

APPLICATION BROCHURE HEALTHCARE & HYGIENE SOLUTIONS

KNAUFCEILING
Solutions



CONTENTS

Safe Spaces	04 – 05
Moving Forward	06 – 07
Three Main Criteria	08 – 09
Product Availability per Risk Level	10 – 11
MEDIGUARD & HYGENA	12 – 13
Range Performances	14 – 15
Solutions per Room Types	16 – 17
Datasheets	18 – 33
Datasheet METAL Solutions BIOGUARD	18 – 19
Datasheet MEDIGUARD Alpha	20 – 21
Datasheet MEDIGUARD Acoustic	22 – 23
Datasheet HYGENA Aquatec	24 – 25
Datasheet HYGENA Alpha	26 – 27
Datasheet HYGENA Acoustic 15mm	28 – 29
Definition of Technical Performance Icons	30 – 31
Key Features at a Glance	32 – 33

A PROVEN FORMULA

A proven formula has gone through rigorous testing procedures. It shows time and time again that something is effective and something is replicable. Every medicine must go through this relentless process, so healthcare facilities must work to the same exacting standards.

The control of biocontamination and disinfection is paramount. Knauf Ceiling Solutions has developed a healthcare and hygiene line built on the dedication required to create safe spaces.

We have improved and extended our range. As a result, our products are easily cleanable and provide impressive sound-absorbing and sound-blocking properties.

Safe and sound work in pairs. Optimum acoustics help patients sleep and rest better and reduce stress. Our healthcare and hygiene solutions have Class A sound absorption, which means greater acoustic comfort for the patients and healthcare workers.

All of our tiles are built on hard-earned expertise. Proven for architects and end-users. Proven for the most demanding environments.

SAFE SPACES

Creating calm spaces for healing and rest is essential for taking good care of patients. But the need for high hygiene requirements and bacteria control extends far beyond the hospital's doors.

We offer a comprehensive range of solutions that deliver safe and sound spaces.

From care homes to clean rooms, nurseries and food processing industry facilities, our encompassing range brings acoustic comfort, lighting wellbeing and safety from our products' best hygiene performances.

KEEP WORKERS AND PATIENTS SAFE

The building materials used in healthcare and hygiene environments must be fire safe and non-toxic. Our acoustic products are highly resilient to fire.

They also have the best indoor climate accreditation: VOC A+, Formaldehyde (E1) and Indoor Air Comfort Gold accredited.

MAINTAIN THE HIGHEST HYGIENE LEVELS

Effective hygiene and cleaning in hygiene-led premises reduce cross-infection.

Our MEDIGUARD and HYGENA ranges have the best microbiological cleanliness class (M1), meaning that microorganisms spread less rapidly over the surface of our products. In addition, MEDIGUARD and HYGENA Aquatec products are water repellent.

Add to that easy-to-clean products, and you'll have access to a full range of hygiene solutions to keep spaces spotless.

INCREASE WELLBEING WITH NATURAL LIGHT

Daylight can improve patient wellbeing and influence workers' mood. With their high light reflectance and diffusion, our solutions reduce the need for artificial light and capitalise on sunlight to save energy.



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HOSPITALS

In hospitals, it's crucial to focus on anti-microbial performance. Keeping the building as hygienic as possible is fundamental to prevent the spread of diseases and infectious agents to vulnerable patients. In addition, natural daylight and excellent acoustic performances are paramount to improve staff comfort and reduce patient in-time.

NURSERIES

Young minds need a friendly and warm atmosphere to forge new experiences. Parents will only find peace of mind if they know their little pioneers are safe to roam in an adventure-bound space. Therefore all surfaces, including ceilings, must be spotless and allow natural light to flow in. In addition, high sound absorption is vital for naptime and rest from the day's excitement.

FOOD PROCESSING INDUSTRY

In the food processing industry, hygiene and safety are as stringent as in healthcare. Knauf Ceiling Solutions can provide a range of products with specific coating which limits the growth of bacteria & fungi on surfaces. Add to that great acoustics and light reflectance levels, and you can ensure these workplaces are safe and participate in the workers' wellbeing.

CARE HOMES

Care homes are responsible for vulnerable people with complex health and social care needs. They need to deliver person-centred care tailored to each individual. Safe and clean spaces balanced with great acoustic performances and flooded with natural light do wonders to improve the quality of care and the wellbeing of both elderly and staff.

CLEAN ROOMS

Clean rooms are dedicated spaces to control contaminants' introduction, generation, and retention and measure the concentration of airborne particles in the air. The strictest hygiene levels and adherence to the ISO 14644 norm are required. Our ceiling ranges play a crucial role in achieving clean rooms level for companies producing electronics, semiconductors, micromechanics, optics, biotechnology, pharmaceuticals or medical devices.



MOVING FORWARD

Healthcare and hygiene environments are under constant scrutiny, going through continual changes to provide the best possible spaces for patients and professionals.

Through the implementation of major investment programmes, the standard of healthcare buildings, medical equipment, and patient care is going through constant refinement.

- Acoustic performance not only benefits patient and staff comfort, it also assists patient privacy through sound insulation between spaces.
- Natural daylight has numerous benefits in healthcare, such as reducing patient-in-time. Shallow plan design, and the continuous plane of a suspended ceiling with high light reflectance, will enable natural light to penetrate far into a building, aiding patients and staff.
- Healthcare environments must meet rigorous safety standards. It must be safe and accessible for everyone, including those with limited mobility. It is also critical that all fire safety regulations are met.
- In healthcare premises, it's crucial to focus on anti-microbial performance. With the presence of infectious agents and vulnerable patients, keeping the building as clean as possible is fundamental in preventing the spread of disease.





