



Ceilings for special applications

OWAtecta – metal ceilings

OWA



For advanced interior concepts

OWAtecta

Without the creation of high performance “clean” areas many of today’s hi-tech products could not be developed or manufactured. Similar clean environments are also required in many areas of the health care industry, where hygiene and biological control is crucial. OWAtecta offers a range of metal ceilings that have been specifically developed and tested to meet the demands of special applications such as hospitals, clinics and clean room production areas.



Prof. Dr. R. Mutters
Institut für Medizinische Mikro-
biologie und Krankenhaushygiene
Philipps-Universität Marburg

	Chemical resistance	Disinfectability (DGHM method) ▲	Clean room suitability	Dry cleaning ▲	Damp cleaning ▲	Wisp rubbing ▲	
Ceilings for clean rooms							
S 22 L0-un-perforated $\alpha_w = 0,05$ NRC = 0,05	X	X	ISO 1	X	X	X	
S 33 L0-un-perforated $\alpha_w = 0,05$ NRC = 0,05	X	X	ISO 2	X	X	X	

Positive/negative pressure ceilings

S 22 L0-un-perforated $\alpha_w = 0,05$ NRC = 0,05 (sealing required)	X	X	ISO 1	X	X	X	
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Ceilings for hygienic areas

L0-un-perforated $\alpha_w = 0,05$ NRC = 0,05 (all systems suitable)	X	X		X	X	X	
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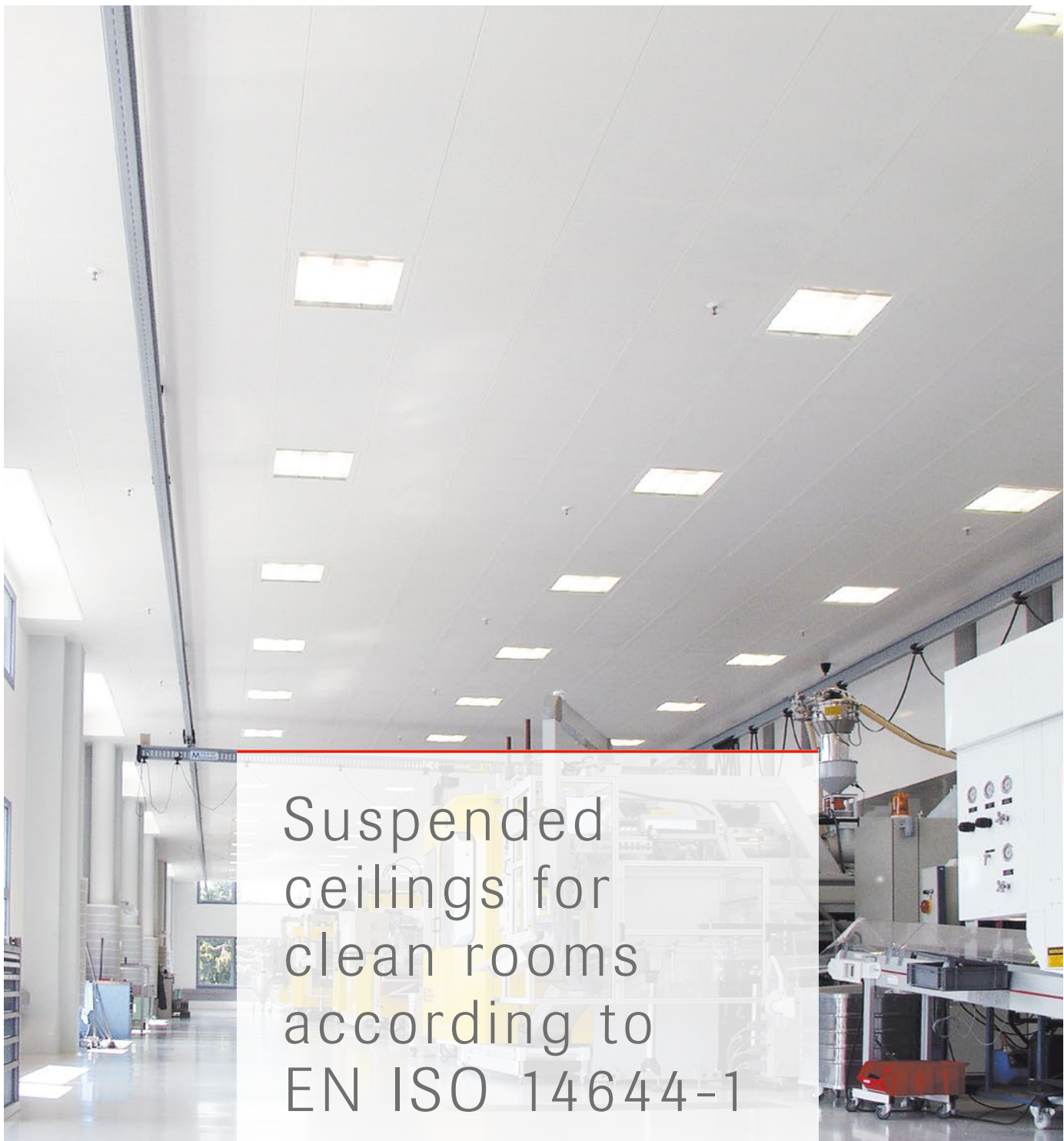
Ceilings for high humidity areas

L0-un-perforated Powder-coated on both sides $\alpha_w = 0,05$ NRC = 0,05	X	X		X	X	X	
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Chemical-resistant ceilings

