

tested in accordance with
NF S 90-351:2013-04
and JIS Z 2801

disinfectable

Protected from the very top:
Hygienic ceilings made by OWA

OWAlifetime collection

OWA

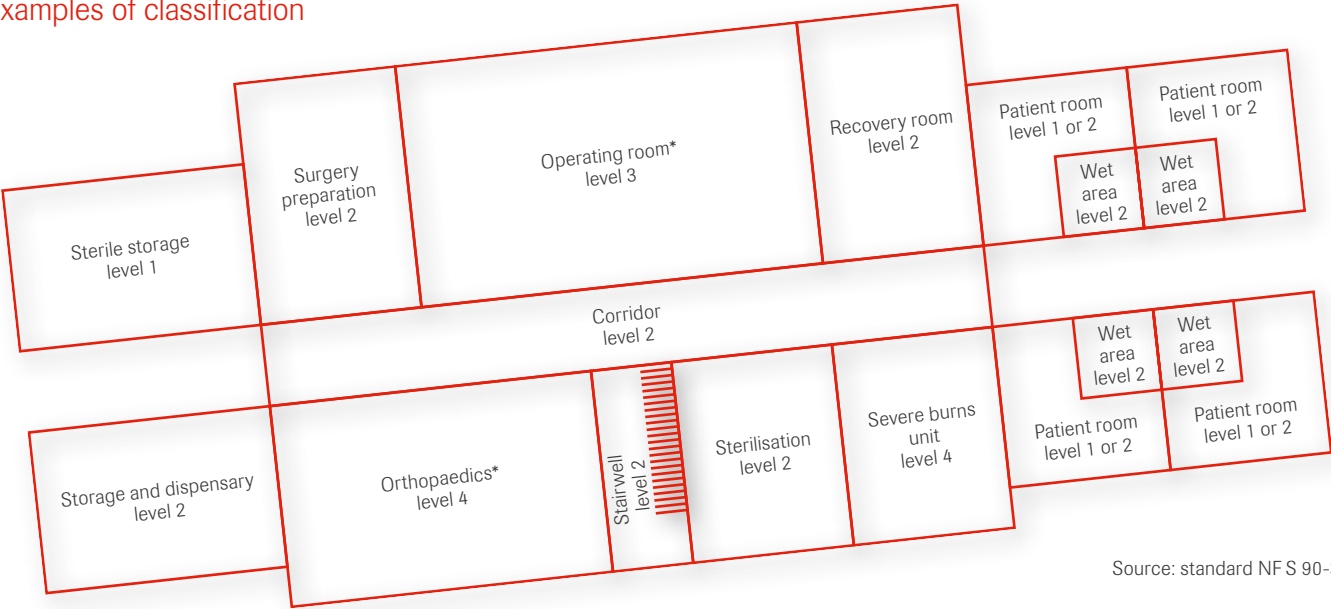
The french norm NF S 90-351

The internationally recognised standard NF S 90-351 with the latest requirement 2013-04 is currently the most stringent testing and standardising process for air purification and monitoring systems. It breaks down spaces in healthcare institutions into four risk areas:

- level 1: low risk
- level 2: moderate risk
- level 3: high risk
- level 4: very high risk

Clean rooms and adjacent control areas are a particular focus here. This is based on the need for and absolute importance of monitoring air contamination and ensuring compliance with suitable boundary conditions in these areas in order to minimise the risk of contamination.

Examples of classification



Source: standard NF S 90-351

* In deviation from standard NF S 90-351, and in line with the guidelines from Robert Koch Institute, we recommend being vigilant about washability and disinfection in operating rooms! Smooth and unperforated surfaces are particularly suitable, such as:
- OWAtecta metal tiles L0 from System S 22
- OWAacoustic mineral tile Sanitas 02 | Plain from system S 3

To establish the air purity of the systems, three fundamental derivative standards/classifications are applied within the scope of this primary standard. The new, more stringent requirements of revision 2013-04 for risk areas in healthcare institutions are established as follows:

Area type	1. Clean room class	2. Decontamination class	3. Bacteriological purity class
Risk area level 4 (very high risk)	ISO 5 < 3.500 particles ≥ 0,5 µm/m³ air	CP 5	M1
Risk area level 3 (high risk)	ISO 7 < 350.000 particles ≥ 0,5 µm/m³ air	CP 10	M10
Risk area level 2 (medium risk)	ISO 8 < 3.500.000 particles ≥ 0,5 µm/m³ air	CP 20	M100
Risk area level 1 (low risk)	No requirements		

1. Clean room class: ISO 14644-1 – Humancare even manages ISO class 4!

When being tested in accordance with the ISO 14644-1 standard, all particles in the air are detected in the test room. These are classified into ISO classes 1 to 8, graded by the different particle sizes ($> 0.1 \mu\text{m}$ to $> 5 \mu\text{m}$). The Humancare ceiling tile achieved **ISO class 4** here, satisfying all of the requirements for use in **risk class level 4** spaces!