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THREE MAIN CRITERIA

FRENCH STANDARD

NF S 90-351:2013

The control of airborne contamination in healthcare premises is a growing concern, therefore the French Standard NF S 90-351:2013, probably the most stringent standard in Europe regarding healthcare premises, is in place to tackle this concern. Knauf Ceiling Solutions has undergone testing to ensure they demonstrate a high level of performance in this field. This standard is a valuable tool that ensures maximum safety and high performance.

01

CONTROL OF AIR PARTICLE ISO CLASS

tested against ISO 14644-1

Determines the concentration of particles emitted by the ceiling into the room.



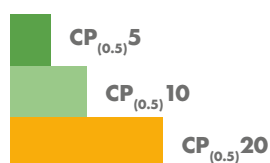
The lower the ISO rating, the less polluting the ceiling.

02

KINETICS OF PARTICLE DECONTAMINATION

expressed in CP (minutes)

Represents the time necessary to achieve 90% decontamination from an initial pollution peak.



The shorter the time, the less the ceiling retains pollution.

03

MICROBIOLOGICAL CLEANLINESS

classified by an index from 1 to 100

Certifies that the ceiling does not conduct the development of bacteria.

The microbiological cleanliness class (M) replaced the bacteriological class (B) in August 2013.



The lower the index, the more resistant the ceiling is to the proliferation of bacteria.

All tests results are available upon request. Contact us for more information.

PRODUCT AVAILABILITY PER RISK LEVEL

When it comes to air purification and control in healthcare facilities, French hospital standard NF S 90-351:2013 is the leading authority. This standard - the most stringent for healthcare facilities to date - classifies different application areas into four risk zones. Each zone dictates the selection of a suitable hygiene-tested ceiling system.

The French standard NF S 90-351:2013 classifies rooms of healthcare facilities into four risk zones:

ZONE 1 LOW RISK	ZONE 2 AVERAGE RISK	ZONE 3 HIGH RISK	ZONE 4 VERY HIGH RISK
Hall, corridor, stairwell, restaurant, office, administrative area, consultation room, examination room, shower, bathroom, kitchen, clean room area	Day hospital-oriented infectious recovery room, endoscopy, sterilisation, radiology, maternity, paediatrics, recovery room, ward	Operating room, intensive care, obstetrics and gynaecology, urology, plastic surgery, haematology, chemotherapy, surgery, radiology, MRI	Operating theatre, burns unit, neurosurgery, aseptic room, premature and special care baby unit, abnormal delivery room



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EXAMPLES OF CLASSIFICATION

SOURCE: STANDARD NF S 90-351:2013

STERILE STORAGE Low risk or average risk	SURGERY PREPARATION Average risk	OPERATING ROOM High risk or very high risk	RECOVERY ROOM Average risk	PATIENT ROOM Average risk
CORRIDOR Low risk				
ORTHOPAEDICS Very high risk	STAIRWELL Low risk	STERILISATION Average risk	SEVERE BURNS UNIT Very high risk	WET AREA Average risk

MEDIGUARD & HYGENA

Our range of acoustic ceilings shares good light reflectance, sound attenuation, and hygiene properties and meets the demanding requirements of the healthcare sector.

All our products are cleanable and have a specific coating that limits the growth of bacteria.

Hygiene criteria and cleanability requirements are unique to each establishment. With its new range, Knauf Ceiling Solutions is the partner of choice to provide an adapted answer to any hygiene requirements, from the essential ones to the most advanced ones.

MEDIGUARD

MEDIGUARD is designed for places where superior hygiene requirements and intensive cleaning is required. Thanks to its specific coating, MEDIGUARD prevents the growth of at least 8 bacteria and fungi*. MEDIGUARD is the solution for the most demanding spaces thanks to its inherent qualities:

- Scratch resistance
- Water repellency
- Resistance to disinfectants
- Steam cleaning

HYGENA

HYGENA provides standing-out acoustic and light reflectance properties. Alongside great indoor air quality results, the range achieves CP5 particle decontamination rating. Thanks to its specific coating, HYGENA limits the growth of bacteria*, making it a strong choice for hygiene and healthcare applications.

*The list of tested bacteria can be found in detail on page 15 of this document.



RANGE PERFORMANCES

Ceilings in healthcare premises are chosen primarily on their performance and aesthetics. We provide ceilings with anti-microbial, acoustic, and cleaning properties with the Knauf Ceiling Solutions healthcare range. We have a solution for every requirement, from reception areas and offices to treatment rooms and operating theatres. Being a leader in sustainability and safety means complying

with the strictest standards and certifications domestically and globally. Our MEDIGUARD and HYGENA products meet the highest standards within LEED® (US), BREEAM (UK) and DGNB (Germany), achieving A+ under the French VOC regulation.

METAL SOLUTIONS BIOGUARD

METAL Solutions with BIOGUARD treatment are durable and water-resistant. Its anti-microbial properties make it the ideal solution for very high risk healthcare environments.

MEDIGUARD ALPHA

MEDIGUARD Alpha has a superior anti-microbial resistance. Suitable for healthcare applications demanding Class A sound absorption and rigorous cleaning methods, it is scrubbable, can be cleaned with steam and is both scratch resistant and water repellent.

MEDIGUARD ACOUSTIC

MEDIGUARD Acoustic combines excellent cleanability with good levels of sound absorption. Its superior anti-microbial performance and disinfectants resistance, as well as scratch resistance and water repellency make it an ideal solution for healthcare applications.

HYGENA AQUATEC

HYGENA Aquatec is the ideal solution for high-humidity areas of up to 100% RH. It offers excellent sound absorption, and its washable, which makes it the perfect solution for hygiene and healthcare environments. The surface is washable and anti-microbial.