For details see pages 14-15

	Positive/ negative pressure	Resistance to humidity	Emissions	Recommended areas for use	Page
		Visible side 95 % permanent Reverse side 70 %	Formaldehyde: < 3 µg/m ³ (ISO 16000)	Precision mechanics industry Optics industry Electronic high-tech production areas Hospitals Operating theatres and/or medical procedure rooms with highest requirements	6 -7
		Visible side 95 % permanent Reverse side 70 %	Formaldehyde: < 3 µg/m ³ (ISO 16000)	Laboratories Food industry Sterile and hygiene areas	6 - 7
	+80 Pa -50 Pa	Visible side 95 % permanent Reverse side 70 %	Formaldehyde: < 3 µg/m ³ (ISO 16000)	Precision mechanics industry Optics industry Electronic high-tech production areas Hospitals Operating theatres and/or medical procedure rooms with highest requirements Laboratories Food industry Sterile and hygiene areas Rooms with positive/negative pressure requirements	8 - 9
		Visible side 95 % permanent Reverse side 70 %	Formaldehyde: < 3 µg/m ³ (ISO 16000)	Food industry Sterile and hygienic areas	10 - 11
		95 % permanent	Formaldehyde: < 3 µg/m ³ (ISO 16000)	Changing cubicles Sanitary areas Shower areas Dish washing areas	12 - 13
					14 - 15



Suspended ceilings for clean rooms according to EN ISO 14644-1

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EN ISO 14644-1 provides a classification table for the level of air cleanliness within a "Clean Room" by measuring the number and size of airborne particulates in a cubic metre of air. The test results showed that OWAtecta ceiling systems met all of the nine requirements of the classifications shown in the standard (classes 1 – 9) making them suitable for use in the medical, optical, electronic, pharmaceutical and engineering industries where clean rooms can be an essential requirement of the manufacturing process.

Suspended ceilings for clean rooms according to EN ISO 14644-1

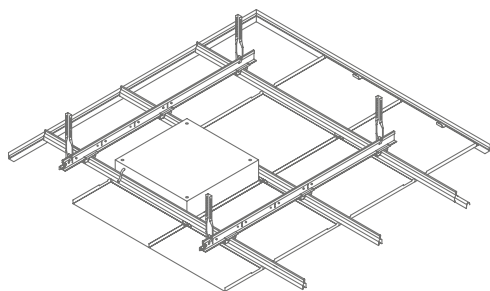
OWAtecta metal ceiling systems have been tested in accordance with EN ISO 14644-1 at the Fraunhofer Institute in Stuttgart. The test was conducted in the institutes own, class 1, clean room where no more than two, 0.2 µm particulates per cubic metre of air are allowed.

Result: The OWAtecta system S 22 acquired the qualification **“class 1 according to EN ISO 14644-1”**. The OWAtecta System S 33 is qualified **„class 2 according to EN ISO 14644-1”**.



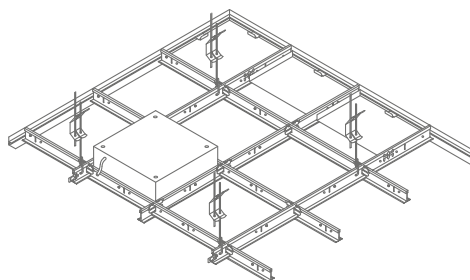
Systems

S 22



S 22 clip-in/swing down system

S 33



S 33 exposed, demountable for 24 mm T profile

Perforation

L0-un-perforated

Light fixtures

(up to ISO 4)

