



OWAcoustic®
premium

OWAconstruct®

FIRE: EN 13501
The European Standard
OWAcoustic® Ceilings
Reaction to Fire
Fire Resistance





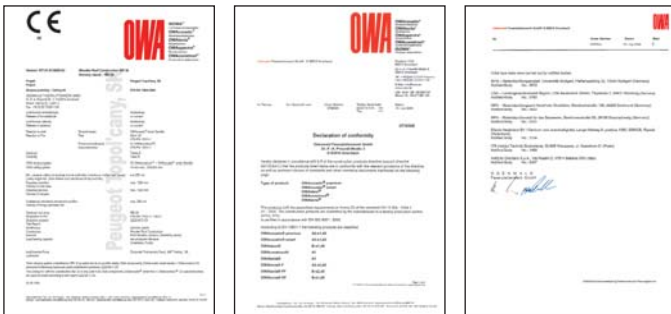
The European Standards

The harmonized European Fire Standards are a set of test standards that have been accepted by all countries within the European Economic Community. This allows manufacturers to produce or import products that have been tested to a common standard without the need to test in each member state. Testing to these standards is now accepted in all EEC countries.

Compliance with the European standards and regulations is mandatory.

All certified European test laboratories (“Notified Bodies”) who are listed with EOTA (European Organisation for Technical Approval) may perform these tests and issue the corresponding test reports (ITT – Initial Type Testing). In addition there may be national test or building regulation requirements that may need to be observed.

The Declaration of Conformity and the “KIT” CE label are the two main documents that will normally be required by local authority officers to show that the intended ceiling system will meet the specified performance level. The use of components other than those supplied by OWA will prevent the issuing of a KIT label.



Reaction to Fire

If a fire is able to find sufficient flammable materials it will quickly spread through an area. It is therefore crucial to use materials of limited combustibility on key surfaces within a room, such as ceilings and walls. The use of such materials can dramatically reduce the speed flames spread through an area as well as minimise their contribution to the fire.

The European standard EN 13501-1: Reaction to Fire provides a number of performance criteria to measure the fire characteristics of building products. These cover spread of flame and contribution to fire as well the generation of smoke and the production of burning droplets. The table below provides an overview of the available classifications.

Additional requirements	No burning droplets falling/dripping	European class according to EN 13501-1
✓	✓	A1
✓	✓	A2-s1,d0
✓	✓	B-s1,d0
✓	✓	C-s1,d0
	✓	A2-s2,d0
	✓	A2-s3,d0
	✓	B, C-s2,d0
	✓	B, C-s3,d0
✓		A2-s1,d1
✓		A2-s1,d2
✓		B, C-s1,d1
✓		B, C-s1,d2
		A2-s3,d2
		B-s3,d2
		A2-s3,d2
✓	✓	D-s1,d0
	✓	D-s2,d0
	✓	D-s3,d0
		E
✓		D-s1,d2
		D-s2,d2
		D-s3,d2
		E-d2
		F

The additional designations are:

Smoke
s1, s2, s3
s1 = little or no smoke generation
s2 = medium smoke generation
s3 = heavy smoke generation

Burning droplets
d0, d1, d2
d0 = no droplets within 600 seconds
d1 = droplet form within 600 seconds but do not burn for more than 10 seconds
d2 = Not as d0 or d1

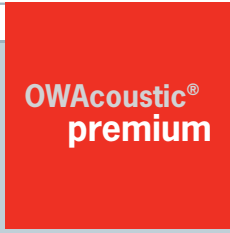
Country	Test standard	Classification
EC member states	EN 13501-1	A2-s1,d0 B-s1,d0
Switzerland	Guide to fire regulations, 1976	VI q.3 virtually non-combustible, smoke level low
USA	ASTM E 84-97 a	class I

Fire Resistance

Fire resistance class EN 13501-2	Fire resistance duration in minutes
REI 30	≥ 30
REI 60	≥ 60
REI 90	≥ 90
REI 120	≥ 120
REI 180	≥ 180

For European categorisation, a building material classification is always given separately.