HYGENA ALPHA

HYGENA Alpha offers a modern, white appearance and is the optimal solution for spaces that need excellent sound absorption. The surface is washable and anti-microbial.

HYGENA ACOUSTIC 15MM

The laminated finish of HYGENA Acoustic creates a smooth, white appearance. It provides good levels of sound absorption and excellent sound attenuation. The surface is washable and anti-microbial.

NF S 90-351:2013 Risk zone 4 requirements

Min.
ISO 5

CP_(0.5) 5

M1 *

ACOUSTIC (α_w)

0.10

0.20(L)

0.65(H)

0.80(H)

0.90

0.95

CLEANING

Dry cloth

Moist cloth

Sponge

Scrubbable

Steam

Chemical
resistance



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	METAL SOLUTIONS BIOGUARD	MEDIGUARD ALPHA	MEDIGUARD ACOUSTIC	HYGENA AQUATEC	HYGENA ALPHA	HYGENA ACOUSTIC 15MM
	●	●	●	●	●	●
	●	●	●	●	●	●
	● 8 bacteria & fungi	● 8 bacteria & fungi	● 8 bacteria & fungi	● 3 bacteria & fungi	● 4 bacteria & fungi	● 4 bacteria & fungi
	●					
			●			
						●
				●		
		●			●	
	●	●	●	●	●	●
	●	●	●	●	●	●
	●	●	●	●		
		●	●			
	●	●	●			
	●	●	●	● + high pressure		

* Microbiological cleanliness class

MEDIGUARD

Tested against:

- Escherichia coli
- Staphylococcus aureus
- Bacillus cereus
- Streptococcus pneumoniae
- Acinobacter baumannii
- Klebsiella pneumoniae
- Candida albicans
- Aspergillus brasiliensis

HYGENA

Tested against:

- Escherichia coli
- Staphylococcus aureus
- Candida albicans
- Aspergillus Niger (except HYGENA Aquatec)

SOLUTIONS PER ROOM TYPES

In healthcare and hygiene environments, focusing on anti-microbial performance is crucial. And so is the comfort of patients and healthcare professionals. In addition, attention to controlling biocontamination and disinfection is vital in preventing the spread of infectious agents. In a healthcare premise, criteria for individual risk zones will need to be reached. Therefore, it is paramount that the

proper construction elements are selected for each risk zone. Using the table below, you can choose the right product for the right space. In addition to the risk level defined in NF S 90-351:2013, each room type has a specific requirement for cleanability air leakage of the ceiling tile. Therefore, a tile that meets risk zone 4 conditions may not be suitable for all room types defined in risk zone 4.

ROOM TYPES	RISK	CRITERIA
ACOUSTIC		
Burns unit, neurosurgery, aseptic room, premature and special care baby unit, abnormal delivery room	Very high risk	M1 ISO 5 / CP _(0.5) 5 Cleanability Sealed Ceiling
Intensive care, obstetrics and gynaecology, urology, plastic surgery haematology, chemotherapy, surgery, radiology	High risk	M10 ISO 7 / CP _(0.5) 10 Cleanability
Neonatology, delivery room	High risk	M10 ISO 7 / CP _(0.5) 10 Cleanability High Absorption
Day hospitals-oriented infections recovery room, endoscopy, colonoscopy, sterilisation, radiology	Average risk	M100 ISO 8 / CP _(0.5) 20 Cleanability
Maternity, paediatrics, recovery room, ward	Average risk	M100 ISO 8 / CP _(0.5) 20 Cleanability High Absorption
Halls, corridors, stairwells, restaurant	Low risk	Cleanability High Absorption
Offices, administrative areas, consultation and examination rooms	Low risk	Cleanability Confidentiality
Showers, bathroom	Low risk	Cleanability Humidity Resistance
Kitchen, clean room areas	Low risk	Cleanability

The application areas are given for information only and do not constitute an exhaustive list.
Each healthcare establishment may determine the appropriate risk level for each application area.



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	METAL SOLUTIONS BIOGUARD	MEDIGUARD ALPHA	MEDIGUARD ACOUSTIC	HYGENA AQUATEC	HYGENA ALPHA	HYGENA ACOUSTIC 15MM
	0.10(L)	1.00	0.65(H)	0.90	0.95	0.80(H)
	●	●	●	●		
	●	●	●			
		●			●	
	●		●			●
		●			●	
			●	●		●
	●		●	●		●
	●			●		
	●		●	●		●



METAL Solutions

BIOGUARD

- BIOGUARD is designed for applications where suspended ceilings are required, and hygiene and cleanliness are of the utmost importance
- It is more effective in the control of bacteria than a standard powder coating because it prevents the settlement of bacteria on the surface of the tile
- It gives good cleanability and resistance to disinfectants as well as cleanroom performance
- A wide range of edge details, modules and sizes is available, suitable for rooms and corridors
- One of the most durable solutions among the healthcare range
- Clean room class up to ISO 1
- Excellent sound attenuation for increased confidentiality: 44dB