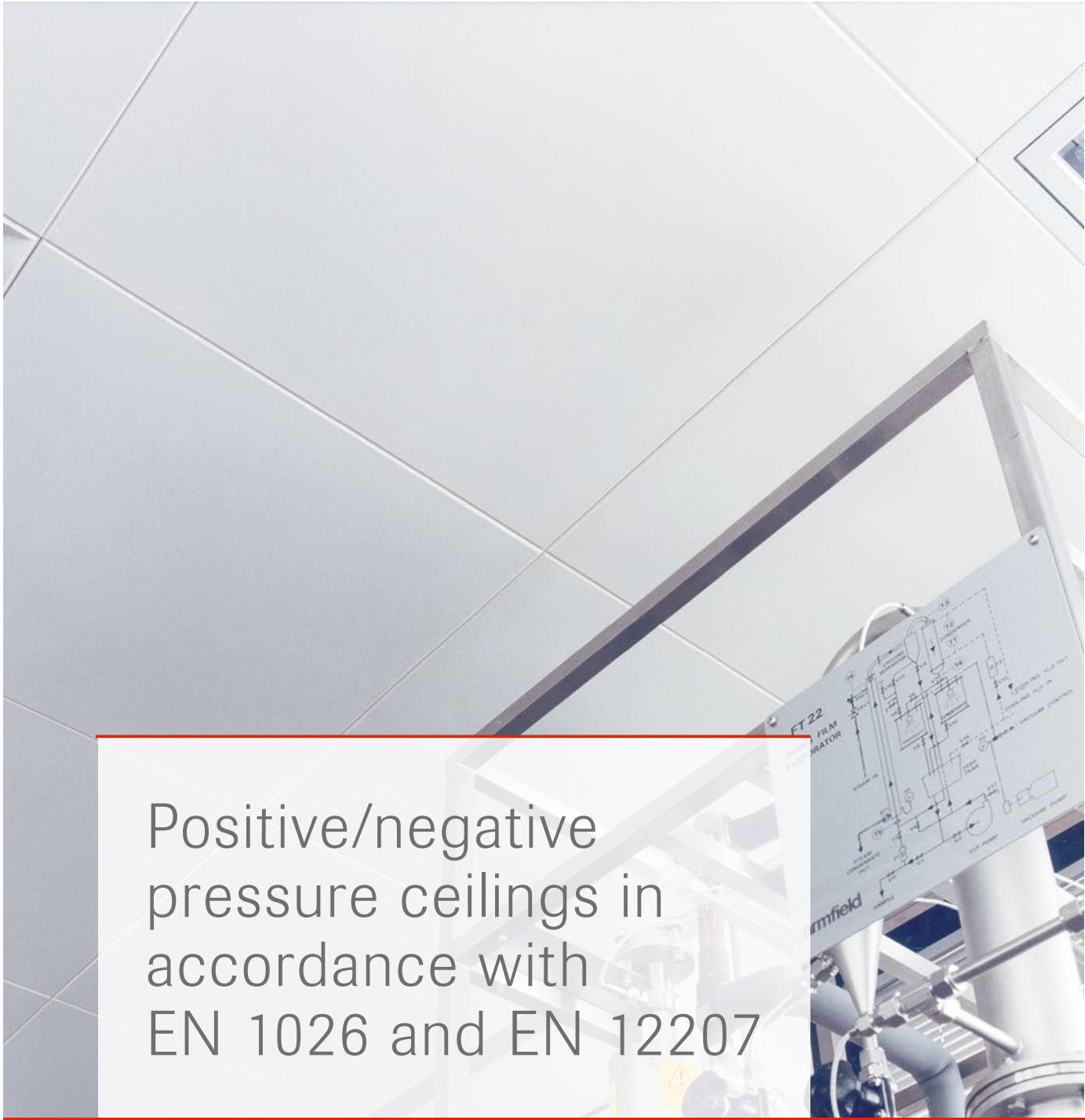
Lifetime plus LED (satin or microprismatic)
Fixing kit S 22 no. 8067/13

625 x 625 x 75 mm IP 54 31 W 4000 K

The table below provides a comparison between the performance classifications shown in EN ISO 14644-1, the EC GMP guide and US Federal Standard 209E. (The US standard was withdrawn in 2001 and is used for comparison purposes only.)

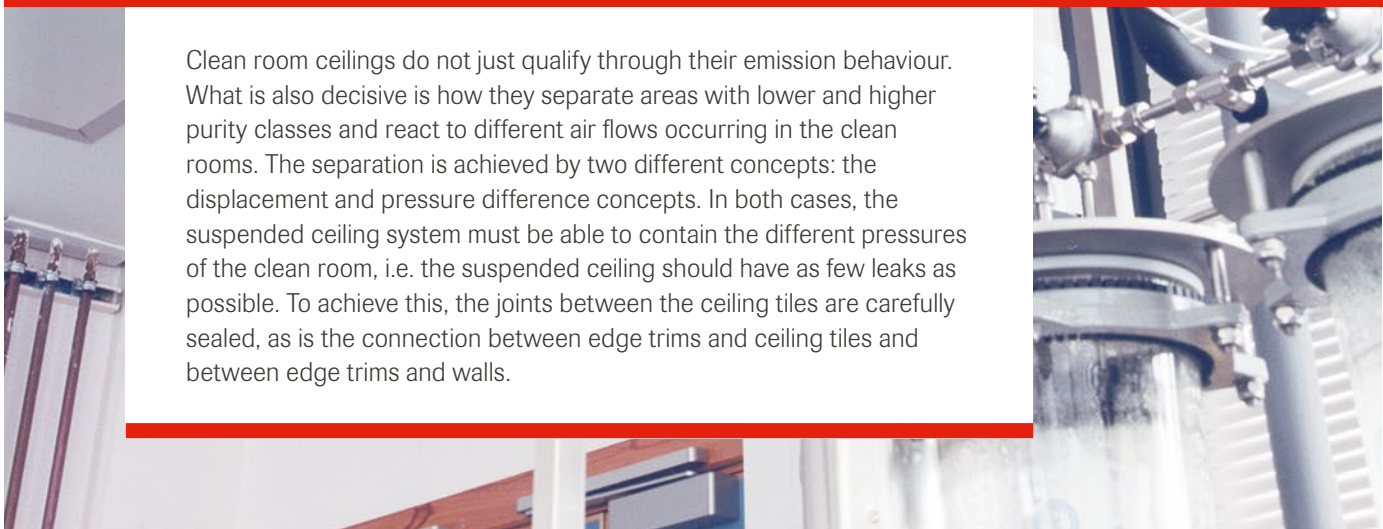
Classifications				Maximum permissible particle number in accordance with ISO 14644-1 according to particle sizes							
EN ISO 14644-1	EG-GMP „at rest“	EG-GMP „in operation“	US Fed. Standard 209E*	0.1 µm		0.2 µm		0.3 µm		0.5 µm	
				per m³	per cbf	per m³	per cbf	per m³	per cbf	per m³	per cbf
1				10	0.3	2	0.1				
2				100	3	24	1	10	0.3	4	0.1
3			1	1.000	30	237	7	102	3	35	1
				1.240	35	265	8	106	3	35	1
4			10	10.000	300	2.370	67	1.020	29	352	9.9
				12.000	340	2.650	75	1.060	29	353	10
				100.000	3.833	23.700	671	10.200	289	3.520	100
5	A	A								3.520	100
	B									3.520	100
			100			26.500	750	10.600	300	3.530	100
6			1.000	100.000	28.329	237.000	6.710	102.000	2.890	35.200	997
										35.300	1.000
7	C	B								352.000	9.972
			10.000							352.000	9.972
										352.000	10.000
8	D	C								3.520.000	99.716
										3.520.000	99.716
			100.000							3.520.000	100.000
9										35.200.000	997.167





