does not contribute to the protection of an escape route under a ceiling, as the fire is simulated in the escape route due to no evidence of protection in case of fire from above.

European harmonisation of fire protection tests

The harmonisation of fire tests is a political objective within the EU and is generally covered in the European wide “Construction

Products Directive“. The directive has meanwhile been adopted as national law by all of the member states and is to be adhered to. The process of harmonisation has proved difficult as historically, every country had very different requirements which could not be compared in one system.

It was recognised very early on that differences between test requirements and application regulations (requirements) must be clearly distinguished in order to reach an overall agreement.

The different national regulations have remained following the harmonisation of the test requirements regarding metal ceilings (amongst others), because the harmonised requirements only relate to regulating the fire protection test requirements and classifications, but do not state national application regulations. These regulations can still differ greatly due to politics and/or national requirements and are the responsibility of each member state. In addition, the different national transitional periods should be considered e.g. those that lead to national and European standards running parallel to one another.

This approach may appear undifferentiated and regarded as a trade barrier, but it was the only way to find a common denominator in terms of standardisation of fire protection within Europe, which has had a complex, historical development. This has already led to the mandating of standards (the go ahead to create a new standard or the adjustment of standardisation processes) to be done in such a way that they could be introduced in every country that regulates the said theme. Furthermore, the process of “class formation“ would be done in such a way as to meet the different regulations and fulfil the complying levels of protection and open up the opportunity for each member state to maintain the correct level of protection, deemed at that time.

European classes for both fire performance of building materials as well as fire performance of construction elements were created according to these national requirements. For both different areas, CEN/TC 127 “Fire safety in buildings“ created classification standards in addition to the creation of required test standards, one for the reaction to fire of construction products and one for the resistance to fire of building elements.

They are:

- EN 13501-1 Fire classification of construction products and building elements – Part 1: Classification using 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.

Therefore a comparison of the current national, technical fire protection requirements regarding the fire performance of building materials and components in the individual member countries is required with the new European classes.
The building control authorities in each of the individual member countries are currently stating which European reaction to fire of building material classes and which fire resistance of components classes will be required in the future, according to the current national regulations.

For the suspended ceiling user, this means that the respective country-specific regulations regarding the applicability of European classes must be observed. Proof of a European building material or component class alone, as a rule, does not allow the product to be used nationally. This also applies when a metal ceiling has a CE mark, obligatory after 01.01.2006, as this only documents a minimum standard enabling free trade within Europe, but not the unlimited, national regulations.

European harmonisation: Building material classes

The European standard EN 13501-1 defines the procedure for the classification of the reaction to fire of construction products.
The EU classification system has in total seven Euroclasses (Euroclass A1, A2 and B to F) and is based on different test procedures. Three properties of reaction to fire are considered during the assessment:

Flashover
Development of smoke
Burning droplets

Flashover
In a real fire, flashover, i.e. the sudden ignition of gases, plays a major role. This has been taken into account when compiling the new

test standards. Building products in Euroclasses A1, A2 (non-combustible) and B (hardly combustible), can not contribute to a flashover while the combustible products in classes C, D or E lead to flashovers at different rates. Easily combustible products in Class F were not tested.

Class A1, A2	Flashover not possible
Class B	Flashover not possible
Class C	Flashover after more than 10 minutes.
Class D	Flashover inside 2-10 minutes
Class E	Flashover in less than 2 minutes
Class F	not tested

New subclasses for smoke and burning droplets

According to the European classification system, the development of smoke is tested for classes A2 to D. There are three levels of intensity: s1, s2 and s3.
In addition, materials are tested for burning droplets/particles. There are three classes:

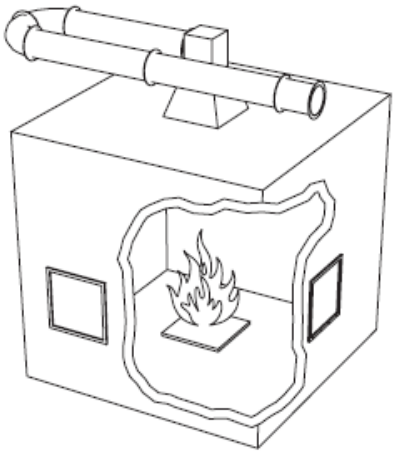
d0:	no burning droplets
d1:	no burning droplets after 10 seconds.
d2:	neither d0 nor d1

The SBI test method

At the core of the new system is the SBI ("single burning item") test, a mid-scale test method. Generally, the larger the scale of the test method, the more realistic and reliable the test results will be. For this reason, the limits of the Euroclasses A1 to E are based on the results of a large scale test method, the ISO 9705 Room Corner Test. Since it is very difficult to test all building products on such a large scale and due to the many different national test methods which could not be standardised, the new SBI test method was developed with the Euroclass assignments A2 to D.