Structural elements based on EN 13501-2 encompass the whole structural element and not just the suspended ceiling. This may consist of the roof and the suspended ceiling or the structural floor and suspended ceiling. The entire element should resist the impact of fire on its structural ability for as long as possible. The length of time this can be maintained is the fire resistance duration and will classify it in one of the classes shown.



Test Criteria

During the fire resistance test the laboratory will look out for adverse reaction as well as reporting on the following key criteria.

R. The structural element should not collapse or deflect beyond the permitted levels when subjected to the applied load.

E. The integrity of the room must be maintained. No breakthrough of flames is permitted.

I. The temperature on the non-exposed side of the structural element must not rise more than 140° C above ambient as an average measurement and no more than 180° C at any one location.

If one of the above criteria is exceeded the test is terminated and the duration achieved prior to failure will dictate the appropriate fire resistance classification.



Due to the diversity of the various structural elements currently available it is impossible to test each individually. We therefore endeavor to test the worst case scenario in each generic construction type.

The following examples show constructions within a test furnace.

The illustration below (fig. 1) shows an example of a typical steel beam construction with the OWA ceiling below.

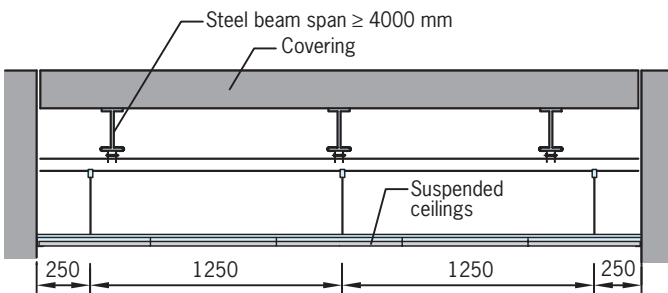


Fig. 1: Steel beam floor

OWA Suspended ceilings can also be used to provide fire resistance to timber constructions.

The example below (fig 2) shows a timber floor construction with the OWA ceiling below

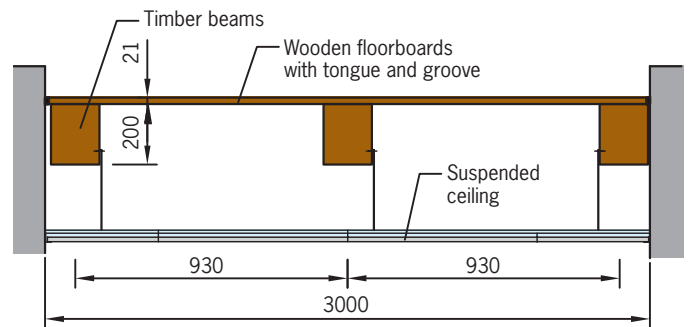


Fig. 2: Timber floor

OWA have tested most standard floor and roof constructions with OWAcoustic Ceilings to EN 13501-2 and have achieved up to REI 180 as shown in the following table.

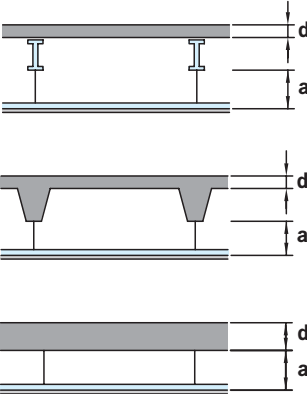
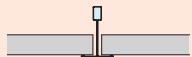
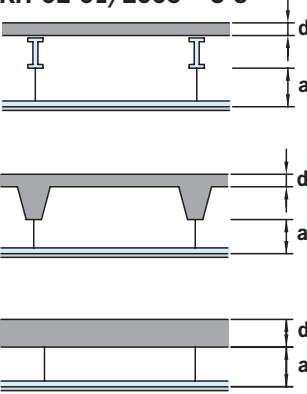
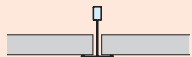
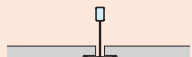
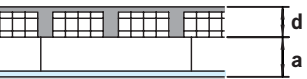
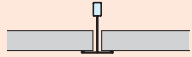
Where an OWAcoustic ceiling is used to provide structural fire resistance it is important that the ceiling is constructed in the same manner as that used in the test. Failure to use the same components and layout may invalidate any certification and prevent us issuing a KIT declaration