Positive/negative pressure ceilings in accordance with EN 1026 and EN 12207

OWAtecta



Clean room ceilings do not just qualify through their emission behaviour. What is also decisive is how they separate areas with lower and higher purity classes and react to different air flows occurring in the clean rooms. The separation is achieved by two different concepts: the displacement and pressure difference concepts. In both cases, the suspended ceiling system must be able to contain the different pressures of the clean room, i.e. the suspended ceiling should have as few leaks as possible. To achieve this, the joints between the ceiling tiles are carefully sealed, as is the connection between edge trims and ceiling tiles and between edge trims and walls.

Determination of the air permeability of an OWAtecta ceiling in accordance with EN 1026 and EN 12207

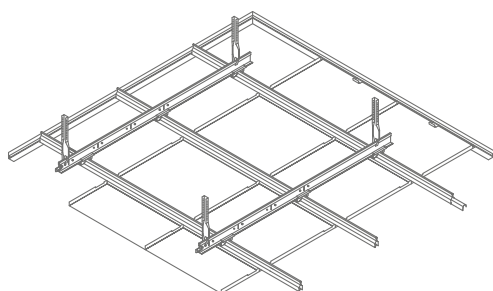
To assess their performance the Fraunhofer Institute of Stuttgart subjected OWAtecta metal ceiling systems S 22 to an air permeability test in accordance with EN 1026 and EN 12207. The ceiling system was mounted in a test box specially designed for this purpose and sealed to ensure it was airtight. The complete ceiling systems were then subjected to a positive pressure of +80 Pa and negative pressure of -50 Pa and the leakage measured.

Result: The OWAtecta system S 22 achieved a "class 4" rating for air permeability. In addition to the effective level of airtightness, the OWAtecta system S 22 also meets the emission requirements for clean rooms (see ceilings for clean rooms) and is therefore ideally suited for use in many clean rooms and clean room areas.