As some technical details of the new test method are unclear or controversial, the results of this test are currently under national debate and as yet only limited in use, or following clarification, in individual cases in individual EU countries.

Fig. 10 Diagram of the new SBI Test method



Measured by the SBI test are:
Total heat released (THR)
Lateral flame spread (LFS)
Speed of growth of heat release rate (FIGRA)
Smoke production (SMOGRA „S") and
burning droplets („d")

The results of this test are used together with other necessary tests to classify a building material, ceiling panel or substructure profile in one of the classes A to F ("classification").

However, to prove non-combustibility, other test procedures e.g. according to EN ISO 1716 (calorific value determination), must be carried out. The classification procedure and the alternative possible procedures along with the applicable limits are given in detail in EN 13501-1.

Fig. 11 Applicable test procedures for the determination of a European building material class

Class	Test procedure
A1	EN ISO 1182 and EN ISO 1716
A2	EN 13823 (SBI) and either EN ISO 1182 or ISO 1716
B	EN 13823 (SBI) and EN ISO 11925-2
C	EN 13823 (SBI) and EN ISO 11925-2
D	EN 13823 (SBI) and EN ISO 11925-2
E	EN ISO 11925-2
F	No performance determined

If the limits (not given here) according to EN13501-1 are met, it is possible for a surface finished or fleece laminated metal ceiling to prove non-combustibility and obtain the building material classification “non-combustible”. Metal ceilings are available in accordance with EU guidelines, please see the member companies marketing material.
Steel or aluminium sheets are classified as "non-combustible“ without any further testing, provided they are uncoated or only galvanised.

European harmonisation: Fire resistance classes of building elements

The test procedures are necessary to classify the fire resistance of a building component or a construction type (the combining of different building components on site). The fire resistance indicates how well a building component can resist fire for a defined period of time and prevent the spread of fire.

The major European test standards were published in 1999. The tests for metal ceilings are conducted according to EN 1364 part 2 (independent metal ceilings) or EN 1365 part 2 (load bearing components). The classifications are according to 13501-2. These test procedures provide information on how long a building component can withstand a defined fire load in a large scale test. The classification of the duration of fire resistance in minutes is divided into classes e.g. REI 30, R 60 or EI 90, and describes the fire resistant capabilities of the tested building component, the number representing the fire resistance in minutes. The major information of a classification is expressed as an abbreviation.

Fig. 12 Explanation of the abbreviations acc. to the new EN classification, taken from EN 13501-1 - the relevant abbreviations for suspended ceilings

Derivation of abbreviation	Criteria
R (Résistance)	Load bearing capacity
E (Étanchéité)	Integrity
I (Insulation)	Thermal insulation (under the influence of fire)
a ↔ b (above - below)	Direction of the classified fire resistance rating

R (Résistance) Load bearing capacity (Structural stability of the building)
E (Étanchéité) Integrity (part of the building stays intact)
I (Insulation) Thermal insulation (keep the temperature low under influence of fire)

In addition to these three basic criteria, there are a variety of other criteria that provide further information for the classification of fire resistance, such as W (Radiation, limiting the pass by radiance), M (Mechanical, mechanical effect on walls, impact stress), S (Smoke, limiting smoke permeability, density, leak rate), G (soot resistance), C (Closing, self-closing properties), P (Maintaining the power and/or signal transmission). Some however are not essential for metal ceilings.
The abbreviation **a** ↔ **b** means that such a ceiling is classified from both above and below i.e. successful in at least two (separate) fire tests with identical set up of the respective fire attack direction.

A fire resistant component (e.g. an independent classified suspended ceiling) that has achieved the classification EI 30 **a** ↔ **b**, must withstand the flames for a minimum of 30 minutes from both above and below, during the fire test. The Integrity (e.g. no large cracks through the component; criteria “E“) and the Thermal Insulation (temperature criteria single value: max. 180 degree increase/ average max. 140 degree increase on the side away from the fire; criteria “I“) must also fulfil the minimum time. The load bearing capacity (criteria “R“) is not relevant for independent metal ceilings. It is only relevant in conjunction with the soffit, when it is protected by a metal ceiling.

National building authority requirements for components to guarantee a defined period of fire resistance are expressed, for example, by the terms “fire retardant” and “fire resistant”.

The various test possibilities and protection aims of metal ceilings

- “in conjunction with the soffit”
- “independent from above”
- “independent from below”
- “against collapse”

have been explained above.

Product Standard EN 13964 in conjunction with fire protection from metal ceilings

With the completion of a product standard for suspended ceilings, the theme of fire protection reached a new dimension.