METAL Solutions BIOGUARD

Edge details		Various edge details are available for lay-in, clip-in, hook-on and corridors																																																																																											
Dimensions (mm)		Standard modules: 600 x 600, 625 x 625, 1200 x 600, 1250 x 625, depending on selected system. Additional sizes on request. Vario Design range: Panels up to 3300 length. See metal brochure for more detailed information.																																																																																											
System		Various exposed and concealed grid options																																																																																											
Thickness (mm)		0.5 - 0.7 mm depending on the selected system																																																																																											
Weight		3.1 - 7.8 kg/m² Weight varies depending on the selected system and perforation.																																																																																											
Colour		 RAL 9010	 RAL 9016	Other colours Other colours from popular RAL colour system are available																																																																																									
Perforations		 Unperforated	 Standard perforation Rg 2516 Ø: 2.5mm Open area: 16%	 Micro-perforation Rd 1522 Ø: 1.5mm Open area: 22%	 Extramicro perforation Rg 0701 Ø: 0.7mm Open area: 1.5%																																																																																								
Sound absorption		<table><tr><th rowspan="3"></th><th rowspan="3">α_w^*</th><th rowspan="3">Class</th><th colspan="7">EN ISO 354</th><th>EN ISO 10848-2</th><th>EN ISO 10140-2</th><th rowspan="3">CAC****</th></tr><tr><th colspan="6">Frequency (Hz) α_p</th><th rowspan="2">NRC**</th><th rowspan="2">$D_{n,w}^{***}$</th><th rowspan="2">R_w^{***}</th></tr><tr><th>125</th><th>250</th><th>500</th><th>1000</th><th>2000</th><th>4000</th></tr><tr><td>Unperforated</td><td>0.10(L)</td><td>NC</td><td>0.25</td><td>0.15</td><td>0.05</td><td>0.05</td><td>0.10</td><td>0.10</td><td>0.10</td><td>44 dB</td><td>19 dB</td><td>–</td></tr><tr><td>Rg 2516 + Fleece</td><td>0.75(L)</td><td>C</td><td>0.35</td><td>0.80</td><td>0.95</td><td>0.70</td><td>0.75</td><td>0.75</td><td>0.80</td><td>18 dB</td><td>8 dB</td><td>–</td></tr><tr><td>Rd 1522 + Fleece</td><td>0.70</td><td>C</td><td>0.30</td><td>0.65</td><td>0.90</td><td>0.65</td><td>0.70</td><td>0.75</td><td>0.70</td><td>16 dB</td><td>6 dB</td><td>16 dB</td></tr><tr><td>Rg 0701 + Fleece</td><td>0.55(L)</td><td>D</td><td>0.45</td><td>0.70</td><td>0.70</td><td>0.55</td><td>0.55</td><td>0.45</td><td>0.65</td><td>21 dB</td><td>10 dB</td><td>22 dB</td></tr></table> *as per EN ISO 11654 **as per ASTM C 423-01 ***as per EN ISO 717-1 ****as per ASTM E 413-10 The unperforated version is recommended, because it gives the best antimicrobial result. The perforated options increase the acoustic values, but the antimicrobial performance is somewhat reduced.													α_w^*	Class	EN ISO 354							EN ISO 10848-2	EN ISO 10140-2	CAC****	Frequency (Hz) α_p						NRC**	$D_{n,w}^{***}$	R_w^{***}	125	250	500	1000	2000	4000	Unperforated	0.10(L)	NC	0.25	0.15	0.05	0.05	0.10	0.10	0.10	44 dB	19 dB	–	Rg 2516 + Fleece	0.75(L)	C	0.35	0.80	0.95	0.70	0.75	0.75	0.80	18 dB	8 dB	–	Rd 1522 + Fleece	0.70	C	0.30	0.65	0.90	0.65	0.70	0.75	0.70	16 dB	6 dB	16 dB	Rg 0701 + Fleece	0.55(L)	D	0.45	0.70	0.70	0.55	0.55	0.45	0.65	21 dB	10 dB	22 dB
	α_w^*	Class	EN ISO 354							EN ISO 10848-2	EN ISO 10140-2	CAC****																																																																																	
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Rg 2516 + Fleece	0.75(L)	C	0.35	0.80	0.95	0.70	0.75	0.75	0.80	18 dB	8 dB	–																																																																																	
Rd 1522 + Fleece	0.70	C	0.30	0.65	0.90	0.65	0.70	0.75	0.70	16 dB	6 dB	16 dB																																																																																	
Rg 0701 + Fleece	0.55(L)	D	0.45	0.70	0.70	0.55	0.55	0.45	0.65	21 dB	10 dB	22 dB																																																																																	
Fire reaction		Euroclass A2-s1, d0 as per EN 13501-1																																																																																											
Light reflectance		up to 87%																																																																																											
Humidity resistance		90% RH																																																																																											
Clean room		ISO 1 class for METAL Board 600 x 600 mm ISO 3 class for METAL Q-Clip / METAL Q-Clip F 600 x 600 / 625 x 625 mm ISO 5 class for METAL R-Clip F 1200 x 600 mm																																																																																											
Indoor air quality		 A+	 E1																																																																																										
Cleanability																																																																																													
Sustainability		 EN ISO 14021 ≈ 14%	 cradle to cradle Silver*																																																																																										
Design options		 Dimensions	 Colours	 Perforations	 Acoustic Infills	 Cut-Outs																																																																																							

Product availability may vary from country to country. Please contact your local sales representative.
For further information and legal notice, please visit our website.

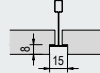


MEDIGUARD Alpha

MEDIGUARD Alpha has a superior anti-microbial resistance. Suitable for healthcare applications demanding Class A sound absorption and rigorous cleaning methods, it is scrubbable, can be cleaned with steam and is both scratch resistant and water repellent.

- Water repellent
- Scratch resistant
- Limit growth of extended scope of bacteria & fungi
- Resistant to disinfectants, it can be scrubbed and cleaned with steam
- Complies with Zone 4 risk requirements according to NF S 90-351:2013
- Excellent acoustics with Class A level
- ISO 3
- Excellent light reflectance (88%)
- Ideal for healthcare facilities, food processing industry, laboratories, etc.