Systems

S 22



S 22 clip-in/swing down system

Perforation

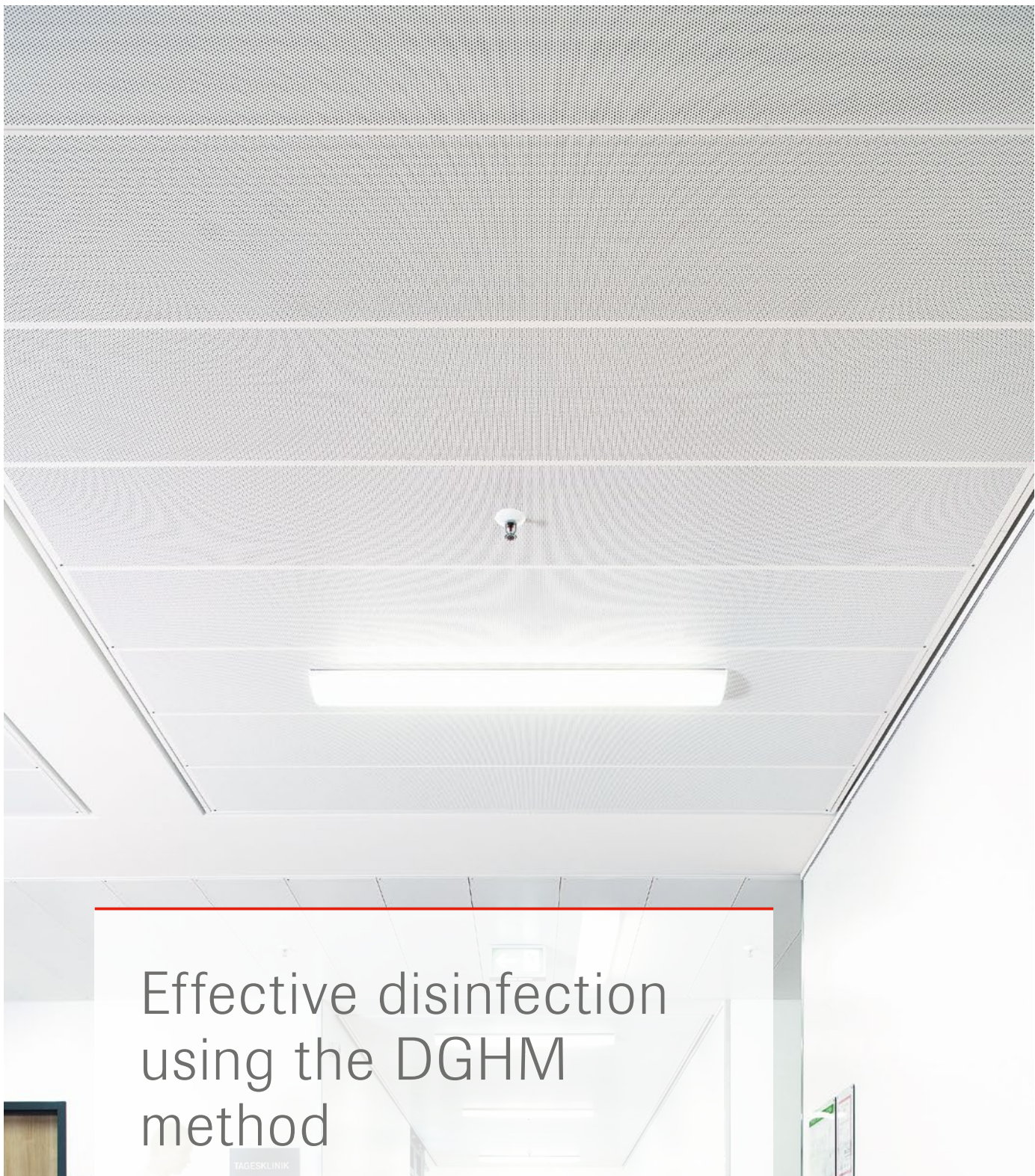
L0-un-perforated

As there are no specific test standards to measure the air permeability of a ceiling, the Fraunhofer Institute adapted the test procedures contained within EN 1026: 2000-09 (windows and doors, air permeability test procedures) and reported the results in accordance with EN 12207: 2006-06 (windows and doors, air permeability, classification). The table below permits categorisation of the classification achieved by the OWAtecta ceiling system S 22:

Class according to EN 12207	Reference air permeability at 100 Pa in $\text{m}^3/(\text{hm}^2)^1$	Reference air permeability at 100 Pa in $\text{m}^3/(\text{hm})^1$	Maximum test pressure in Pa	Classification according to DIN 18055 load group
0	Not tested	Not tested	Not tested	Not tested
1	50	12.50	150	A
2	27	6.75	300	B
3	9	2.25	600	C
4	3	0.75	600	

¹ = With reference to 1 m² window area | ² = With reference to 1 m joint length





Effective disinfection using the DGHM method

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One of the most important characteristics required for surfaces used in hygienic areas is the ability to disinfect them easily. OWAtecta plain (L0), un-perforated ceiling tiles meet this important criteria and are eminently suitable for installation in post and pre surgical areas, intensive care units, wards and other sterile areas.

Effective disinfection using the DGHM Method (German Society for Hygiene and Microbiology)

The Institute for Medical Microbiology and Hospital Epidemiology at Philipps University, Marburg have carried out a series of tests in accordance with the requirements of the German Society for Hygiene and Microbiology (DGHM).

The test procedure used eight bacteria species to assess the effectiveness of the disinfection process:

- staphylococcus aureus
- pseudomonas aeruginosa
- enterococcus faecium
- proteus mirabilis
- enterococcus hirae
- candida albicans
- escherichia coli
- aspergillus niger

Representative active groups for surface disinfection in hospitals were tested. This ensures that other disinfectants from the VAH (Association for Applied Hygiene) list can also be used.

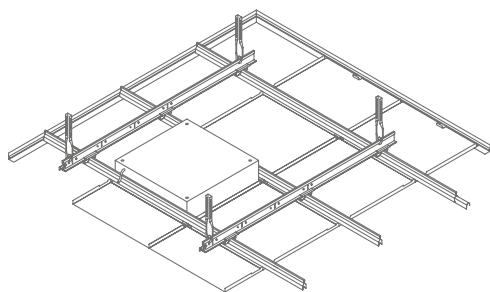
The values measured produced a reduction of 6 log levels for all germ types tested. This result exceeds the reduction of at least 5 log levels for disinfecting preparation demanded by the specialist associations by Professor R. Mutters.



Prof. Dr. R. Mutters
Institute for Medical Microbiology
and Hospital Hygiene
Philipps University Marburg

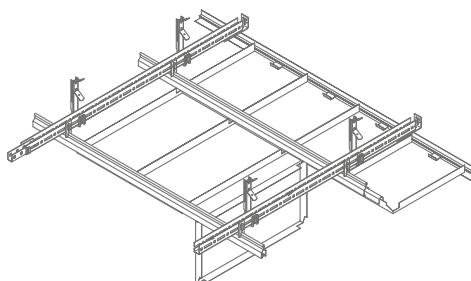
Systems (examples)

S 22



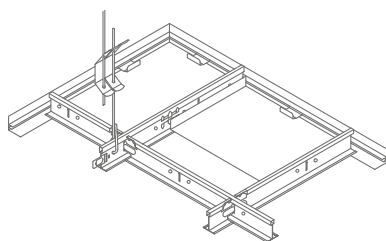
S 22 clip-in/swing down system

S 32 L



S 32 L clip-in panels/linear panels (on stock)