The main reason for this high performance classification is the materials from which the ceiling tiles are made. They ensure that the most stringent hygienic requirements are met and flawless air conditions are possible with the use of natural materials.

2. Decontamination class CP (0.5) 5 – a reliable and internationally certified general system

When equipping hygiene-critical working areas, it is not only the selection of suitable building materials but also their interaction with the ventilation system that plays a key role. The ceiling system must not absorb and re-transmit any contaminants, especially when there is a massive deterioration in the air quality in the space as a result of increased loads. The decontamination class according to NF S 90-351 is decided by the number of minutes it takes for 90 per cent of the increased load to be broken down. Humancare ceiling systems achieve optimum values in less than five minutes here – putting them in **decontamination class CP (0.5) 5**.

The combination of high-quality materials and hygiene-improving features also demonstrated their worth in this test, with the specific suitability of Humancare products for **level 4 risk areas** being confirmed once again. Experts in the hygiene sector can trust in Humancare as a reliable, internationally certified complete system that – manufactured in accordance with German quality standards – guarantees maximum sterility in challenging environments.

3. Bacteriological purity class: classification M1 – suitable for all risk areas

Humancare prevents the growth of bacteria and viruses. Such valuable properties are confirmed by no less than two testing standards: **NF S 90-351** and JIS Z 2801, which is also established as an international standard in the form of ISO 22196.

During the NF S 90-351 test, the ceiling elements are contaminated using three different pathogens: Escherichia coli, Aspergillus niger and Candida albicans. The reduction in germs on both the surface and in the air is then recorded at fixed intervals.

The result: thanks to the proactive hygienic features of the surface, Humancare achieves the maximum possible **M1 classification**, making it suitable for all risk areas.

The multi-resistant germ **MRSA** (Methicilin-resistant Staphylococcus aureus), which is known for its hospital infections, achieves an M10 classification under the critical test conditions of the NF S 90-351 standard test, which enables use in level 3 risk areas in accordance with the more stringent classification criteria of the current **revision 2013-04** of NF S 90-351. The likewise familiar **murine norovirus** was also reduced by the Humancare surface by almost 5 log levels within 2 hours.

Tests	Standard	Acceptance criterion for level 4	Actual values	Risk area
Particular class normal conditions face	ISO 14644-1	ISO 5	ISO 4	Level 4
Kinetic of particle decontamination	NFS 90-351	CP(0.5)5	CP(0.5)5	Level 4
Microbiology air test Escherichia coli	NFS 90-351	M1	M1	Level 4
Microbiology air test Aspergillus niger	NFS 90-351	M1	M1	Level 4
Microbiology air test Candida albicans	NFS 90-351	M1	M1	Level 4

NF S 90-351 AND JIS Z 2801 – Humancare sets new standards for the purity of hygienic ceiling systems

To confirm the effects on other germ groups, the ceiling system was also subjected to the **JIS Z 2801** procedure (established as an international standard in the form of ISO 22196).

The question: how many germs (CFU/ml) can be killed at most during direct contamination of the Humancare surface? To determine this, eight different test germs were applied to the surface of the material as part of the JIS Z 2801 test procedure. The reduction in germs was then tested following a period of incubation.

	Comparative values on culture medium		Value on the Humancare surface	Reduction factor
	(CFU/ml) 60 sec.	(CFU/ml) 24 h	(CFU/ml) 24 h	(log10)
Bacterial pathogens				
Staphylococcus aureus	1.13 x 10 ⁵	1.12 x 10 ⁵	0	5.04
Enterococcus faecium	0.92 x 10 ⁵	0.93 x 10 ⁵	0	4.96
Enterococcus hirae	0.85 x 10 ⁵	0.80 x 10 ⁵	0	4.90
Escherichia coli K12	1.59 x 10 ⁵	0.94 x 10 ⁵	0	4.97
Pseudomonas aeruginosa	1.78 x 10 ⁵	1.27 x 10 ⁵	0	5.10
Proteus mirabilis	0.88 x 10 ⁵	0.80 x 10 ⁵	0	4.90
Fungal species				
Candida albicans	3.16 x 10 ⁵	2.03 x 10 ⁵	0	5.30
Aspergillus niger	1.96 x 10 ⁵	1.40 x 10 ⁵	4 x 10 ²	2.84