MEDIGUARD Alpha

Edge details		Board	Tegular 24/90		Tegular 15/90			
								
Thickness (mm)		20	20	20				
Dimensions (mm)		600 x 600 1200 x 600	600 x 600	600 x 600				
System		Exposed demountable - System C						
Weight		3.3 kg / m²						
Colour		 White						
Sound absorption		EN ISO 354 $\alpha_w = \mathbf{0.95}$ as per EN ISO 11654 - Class A						
		Frequency f (Hz)	125	250	500	1000	2000	4000
		α_p	0.60	0.85	0.90	0.90	1.00	1.00
		NRC = 0.95 as per ASTM C 423						
Sound attenuation		EN ISO 10848-2 $D_{n,f,w} = \mathbf{25\ dB}$ as per EN ISO 717-1					CAC = 25 dB as per ASTM E 413-10	
Sound reduction		EN ISO 10140-2 $R_w = \mathbf{12\ dB}$ as per EN ISO 717-1						
Fire reaction		Euroclass A2-s1, d0 as per EN 13501-1 Class A as per ASTM E 84						
Light reflectance		88%						
Thermal conductivity		$\lambda = \mathbf{0.040\ W/mk}$ as per EN 12667						
Humidity resistance		95% RH						
Clean room		ISO 3 as per EN ISO 14644-1						
Risk level		Zone 4 (Very High Risk) as per NF S 90-351:2013						
Microbiological Cleanliness		M1 as per NF S 90-351:2013						
Kinetics of particle decontamination		CP_(0,5) 5 as per NF S 90-351:2013						
Indoor air quality		 A+	 E1	 INDOOR AIR COMFORT GOLD CERTIFIED PRODUCT				
Cleanability								
Anti-microbial characteristics		Tested against: Escherichia coli, Staphylococcus aureus, Bacillus cereus, Streptococcus pneumoniae, Acinobacter baumannii, Klebsiella pneumoniae, Candida albicans, Aspergillus brasiliensis						
Sustainability		 EN ISO 14021 74%	 BIOSOLUBLE WOOL EC 1272/2008 Annex G					

In addition to risk level, each room type will have specific requirement for the cleanability and air leakage of the ceiling tile. Therefore, a tile which meets risk zone 4 requirements may not necessarily be suitable for all room types defined in risk zone 4.

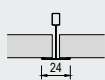
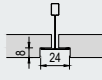
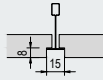


MEDIGUARD Acoustic

MEDIGUARD Acoustic combines excellent cleanability with good levels of sound absorption. Its superior anti-microbial performance and disinfectants resistance, as well as scratch resistance and water repellency make it an ideal solution for healthcare applications.

- Water repellent
- Scratch resistant
- Limit growth of an extended scope of bacteria & fungi
- Resistant to disinfectants, it can be scrubbed and cleaned with steam
- Complies with Zone 4 risk requirements according to NF S 90-351:2013
- Excellent light reflectance (88%)
- Ideal for healthcare facilities, food processing industry, laboratories, etc.

MEDIGUARD Acoustic

Edge details		Board	Tegular 24/90				Tegular 15/90					
												
Thickness (mm)		19	19				19					
Dimensions (mm)		600 x 600 1200 x 600	600 x 600 1200 x 600				600 x 600 1200 x 600					
System		Exposed demountable - System C										
Weight		5.0 kg / m²										
Colour		 White										
Sound absorption		EN ISO 354										
		α _w = 0.65(H) as per EN ISO 11654 - Class C										
		Frequency f (Hz)	125	250	500	1000	2000	4000				
		α _p	0.40	0.40	0.60	0.80	0.90	0.85				
		NRC = 0.70 as per ASTM C 423										
Sound attenuation		EN ISO 10848-2 D _{n,f,w} = 38 dB as per EN ISO 717-1										
		CAC = 39 dB as per ASTM E 413-10										
Sound reduction		EN ISO 10140-2 R _w = 22 dB as per EN ISO 717-1										
Fire reaction		Euroclass A2-s1, d0 as per EN 13501-1 Class A as per ASTM E 84										
Light reflectance		88%										
Thermal conductivity		λ = 0.060 W/mk as per EN 12667										
Air permeability		PM1 (≤ 30 m³/hm²) as per DIN 18177										
Humidity resistance		95% RH										
Clean room		ISO 4 as per EN ISO 14644-1										
Risk level		Zone 4 (Very High Risk) as per NF S 90-351:2013										
Microbiological Cleanliness		M1 as per NF S 90-351:2013										
Kinetics of particle decontamination		CP_(0,5) 5 as per NF S 90-351:2013										
Indoor air quality		 A+	 E1									
Cleanability												
Anti-microbial characteristics		Tested against: Escherichia coli, Staphylococcus aureus, Bacillus cereus, Streptococcus pneumoniae, Acinobacter baumannii, Klebsiella pneumoniae, Candida albicans, Aspergillus brasiliensis										
Sustainability		 EN ISO 14021 35%	 BIOSOLUBLE WOOL EC 1272/2008 Annex G									

In addition to risk level, each room type will have specific requirement for the cleanability and air leakage of the ceiling tile. Therefore, a tile which meets risk zone 4 requirements may not necessarily be suitable for all room types defined in risk zone 4.

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For further information and legal notice, please visit our website.



GRADED SCHOOL, Brazil,
©Alessandro Couto

HYGENA Aquatec

HYGENA Aquatec is the ideal solution for high-humidity areas of up to 100% RH. It offers excellent sound absorption, and its washable, which makes it the perfect solution for hygiene and healthcare environments. The surface is washable and anti-microbial.