Escape and rescue routes often have services containing combustible materials installed below the structural slabs. For this reason we recommend the use of OWAcoustic self contained fire resistant ceilings (see table on page 6 and 7). With this type of ceiling it is possible to provide fire resistance of EI 30 to the services in the void as well as to the area below. The use of this system can help provide protected escape routes both from fire and smoke.



European Resistance to Fire Test / Ceiling Kit's



Loadbearing Construction			Type of suspended ceiling	OWAcoustic® tiles	
	min. Thickness of slab (d)	min. cavity height (a)		Module	Thickness
	mm	mm	Systems	mm	mm
Steelbeam floor KIT-03-01/2005 – S 3 	≥ 90	≥ 250	S 3 Exposed system 	625 x 625	15
Steelbeam floor KIT-02-02/2008 – S 3 KIT-02-01/2005 – S 3 	≥ 50	≥ 230	S 3 Exposed system  S 3a Exposed system with Contura tiles 	625 x 625	15 14 nominal
Reinforced block floor KIT-08-01/2007 – S 3 	≥ 240	≥ 250	S 3 Exposed system 	600 x 600	14 nominal

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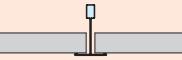
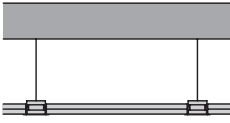
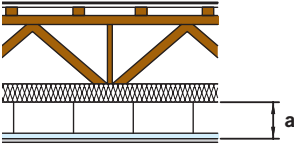
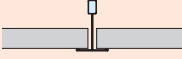

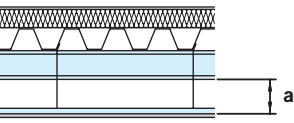
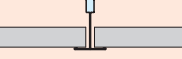
The test results are only valid
with original OWAconstruct® and
OWAcoustic® components.

Product range	Resistance to Fire		Tested hanger (max. distances)			Special characteristics
	Classification	Test report	Centres of main tee	Centres of hangers	Hanger	
	Min.	No.	mm	mm	OWA-No.	
premium	REI 120	PZ-Nr. 3232/3275-CR MPA Braunschweig No. 0761	625	750	wire Ø 2,4 mm	square edge K 3 OWAconstruct® S 3 perimeter trim fixed every 250 mm recessed light fittings + firebox + 2 additional hangers
premium smart	REI 90	PB III/08-191 Leipzig LP 1127/03 ITB Warschau	1250	1250	12/.../... 12/44	square edge K 3 and Contura K 6 /K 7 edge OWAconstruct® S 3 perimeter trim fixed every 250 mm recessed light fittings + firebox + 2 additional hangers
smart	REI 90	No. 234561/ 2487/CPD	1200	1200	12/.../... 12/44	OWAconstruct® S 3 Contura K 7 edge



European Resistance to Fire Test / Ceiling Kit's



Loadbearing Construction			Type of suspended ceiling	OWAcoustic® tiles	
	min. Thickness of slab (d)	min. cavity height (a)		Module	Thickness
	mm	mm	Systems	mm	mm
Reinforced concrete hollow slab KIT-09-01/2007 – S 3 	≥ 250	≥ 250	S 3 Exposed system 	600 x 600	14 nominal
Self containing fire protection unit barriere B KIT-06-01/2005 – B 	clear span, concealed grid, demountable	–	F 30 barriere B	width 312,5 / 400 length 2100	44
Timber roof construction KIT-01-01/2005 – S 3 	–	≥ 250	S 3 Exposed system  S 3a Exposed system with Contura tiles 	625 x 625	14 nominal
Steel roof construction with corrugated steel sheets insulation (Foamglas) KIT-05-01/2005 – S 3 	–	≥ 500	S 3 Exposed system 	625 x 1250	15