CFU = colony forming unit

The bacteriological purity class is then determined on this basis. The ISO 22196 standard requires between three and four log levels. **The Humancare result: the Humancare-surface with a reduction rate by up to five log-levels.**

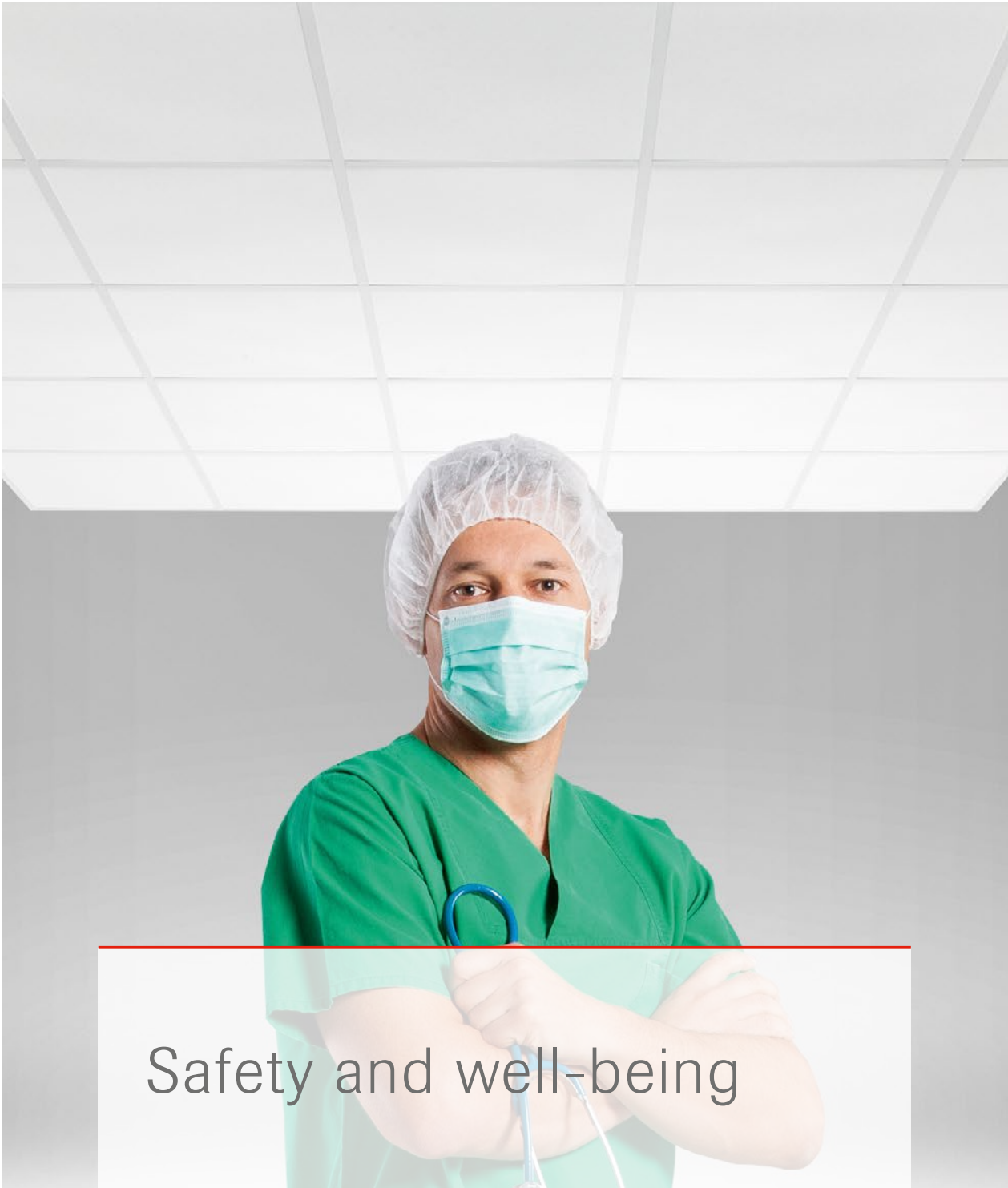
Disinfectability

Humancare prevents even without additional measures the growth of bacteria, viruses and fungus. For more disinfectability you can handle with spray disinfection. For further information please contact us.

* Standard spray disinfection (44 % Ethanol-Lotion)

Humancare – high purity standard, maximum safety standard

Equally suitable for laboratories, or medical and industrial high-tech facilities: with Humancare, OWA has developed a ceiling tile that combines highest standards for both purity and safety, even in the most demanding working environments. A key component of the ceiling concept: minimising the effects of particle emissions in the air. This is a topic of vital importance, particularly for the hygiene-sensitive medical sector: to what extent can building components promote the air purity of these types of workplaces by eliminating so-called air-borne microbial contaminations? Hygiene consultant or architect, developer or building manager: with Humancare, you have already begun minimising the risk of hospital infection in the planning phase by using suitable building materials!