The harmonised test and classification standards for fire protection in conjunction with the European product standard for suspended ceilings (EN 13964), make it possible for metal ceilings according to TMMC to be marketed across Europe. The CE mark signifies that a metal ceiling has undergone the required testing and certification procedures. The product fulfils defined minimum requirements for the general fitness for purpose of suspended ceilings. The CE mark is a kind of “technical passport” for construction products. Products with the CE mark can move freely within the European market. However, the CE mark is not a quality mark. The product manufacturer alone is responsible for the declaration. The label for suspended ceilings does not include regular monitoring. It also does not guarantee that a suspended ceiling can be used to fulfil the national building requirements.

In the product standard EN 13964 the technical fire protection requirements are distinguished as:

- Reaction to fire of building materials – Building regulations designation e.g. „non-combustible“, "hardly combustible“ etc.

- Fire resistance of construction components Building regulations designation e.g. "fire retardant“, "fire resistant“ etc.

Due to mandatory labelling it is necessary as of 01.01.2006, to at least declare the reaction to fire of a metal ceiling (as also with all other ceilings). Declaration of the fire resistance of construction components is not mandatory.

Thus, a developed product that receives a CE mark, (with additional requirements according to the product standard), as confirmation of conformity to the harmonised product standard (EN 13964), can be traded without additional proof within the member countries.

However, a metal ceiling that serves to meet national fire protection regulations may not yet be directly ”used” i.e. installed.

In this case national application regulations should be considered, for example, those that regulate the assignment of building material classes and/or require additional evidence of suitability for use in individual EU member states, when these regulations can go beyond that of the documented properties of the CE mark.

Fig. 13 Example of a CE mark for a metal ceiling acc. to EN 13964 with building material class “hardly combustible“

CE

XYZ Ltd., P.O. Box 21, B 1050
03

EN 13964
Suspended ceiling kit for use internally in buildings

Reaction to fire:	Panels Class B-s1, d0 Substructure Class A1
Fire resistance:	NPD

If the ceiling also fulfils fire resistance requirements, this can be stated here with the European class.

National specifics regarding the use of the EN classification of building materials: example Germany

In Germany, classifications are currently applicable according to DIN 4102-1 and DIN EN 13501-1 for certifying the reaction to fire of a building material, until a further alternative is available.
Thereby, a general building regulations test certificate (ABP) together with a declaration of conformity from the manufacturer (ÜH) or a certificate of conformity from a certified body (ÜZ) are required as proof of building regulation conformance.
This practice is set out in the Building Regulations List (BRL). These regulations were made because several details such as fixing and specimen position in SBI tests are still not standardised and sufficient information is missing from the current product standards, including the suspended ceiling standard EN 13964.

In the case of suspended ceilings, a classification according to EN 13501-1 (building materials) and EN 13501-2 (building components) can be declared from every notified test institute whose test procedures are in accordance with EU standards. An ABP or ABZ, however, can only be issued by an authorised body within the building control process in Germany.

Classifications in accordance with EN standards for suspended ceilings that are valid by building regulations in Germany, must currently be provided in the form of an ABP or an ABZ (with additional toxicity tests), issued by a nationally recognised certification body. Information is given in detail from the DIBT (German Institute for Building Technology, Berlin) or nationally certified test bodies.

The following classifications are valid in accordance with BRL A part 1 appendix 0.2.2. (excerpt):

Fig. 14 Building material classes in Germany acc. to the new EN building material classes

Building regulation requiremen-ts	Additional requirements		European class acc. to DIN EN 13501-1
	No smoke	No burning droplets	
non combustible	X	X	A1
	X	X	A2 - s1, d0
hardly combustible	X	X	B, C - s1, d0
		X	B, C - s3, d0
	X		B, C - s1, d2
			B, C - s3, d2
Normally combustible		X	D - s3, d0 E
			D - s3, d2
			E - d2
easily combustible			F

Note:
Further details and further tests and limit values can not be discussed in this document. The submission of evidence alone e.g. that fulfils the requirements of A2-s1, d0, to prove a building material is classified as “non-combustible”, is not enough. Refer also to figure 11 of this document.

National specifics regarding the use of the EN classification of building components: example Germany

The fire resistance of metal ceiling components are classified according to EN 13501-2. Alternatively in Germany, classifications are also applicable according to DIN 4102 and DIN EN 13501-2 for proving the fire resistance of building components.
Up till now, as with building materials, a general building regulations test certificate (ABP), issued by a nationally certified testing body is required in addition to a classification in accordance with the relevant EN standards. The tests for metal ceilings are carried out in accordance with the corresponding parts of DIN 4102 or alternatively according to DIN EN 1364 part 2 (independent metal ceilings) or DIN EN 1365 part 2 (load bearing components).