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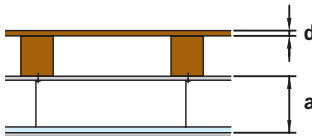
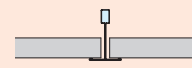
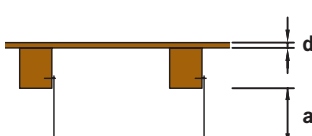
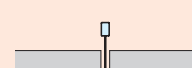
The test results are only valid
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OWAcoustic® components.

Product range	Resistance to Fire		Tested hanger (max. distances)			Special characteristics
	Classification	Test report	Centres of main tee	Centres of hangers	Hanger	
	Min.	No.	mm	mm	OWA-No.	
smart	REI 180	No. 234562/ 2488/CPD	1200	1200	12/.../...	OWAconstruct® S 3
barriere B	EI 30 (a <-> b)	PZ-Nr. 3617/3831 MPA Braunschweig No. 0761	clear span and bandraster	–	–	perimeter trim 51/25 Further details see system leaflet.
smart	REI 30	PZ-Nr. 3222/3473-CR MPA Braunschweig No. 0761	1250	1250	12/.../...	square edge K 3 and Contura K 7 edge OWAconstruct® S 3 perimeter trim fixed every 250 mm recessed light fittings + firebox + 2 additional hangers
premium	REI 30	PZ-Nr. 3691/3845-CR MPA Braunschweig No. 0761	625	1250	12/2 ...	square edge K 3 Contura K 6 edge OWAconstruct® S 3 perimeter trim fixed every 250 mm recessed light fittings + firebox + 2 additional hangers



European Resistance to Fire Test / Ceiling Kit's



Loadbearing Construction			Type of suspended ceiling	OWAcoustic® tiles	
	min. Thickness of slab (d)	min. cavity height (a)		Module	Thickness
	mm	mm	Systems	mm	mm
Timber floor KIT-04-01/2005 - S 3 	timber beam 160/200 mm wooden floorboard 21 mm	≥ 248	S 3 Exposed system 	625 x 625 + Minowa raw board	15
Timber floor KIT-07-01/2008 - S 3 	timber beam 75/175 Wooden particle board 18 mm Fermacell Gypsum fireboard 12,5 mm	≥ 245	S 3 Exposed system 	600 x 600	15

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Product range	Resistance to Fire		Tested hanger (max. distances)			Special characteristics
	Classification	Test report	Centres of main tee	Centres of hangers	Hanger	
	Min.	No.	mm	mm	OWA-No.	
premium	REI 90	PZ-Nr. 900955 2000-Re/Ei- MPA Stuttgart No. 0672	625	930	17/45 16, 78, 76	square edge K 3 Contura K 7 edge OWAconstruct® S 3 perimeter trim fixed every 250 mm recessed light fittings + firebox + 2 additional hangers
premium	REI 30	2007 - Efectis RO 574 (E)	1200	1200	12/.../...	square edge K 3 Contura K 7 edge OWAconstruct® S 3 perimeter trim fixed every 250 mm recessed light fittings + firebox + 2 additional hangers

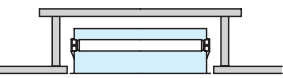


Light Fittings Perimeter trims



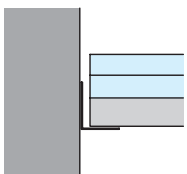
Light Fittings

When installing recessed luminaires in an OWAoustic® fire resistant ceiling an OWAoustic® fire box should be installed to ensure continuity of fire resistance. It is important to ensure that the performance of the fire box matches that of the installed OWAoustic® ceiling.