- Limits the growth of bacteria and fungi
- Ideal solution for high humidity areas of up to 100% RH
- Excellent acoustics with Class A level
- Complies with Zone 4 risk requirements according to NF S 90-351:2013
- Can be cleaned with high pressure device and resists to disinfectants
- ISO 3
- Ideal for healthcare environments, food processing industry, laboratories, treatment rooms, intensive care units, locker rooms or shower areas

HYGENA Aquatec

Edge details		Board 	Tegular 24/90 	Tegular 15/90 	Finesse 												
Thickness (mm)		19	19	19	19												
Dimensions (mm)		600 x 600 610 x 610 625 x 625 1200 x 600 1220 x 610 1250 x 625	600 x 600 610 x 610 625 x 625	600 x 600 610 x 610 625 x 625	600 x 600 625 x 625												
System		Exposed demountable - System C			Concealed, demountable - System A.2 / A.3												
Weight		5.2 kg / m ²															
Colour		 White															
Sound absorption		EN ISO 354 $\alpha_w = 0.90$ as per EN ISO 11654 - Class A Frequency f (Hz) <table><tr><td>125</td><td>250</td><td>500</td><td>1000</td><td>2000</td><td>4000</td></tr></table> α_p <table><tr><td>0.60</td><td>0.70</td><td>0.85</td><td>0.90</td><td>1.00</td><td>1.00</td></tr></table> NRC = 0.90 as per ASTM C 423				125	250	500	1000	2000	4000	0.60	0.70	0.85	0.90	1.00	1.00
125	250	500	1000	2000	4000												
0.60	0.70	0.85	0.90	1.00	1.00												
Sound attenuation		EN ISO 10848-2 $D_{n,f,w} = 29$ dB as per EN ISO 717-1 CAC = 29 dB as per ASTM E 413-10															
Sound reduction		EN ISO 10140-2 $R_w = 16$ dB as per EN ISO 717-1															
Fire reaction		Euroclass A2-s1, d0 as per EN 13501-1 Class A as per ASTM E 84															
Light reflectance		88%															
Thermal conductivity		$\lambda = 0.060$ W/mk as per EN 12667															
Air permeability		PM1 (≤ 30 m ³ /hm ²) as per DIN 18177															
Humidity resistance		100% RH															
Clean room		ISO 3 as per EN ISO 14644-1															
Risk level		Zone 4 (Very High Risk) as per NF S 90-351:2013															
Microbiological Cleanliness		M1 as per NF S 90-351:2013															
Kinetics of particle decontamination		CP_(0,5)5 as per NF S 90-351:2013															
Indoor air quality		A+ E1															
Cleanability																	
Anti-microbial characteristics		Tested against: Escherichia coli, Staphylococcus aureus, Candida albicans															
Sustainability																	

In addition to risk level, each room type will have specific requirement for the cleanability and air leakage of the ceiling tile. Therefore, a tile which meets risk zone 4 requirements may not necessarily be suitable for all room types defined in risk zone 4.

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HYGENA Alpha

HYGENA Alpha offers a modern, white appearance and is the optimal solution for spaces that need excellent sound absorption. The surface is washable and antimicrobial.

- Limits the growth bacteria and fungi
- Cleanable with dry and damp cloth
- White appearance and excellent acoustics with Class A level
- Complies with Zone 4 risk requirements according to NF S 90-351:2013
- Ideal for healthcare facilities, food processing industry, laboratories, etc.

Edge details		Board 	Tegular 24/90 	Tegular 15/90
Thickness (mm)		19	19	19
Dimensions (mm)		600 x 600 610 x 610 625 x 625 1200 x 600 1220 x 610 1250 x 625	600 x 600 610 x 610 625 x 625	600 x 600 610 x 610 625 x 625
System		Exposed demountable - System C		
Weight		3.3 kg / m ²		
Colour		 White		
Sound absorption		EN ISO 354 $\alpha_w = 0.95$ as per EN ISO 11654 - Class A Frequency f (Hz) α_p NRC = 0.90 as per ASTM C 423		
Sound attenuation		EN ISO 10848-2 $D_{n,f,w} = 28$ dB as per EN ISO 717-1 CAC = 29 dB as per ASTM E 413-10		
Sound reduction		EN ISO 10140-2 $R_w = 14$ dB as per EN ISO 717-1		
Fire reaction		Euroclass A2-s1, d0 as per EN 13501-1 Class A as per ASTM E 84		
Light reflectance		87%		
Thermal conductivity		$\lambda = 0.040$ W/mk as per EN 12667		
Air permeability		PM1 (≤ 30 m ³ /hm ²) as per DIN 18177		
Humidity resistance		95% RH		
Clean room		ISO 4 as per EN ISO 14644-1		
Risk level		Zone 4 (Very High Risk) as per NF S 90-351:2013		
Microbiological Cleanliness		M1 as per NF S 90-351:2013		
Kinetics of particle decontamination		CP_(0,5)5 as per NF S 90-351:2013		
Indoor air quality		 A+ E1 		
Cleanability		 		
Anti-microbial characteristics		Tested against: Escherichia coli, Staphylococcus aureus, Candida albicans, Aspergillus niger		
Sustainability		 EN ISO 14021 60% BIOSOLUBLE WOOL EC 1272/2008 Annex G		

In addition to risk level, each room type will have specific requirement for the cleanability and air leakage of the ceiling tile. Therefore, a tile which meets risk zone 4 requirements may not necessarily be suitable for all room types defined in risk zone 4.

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HYGENA Acoustic 15mm

The laminated finish of HYGENA Acoustic creates a smooth, white appearance. It provides good levels of sound absorption and excellent sound attenuation. The surface is washable and anti-microbial.

- Limits the growth of bacteria and fungi
- Cleanable with dry and damp cloth
- Smooth, white appearance and good levels of acoustics
- Complies with Zone 4 risk requirements according to NF S 90-351:2013
- Excellent light reflectance (87%)
- Ideal for healthcare facilities, food processing industry, laboratories, etc.