This practice is set out in detail according to BRL A part 2, section 2.1, BRL A part 3 issue 1 and in the BRL A, part 1 appendices. The following classifications are valid in accordance with BRL A, part 1 appendix 0.2.2. (excerpt):

Fig. 15 Fire resistance classes in Germany acc. to the new EN component classes

Building regulation requirem-ents	Load bearing components		Indepen-dent suspend-ed ceilings
	Without fire resista nce	With fire resistanc e	
Fire retardant	R 30	REI 30	EI 30 (a ↔ b)
Highly fire retardant	R 60	REI 60	EI 60 (a ↔ b)
Fire resistant	R 90	REI 90	EI 90 (a ↔ b)
Fire resistant 120 min.	R 120	REI 120	-
Fire wall	-	REI-M 90	-

Note:
The column “load bearing components“ is only relevant to metal ceilings tested in conjunction with the soffit.

National specifics regarding CE marking in conjunction with building material or component classifications: example Germany

If for example in Germany a steel metal ceiling is used in a place of assembly, as a rule, the building regulation requirements “non-combustible“ or “hardly combustible“ are to be fulfilled.

The CE mark, according to EN 13964, alone (see example in figure 13) is insufficient to prove the suitability for use in terms of building regulations e.g. to prove the non-combustibility or the resistance class of a metal ceiling, because according to the Building Products List a general building regulations test certificate (ABP) or a general building regulations technical approval (ABZ) is to be submitted.
An ABZ is then necessary if additional information regarding the toxicity of a building material in the case of fire is required. For details and the necessary attestations of conformity ("ÜZ“ a certificate of conformity from a recognised certified body or "ÜH“ a declaration of conformity from a manufacturer) refer to the Building Products Lists (see above).

This means for example, that the classification of an F30 ceiling or an A2 ceiling tile that has been assigned in an EU member state can not be used in Germany as valid proof of meeting building regulations, even if the testing institute has an appropriate notification for testing in accordance with EN standards.

The evidence is only currently valid in German building regulation procedures if the classification is available as an ABP (general building regulations test certificate) or as an ABZ (general building regulations technical approval), issued by a nationally certified test body (for ABP) or the DIBT (for ABZ). Whether and to what extent a classification assigned by a certified institute in an EU member state can be “rewritten“ as a valid ABP or ABZ, has to be clarified in each individual case.

Summary

Metal ceilings in accordance with TMMC are ideally suited to fulfil fire protection requirements, when applied and installed correctly and make a valuable contribution to structural fire protection.

With the completion of the EU wide standards to determine the building material class and the fire resistance class of metal ceilings, instruments are available to enable the testing and classification of the building material class of a metal ceiling or the fire resistance of a metal ceiling construction, according to the standardised European criteria.

Due to the large national differences and the standardised test procedures that are not yet fully detailed, it is possible in the future that the EU member states apply additional application requirements that regulate the suitability of metal ceilings tested and classified according to European criteria and establish national specific requirements.

It is for example possible in Germany to use the building material or building component classifications according to the relevant (old) DIN 4102 standard as an alternative to the new European DIN EN 13501-1/2 guidelines to prove the reaction and resistance to fire of building materials and components.

However, in addition to a classification according to the relevant EN standards and in accordance with the respective building regulations, further national proof of usability is required. In Germany for example, an ABP for building components and materials (general building regulations test certificate) or an ABZ for building materials with additional toxicity tests (general building regulations technical approval), is issued by a nationally certified test body.

This applies regardless of the fact that the CE mark, legally required for suspended ceilings since January 2006, must at least state the building material class on the basis of the EN classifications in the declaration of conformity, as an ABP or an ABZ is required in addition to the national proof of usability (for Germany) in cases with building regulation requirements for building material and component classes. For the applicable regulations, refer to the current Building Products Lists and their appendices. If no building regulation requirements are stated, the CE mark is sufficient to allow the metal ceiling to also be brought into the German market.
Only time will tell to what extent additional national usability requirements will also apply in other countries, over what time period they will apply or when the final standardised test procedure requirements will be available.

The importance of the CE mark of suspended ceilings is incidentally not transferable to any other products used in dry construction trade.

Thus, for example, with fire doors, the CE mark alone should be sufficient to serve as valid proof for building regulations. However, stricter conformity systems are to be used, different to those with suspended ceilings that call for ongoing quality control by certified test bodies.

Note

European standards in this document are only expressed as “EN“. The respective national version states the country specific prefix in the form of the national standard abbreviation and is used for national classifications.

The respective, country specific regulations are to be complied with and the building designer must specify the requirements. Any other national specific requirements e.g. regulations for hospitals, high rise buildings, schools, retail and places of assembly, further legal requirements or requirements of non EU states are not covered in this technical bulletin.

For further information regarding individual products and test information, please refer to the marketing material of our member companies. The current version of this document is available from TAIM e.V. Leostraße 22, D – 40545, Düsseldorf or can be downloaded from www.taim.info

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Technical Association of Industrial Metal Ceiling Manufacturers (TAIM) e. V.