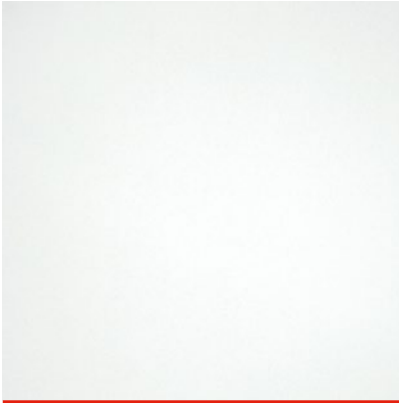
Safety and well-being

Humancare | Sinfonia

Humancare is a ceiling tile with special hygienic properties. It prevents the growth of bacteria, fungi and germs and even noroviruses and MRSA pathogens don't stand a chance. Its suitability for use in areas where hygiene is particularly important is confirmed by the tests specified in the standard NF S 90-351.

Thanks to its high absorption values, Humancare is particularly suited also to rooms in which good acoustics need to be achieved – i.e. anywhere that people gather and where a pleasant room environment in terms of acoustics is required as a contributing factor to wellness.

This makes Humancare the perfect choice not only for healthcare institutions like hospitals or retirement homes/care homes, but in particular also for nurseries and schools.



Surface example | Humancare | Sinfonia

Material	Mineral tile, fleece covered
Reaction to fire	A2-s1,d0 in accordance with EN 13501-1
Thickness	15 mm nom. (Sinfonia), 20 mm nom. (Sinfonia Silencia)
Colour	White
Light reflection	Approx. 87 (ISO 7724-2, ISO 7724-3)
Sound reduction*	$D_{n,f,w}$ = up to 40 dB, CAC = up to 41 dB
Sound absorption	 α_w = up to 1,00 NRC = up to 1,00
Moisture resistance	 up to 95 % RH
Reaction to fire*	 up to REI 180 (EN 13501-2)
Cleanroom class	ISO 4 (ISO 14644-1:1999)

* Dependent on system, soffit and other factors
 ° Tested with OWAconstruct system S 3



The detailed product specifications can be found in our data sheets at www.owa-ceilings.com.

Possible sizes and system combinations can be found in price list no. 9001 e

Luminaire

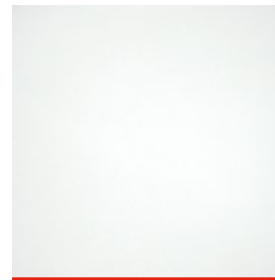
Lifetime plus LED (satin finish or microprismatic)

625 x 625 x 75 mm, IP 54, 31 W, ISO 4

For detailed information please see brochure no. 9630 e

$D_{n,f,w}$ = 28 dB*, CAC = 30 dB*
 α_w = 0,85 | NRC = 0,85
 bis REI 60 (DIN EN 13501-2)

$D_{n,f,w}$ = 24 dB*, CAC = 24 dB*
 α_w = 1,00 | NRC = 1,00
 bis REI 45 (DIN EN 13501-2)



Humancare | Sinfonia



Humancare | Sinfonia Silencia

Further information

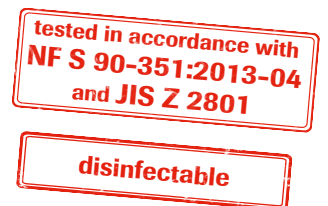
Benefits:

- compliance with test standard NF S 90-351 in accordance with the stricter classification criteria of the current revision 2013-04
 - clean room class ISO 4 in accordance with ISO 14644-01:1999
 - decontamination class CP(0.5) 5
 - bacteriological purity class M1 or M10
- > suitable for all rooms up to the highest risk zone 4
- compliance with the internationally recognised JIS-Z-2801 standard (up to 5-log reduction)
- even multi-resistant hospital germs (MRSA) and murine noroviruses don't stand a chance
- 100 % recyclable as part of OWA green circle

Disinfectability:

Humancare prevents the growth of bacteria, viruses and fungi, even without additional measures. But for applications requiring additional disinfectability, you can also treat the tiles with spray disinfection*. Please feel free to request the corresponding test report from us.

* Two spray applications (standard commercially available handheld spraying device) with e.g. 10 % ACTICIDE®-BAC-50-M solution or Meliseptol® (44 % ethanol solution)



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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