HYGENA Acoustic 15mm

Edge details		Board 	Tegular 24/90 	Tegular 15/90 														
Thickness (mm)		15	15	15														
Dimensions (mm)		600 x 600 610 x 610 625 x 625 1200 x 600 1220 x 610 1250 x 625	600 x 600 610 x 610 625 x 625	600 x 600 610 x 610 625 x 625														
System		Exposed demountable - System C																
Weight		2.9 kg / m²																
Colour		 White																
Sound absorption		EN ISO 354 $\alpha_w = \mathbf{0.80 (H)}$ as per EN ISO 11654 - Class B <table><tr><td>Frequency f (Hz)</td><td>125</td><td>250</td><td>500</td><td>1000</td><td>2000</td><td>4000</td></tr><tr><td>α_p</td><td>0.55</td><td>0.75</td><td>0.80</td><td>0.75</td><td>0.95</td><td>1.00</td></tr></table> NRC = 0.85 as per ASTM C 423			Frequency f (Hz)	125	250	500	1000	2000	4000	α_p	0.55	0.75	0.80	0.75	0.95	1.00
Frequency f (Hz)	125	250	500	1000	2000	4000												
α_p	0.55	0.75	0.80	0.75	0.95	1.00												
Sound attenuation		EN ISO 10848-2 $D_{n,f,w} = \mathbf{28 dB}$ as per EN ISO 717-1 CAC = 29 dB as per ASTM E 413-10																
Sound reduction		EN ISO 10140-2 $R_w = \mathbf{13 dB}$ as per EN ISO 717-1																
Fire reaction		Euroclass A2-s1, d0 as per EN 13501-1 Class A as per ASTM E 84																
Light reflectance		87%																
Thermal conductivity		$\lambda = \mathbf{0.040 W/mk}$ as per EN 12667																
Humidity resistance		95% RH																
Clean room		ISO 4 as per EN ISO 14644-1																
Risk level		Zone 4 (Very High Risk) as per NF S 90-351:2013																
Microbiological Cleanliness		M1 as per NF S 90-351:2013																
Kinetics of particle decontamination		CP_(0,5) 5 as per NF S 90-351:2013																
Indoor air quality		 A+	 E1															
Cleanability																		
Anti-microbial characteristics		Tested against: Escherichia coli, Staphylococcus aureus, Candida albicans, Aspergillus niger																
Sustainability		 EN ISO 14021 48%	 BIOSOLUBLE WOOL EC 1272/2008 Annex G															

In addition to risk level, each room type will have specific requirement for the cleanability and air leakage of the ceiling tile. Therefore, a tile which meets risk zone 4 requirements may not necessarily be suitable for all room types defined in risk zone 4.

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DEFINITION OF TECHNICAL PERFORMANCE ICONS



Sound Absorption

A single-number rating for random incidence sound absorption coefficients as calculated by reference to EN ISO 11654 (α_w) or to ASTM C 423-01 (NRC).



Sound Attenuation

A single-number rating for flanking sound transmission between adjacent rooms, as calculated by reference to EN ISO 717-1.



Humidity Resistance

Maximum relative humidity conditions for installation and lifetime of ceiling.



Sound Absorption Class

A classification for sound absorption (A – E) based upon the sound absorption α_w value.



Fire Reaction

Reaction to fire classification in accordance with EN 13501-1 expressed as Euroclass (A1 – F).



Antimicrobial

Antimicrobial finish on standard mineral tiles and available as a custom option on metal products with this icon.



Sound Reduction

A single-number rating for airborne sound transmission (single pass) as calculated by reference to EN ISO 717-1.



Light Reflectance

Light reflection is the proportion of incident light that is reflected back off the product.



Air Permeability

Tested in accordance with DIN 18177, the air permeability rating indicates the cubic metres of air leakage per hour per square meter.



Recycled Content

The recycled content of the product, as calculated in accordance with ISO 14021.



Indoor Air Comfort Gold

Higher level "Indoor Air Comfort GOLD - Certified Product" shows additional compliance of product emissions with the criteria of many of the voluntary specifications issued by most relevant ecolabels and similar specifications in the EU an requirements for sustainable building certifications. Certified products are those with the best-in-class low emissions, thus good for indoor air quality.



Biosoluble Wool

The mineral wool used in our products is biosoluble and therefore not a health hazard. The two quality labels RAL and EUCB ensure the biosolubility of the wool through regular testing.



VOC

The VOC emission performance in accordance with the French labelling requirements.



Formaldehyde (E1)

Formaldehyde emission level (E1 = lowest test result possible).



M1

The Finnish emission label for building products is one of the leading test labels in the Scandinavian region. M1 is the best category and stands for "low emission". The M1 classification sets requirements for the emission of VOC, formaldehyde, ammonia and other substances.



ISO 9001 & ISO 14001

This icon demonstrates Knauf Ceiling Solutions ability to consistently provide products and services that meet customer and regulatory quality management system requirements (ISO 9001) and environmental management system requirements (ISO 14001).



Indoor Air Quality

The Eurofins Indoor Air Comfort (Gold) certification ensures that all product-related health criteria on product emissions are sufficiently fulfilled. It is a sign confirming the quality claim of the manufacturer and its contribution to a healthy indoor climate. Mainly VOCs emissions can pose a serious risk, especially to children. Limiting VOC from indoor building products is the subject of many national regulations and voluntary quality labels. A lot of these regulations are covered by IAC(G).



Cradle to Cradle CERTIFIED®

Products with this icon are Cradle to Cradle Certified®, providing a transparent mechanism to compare the sustainability performance of products, showing that they are designed for recycling and can help protect and sustain our environment for future generations by keeping resources in the economy for longer.



Dimensions

Indicates the sizes available for the product of reference.