S 33 / S 45

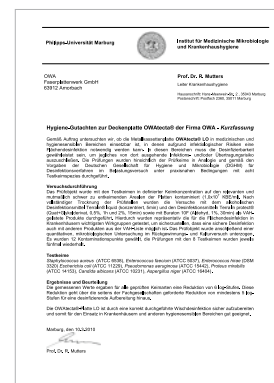


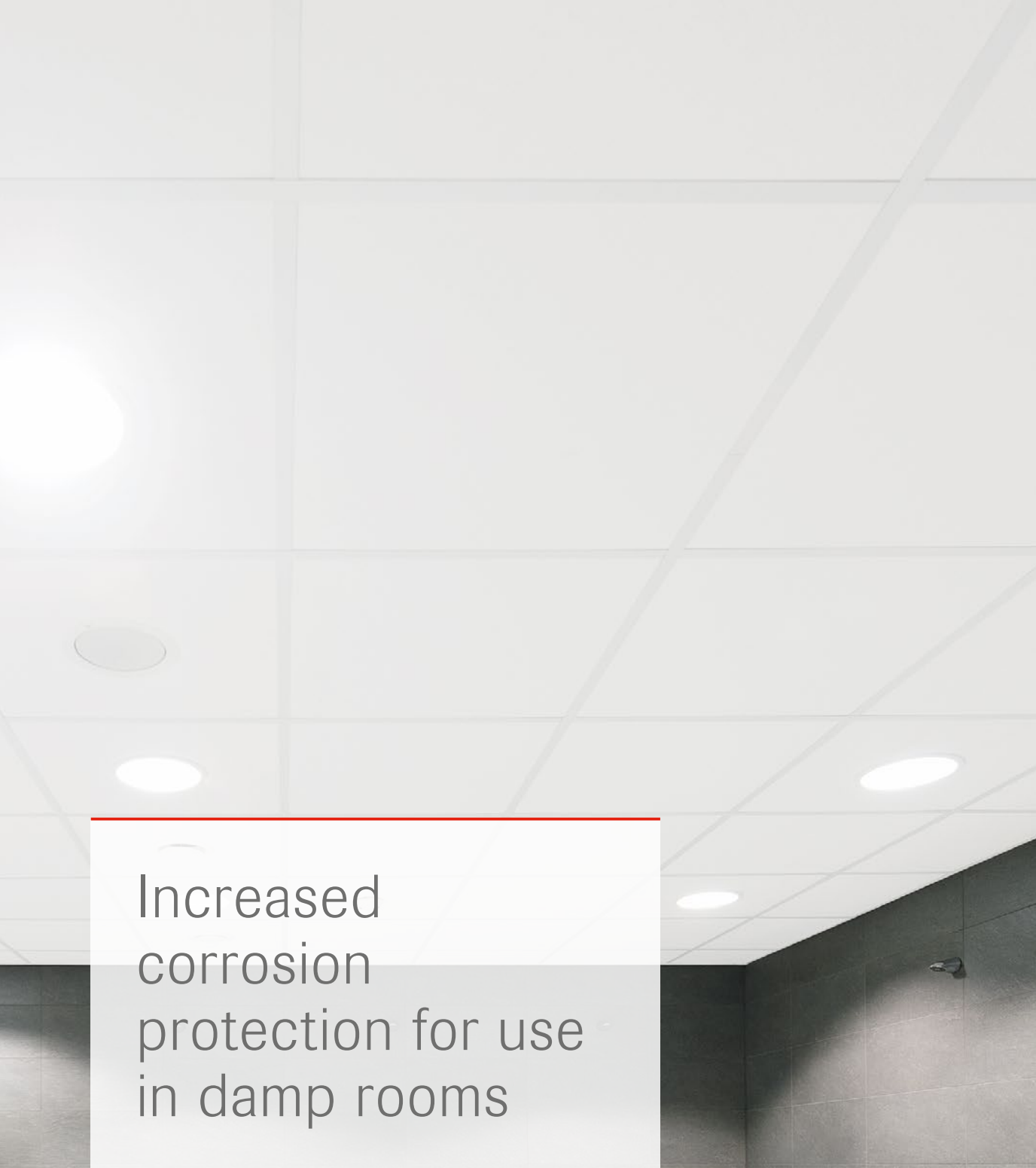
S 33 exposed, demountable for 24 mm T-profile
S 45 exposed, demountable for 15 mm T-profile

For additional systems please see OWA-brochure no. 9391 e.

Perforation

L0-un-perforated





Increased corrosion protection for use in damp rooms

OWAtecta

In special areas such as showers, dish washing areas and other damp rooms, increased humidity can occur temporarily or permanently. Products with increased corrosion protection need to be used here. The S 33e system is ideally suited to withstand such high demands.

Suspended ceilings in damp rooms according to EN 13964; Table 7 Stress class C

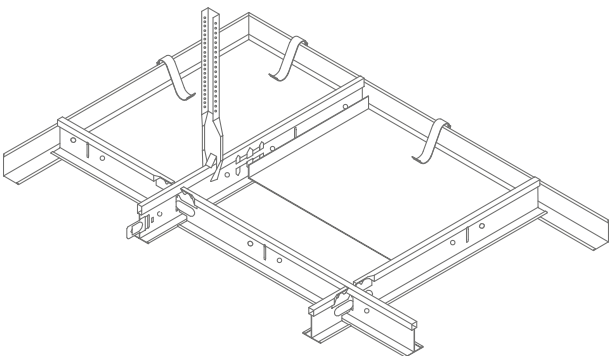
The OWAconstruct System S 33e can be used for interior damp rooms as well as for suspended ceilings in partially open areas (according to EN 13964). In combination with the powder-coated, unperforated metal tiles on both sides, it meets the requirements of Class C according to EN 13964 and can therefore be installed in rooms with a relative humidity of over 90 %.

Use in indoor swimming pools

Further information (info sheet „Use in indoor swimming pools“) can be provided by the OWAconsult team on request.

System

S 33e



S 33e corrosion-protected insertion system for 24 mm T-profile.