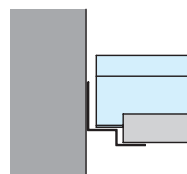
<p>Recessed light fittings</p> 	<p>OWAcoustic® standard ceilings (steelbeam floor, timber roof construction, steel roof construction, timber floor) OWAcoustic® ceilings with recessed light fittings offer the same fire resistance as closed OWAoustic® ceilings, if the recessed light fittings are encased in a 16 mm thick Minowa Firebox.</p> <p>For details, see OWA installation guide no. 801. When using 40 mm thick OWAoustic® premium tiles, 40 mm thick Minowa tiles should be used and for 20 mm thick OWAoustic® premium tiles, 21mm thick Minowa tiles should be used.</p> <p>Also see information sheet on Fire Protection Enclosure.</p> <table border="1"> <thead> <tr> <th>Thickness OWAoustic® tiles</th> <th>Thickness Firebox</th> </tr> </thead> <tbody> <tr> <td>15 mm</td> <td>16 mm</td> </tr> <tr> <td>20 mm</td> <td>21 mm</td> </tr> <tr> <td>≥ 40 mm</td> <td>40 mm</td> </tr> </tbody> </table>	Thickness OWAoustic® tiles	Thickness Firebox	15 mm	16 mm	20 mm	21 mm	≥ 40 mm	40 mm
Thickness OWAoustic® tiles	Thickness Firebox								
15 mm	16 mm								
20 mm	21 mm								
≥ 40 mm	40 mm								

Perimeter Trims

For fire resistant ceilings the perimeter trims should be installed in accordance with corresponding test report. Only approved fire resistant wall fixings should be used (ETA – European Technical Approval). Fixing centre ≤ 250 mm.



Standard perimeter trims
for all standard ceilings



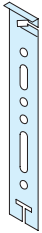
Perimeter trims
for Contura ceilings S 3a and S 15a

Hangers

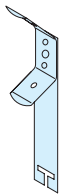
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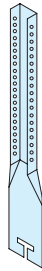
Hangers and suspensions



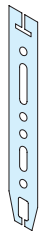
no. 10
Hangers for
concealed systems



no. 12/10*
Adjustable hangers for
concealed systems



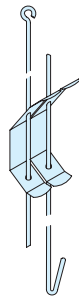
no. 17/10
Nonius hangers for
concealed systems



no. 11
Hangers for
exposed systems



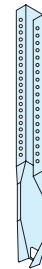
no. 12/45*
Adjustable hangers for
exposed systems



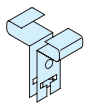
no. 12/.../...*
Double-adjustable hangers
for **exposed** systems



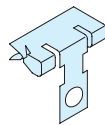
Pre-stressed wire
 $\varnothing \geq 2.0$ mm
Fixing ends
are bound at least
3 times



no. 17/45
Nonius hangers for
exposed systems



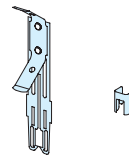
no. 13
Hanger clips, adjustable,
for steel beams



no. 8013
Flange hanger for
steel beams



no. 15
Slit band



no. 12/44*
"Click", adjustable hangers

Top Fixings

Only approved fire resistant top fixings suitable for the substrate should be used (ETA – European Technical Approval).

* **Adjustable hangers** are **not** to be used with Timber constructions REI 90.



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Fire Resistant Ceilings from OWAcoustic®

Technical Assistance

This brochure provides a very brief outline of European Standard EN 13501 and how OWAcoustic® Ceilings can help meet your fire resistance requirements.

If you require further information or assistance on any aspect of your proposed ceiling installation please contact us or visit our website.

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Internet: www.owa-ceilings.co.uk

All system relevant data and statements correspond to the current technology. They assume the exclusive application of OWA products and system components, the interdependent behaviour of which is confirmed by internal and external testing. When they are used in combination with non OWA products and system components, any warranties or guarantees are invalid and liability will not be accepted. OWA reserves the right to make any technical alterations to improve either product or system development. All goods are supplied in accordance with our general sale and delivery terms.

Mistakes and printing errors are not excluded. With the publication of this issue, all previous brochures no. 500 EU are invalid.



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