Systems

Indicates the suspension systems compatible with the product of reference.



Colours

Custom colours available for products with this icon.



Scratch Resistance

Solutions with this icon offer a superior level of surfact scratch resistance.



Product Handling & Durability

Solutions with enhanced durability for improved handling and resistance damage.



Cut-Outs

Custom factory cut-outs for service integration available for products with this icon.



Thermal Conductivity

Tested in accordance with EN 12667, the thermal conductivity rating measures the rate of heat flow through a material.



Shapes

Custom shapes available for products with this icon.



Thickness

Indicates the thickness for the ceiling tile of reference.



Weight

Weight per unit area of the product (kg/m²)



Edge Details

Indicates the different edge details available for the product of reference.



Perforations / Patterns

Custom perforations/patterns available for products with this icon.



Clean Room

Healthcare, pharmaceuticals, and the food processing industry expect the highest levels of air cleanliness. We designed our clean room metal ceiling tiles to meet these requirements for labs, data centres, and clean room assemblies.



Acoustic Infills

Custom acoustic infills available for products with this icon.

CLEANING AND DISINFECTION

The frequency and cleaning method of a ceiling varies from one application to another. All products can at least be cleaned with a dry cloth or vacuum cleaner.



For standard cleaning of dust, loose dirt or deposit, a soft brush, a clean, dry, soft white cloth, a normal vacuum cleaner with a soft brush or focus compressed air can be used.



For more intensive cleaning, the surfaces can be damp cleaned. This should be carried out with a wrung-out soft cloth or sponge. After cleaning, the surfaces of the tile should be dried with a soft cloth.



Wet cleaning should be carried out with lukewarm water (up to 40°C), using a sponge and mild cleaning agent (with a pH value between 7 and 9), and using medium pressure. After cleaning, the surface should be dried with a soft cloth.



Can be cleaned using a high pressure water spray. After cleaning, the surface should be dried.



Can be cleaned with specific disinfectants commonly used in healthcare premises. Disinfectants should be used as a spray on wipes.



The apparatus used should be a cleaner that generates steam under pressure (8 bar and 175°C).



Scrubable with water containing mild soap or diluted detergent

KEY FEATURES AT A GLANCE

Whether it's acoustic performance, contemporary design, hygiene or comfort, Knauf Ceiling Solutions can tailor the answer. Take the time to discover our range and its performances in detail. For more information, please get in touch with us.



ZONE 1 Low risk

ZONE 2 Average risk

ZONE 3 High risk

ZONE 4 Very high risk

DETAILS

DIMENSIONS (MM)

THICKNESS (MM)

LAMINATED

SOUND ABSORPTION α_w

ABSORPTION CLASS

SOUND ATTENUATION

LIGHT REFLECTANCE

HUMIDITY RESISTANCE

CLEAN ROOM

ANTI-MICROBIAL

CLEANABILITY

WATER REPELLENCY

SCRATCH RESISTANCE

FIRE REACTION

VOC



	METAL SOLUTIONS BIOGUARD	MEDIGUARD ALPHA	MEDIGUARD ACOUSTIC	HYGENA AQUATEC	HYGENA ALPHA	HYGENA ACOUSTIC 15MM
	●		●	●		●
			●			●
	●		●		●	●
	●	●	●	●	●	●
	Various edge details available	Board, Tegular 24/90 & 15/90	Board, Tegular 24/90 & 15/90	Board, Tegular 24/90 & 15/90, Finesse	Board, Tegular 24/90 & 15/90	Board, Tegular 24/90 & 15/90
	Various modules and dimensions available	600x600, 1200x600	600x600, 1200x600	600x600, 610x610, 625x625, 1200x600, 1220x610, 1250x625	600x600, 610x610, 625x625, 1200x600, 1220x610, 1250x625	600x600, 610x610, 625x625, 1200x600, 1220x610, 1250x625
	n/a	20mm	19mm	19mm	19mm	15mm
	n/a	YES	YES	YES	YES	YES
	0.10(L)	0.95	0.65(H)	0.90	0.95	0.80(H)
	n/a	Class A	Class C	Class A	Class A	Class B
	up to 44 dB	25 dB	38 dB	29 dB	28 dB	28 dB
	up to 87%	88%	88%	87%	87%	87%
	90%	95%	95%	100%	95%	95%
	up to ISO 1	ISO 3	ISO 4	ISO 3	ISO 4	ISO 4
	YES (8 Bacteria & fungi)	YES (8 Bacteria & fungi)	YES (8 Bacteria & fungi)	YES (3 Bacteria & fungi)	YES (4 Bacteria & fungi)	YES (4 Bacteria & fungi)
	Dry, Damp, Wet	Dry, Damp, Wet, Steam, Resistant to disinfectants	Dry, Damp, Wet, Steam, Resistant to disinfectants	Dry, Damp, Wet, High pressure	Dry, Damp	Dry, Damp
	YES	YES	YES	YES	NO	NO
	YES	YES	YES	YES	NO	NO
	A2-s1,d0	A2-s1,d0	A2-s1,d0	A2-s1,d0	A2-s1,d0	A2-s1,d0
	A+	A+	A+	A+	A+	A+



CLEAN
AND PURE



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YOUR **CEILING**
OUR **SOLUTIONS**

Knauf Ceilings Solutions GmbH & Co. KG

Elsenthal 15,
94481 Grafenau, Germany
Phone: +49 8552 422-0
Fax: +49 9323 318-881-856
www.knaufceilingsolutions.com
E-Mail: info.kcs@knauf.com

Registered court: Passau district court,
Registration No.: HRB 1023
VAT No. pursuant to § 27a of the German VAT Act
(Umsatzsteuergesetz): DE131249009
Managing Director:
Karl Wenig