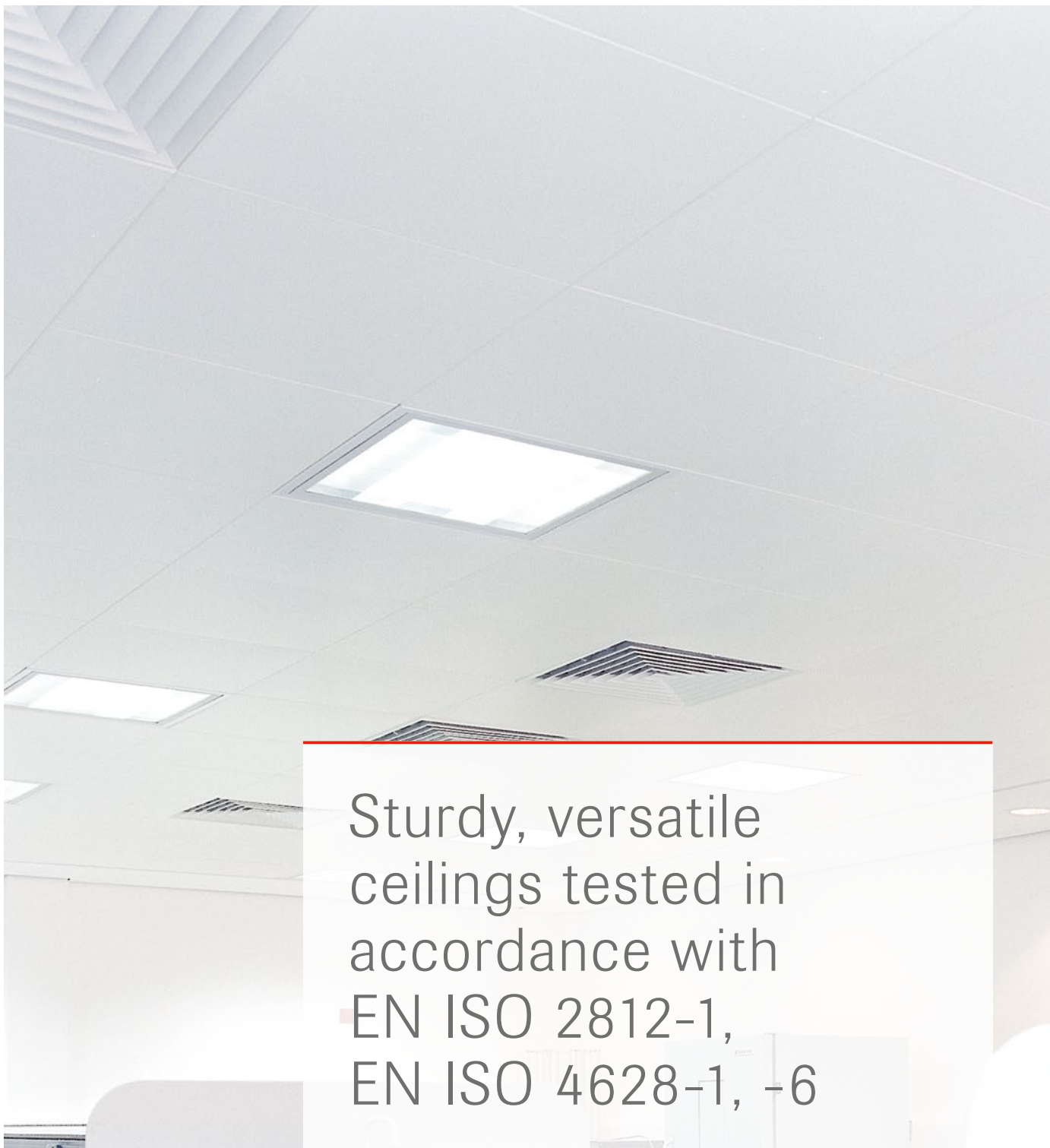
Table 8 classes of exposure

Class	Condition
A	Building components generally exposed to varying relative humidity up to 70 % and varying temperature up to 25 °C but without corrosive pollutants.
B	Building components frequently exposed to varying relative humidity up to 90 % and varying temperature up to 30 °C but without corrosive pollutants.
C	Building components exposed to an atmosphere with a level of humidity higher than 90 % and accompanied by a risk of condensation.
D	More severe than the above.

The construction components must be protected against corrosion according to table 9 depending on the exposure class set out in table 8 of EN 13964.

Perforation L0-un-perforated

Further information can be found in OWA brochures no. 9334 e and no. 9303 e.



Sturdy, versatile
ceilings tested in
accordance with
EN ISO 2812-1,
EN ISO 4628-1, -6

OWAtecta



In many production areas there is a need for the internal construction elements to be resistant to a variety of chemicals, cleaning fluids and disinfection agents. This can be an especially important consideration in clean rooms and laboratories as well as hygienically sensitive areas such as food preparation and pharmaceutical manufacturing units. OWA has successfully used OWAtecta ceiling systems in these areas and their suitability has been confirmed by exhaustive testing.

Sturdy, versatile ceilings tested in accordance with EN ISO 2812-1, EN ISO 4628-1, -6

The Fraunhofer Institute for Production Technology and Automation was commissioned to test the chemical resistance of OWAtecta metal tiles by exposing the samples to ten representative reagents in accordance with EN ISO 2812-1. The criteria used was selected to provide a more onerous level of exposure than would normally be encountered in general day-to-day use and provide a definitive statement on the performance of the material irrespective of the amount and duration of exposure.



Result: OWAtecta metal tiles are resistant to the following representative reagents:

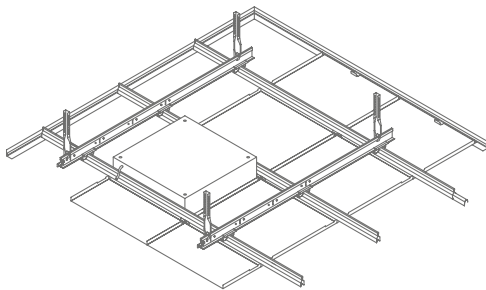
- formalin (37 %)
- ethanol (100 %)
- hydrogen peroxide (30 %)
- isopropanol (70 %)
- Elma clean 100 (10 %)
- benzene
- Ajax (concentrated)
- Mr. Clean (concentrated)
- microbac food (4 %)

OWAtecta metal tiles are resistant to the following reagent for up to three hours exposure and has a qualified resistance for an exposure of up to six hours:

- caustic soda solution (5 %)

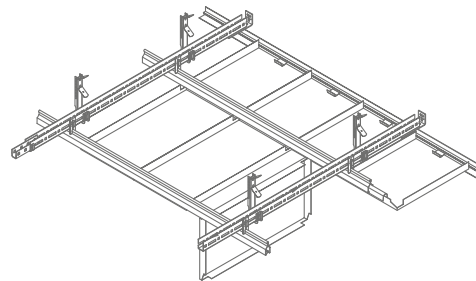
Systems (examples)

S 22



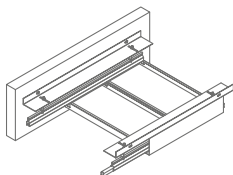
S 22 clip-in/swing down system

S 32 L

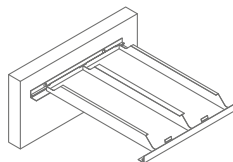


S 32 L clip-in panels/linear panels (on stock)

S 36 clear span from wall to wall; hinge down short side

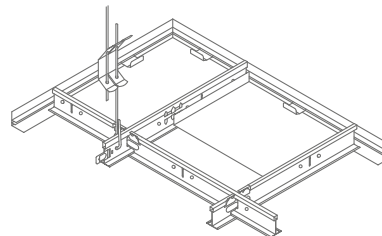


S 36 Success – clip-in section



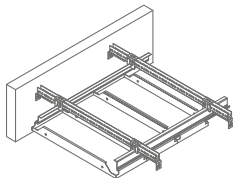
S 36 lay on - F profile

S 33 / S 45



S 33 exposed, demountable for 24 mm T-profile

S 45 exposed, demountable for 15 mm T-profile



S 36 Progress – Z profile

Perforation L0-un-perforated

For additional perforations please see OWA-brochure no. 9391 e.



Depending on the usage and demands on a room, it is recommended, for cosmetic reasons, to have longer intervals between cleaning the ceilings. This is not a functional requirement. OWAtecta ceilings are electrostatically polyester powder coated as standard. Our products are generally given an indestructible long-term finish. Cleaning intervals depend on the one hand on the function and environment of the ceiling and, on the other, operating conditions in respect of heating, ventilation and air conditioning.

L0 - unperforated		A, B, C, D, E
Perforated metal tiles*		A, B, C, D

* When wiping down perforated tiles, ensure the fleece does not get wet.

A Vacuuming

Tool: Standard commercially available vacuum cleaner with a filter attachment (dust prevention) and flat brush attachment.

Procedure: Operate the vacuum cleaner at moderate power. Applying slight pressure, extensively vacuum the surfaces. Please take great care not to loosen the surface layers from the structure when cleaning (adjust the cleaning pressure, risk of injury). In the event of serious soiling, and of frequent cleaning operations, it is advisable to secure the OWAtecta tiles from lifting (e.g. with hold down clips #935).

B Wiping

Tool: Damp cloth or sponge (e.g. OWA cleaning sponge #99/06).

Procedure: Soak the OWA cleaning sponge (or alternative sponge) in clean water and then wring it out well. Basic dirt (fingerprints, etc. – no lubricating impurities) can be removed by wiping gently (*B1). In case of heavy soiling, a neutral and mild detergent (colourless) can be used. To ensure the tolerability of a detergent, we recommend testing the surface beforehand on an area that is not visible (*B2). Please take great care not to loosen the surface layers from the structure when cleaning (adjust the cleaning pressure, risk of injury). In the event of heavy soiling or of frequent cleaning cycles, it is advisable to secure the OWAtecta tiles from lifting (e.g. with hold down clips #935).

C Dusting

Tool: Duster, vacuum cleaner, OWA cleaning sponge #99/06 (also see *B1).

Procedure: Move the duster or vacuum cleaner over the surface, applying moderate pressure (see A and *B1).

D Wipe scrubbing

Increased resistance to cleaning processes (500 washing cycles following the Gardner Test).

Tool: Damp cloth or sponge (e.g. OWA cleaning sponge #99/06).

Procedure: There is increased resistance to wipe scrubbing. These products have a high level of robustness.

Cleaning instructions: See points B and C.

E Disinfecting

The tiles can be disinfected with all standard disinfectants. A report from the Institute of Medical Microbiology and Hospital Hygiene in Marburg in accordance with the guidelines of the DGHM* is available. This tests 2 representative alcohol-based and aldehyde-based disinfectants.

Note

In the event of contamination or exposure to aggressive media (alkalis, acids, greases, etc.), resistance to these must be checked in advance (see also pages 14–15).

* Deutsche Gesellschaft für Hygiene und Mikrobiologie (German Society for Hygiene and Microbiology)



The information in this brochure is up-to-date at the time of publication. Errors and mistakes excepted. Please contact our competence team OWAconsult for specific advice. Our experts will be happy to answer your questions under the following contact details: tel: +49 9373 201-444 or e-mail: info@owaconsult.de

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