**APPLICATION BROCHURE**

# HEALTHCARE & HYGIENE SOLUTIONS

**KNAUF**CEILING
*Solutions*

# A PROVEN FORMULA

## CONTENTS

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 industry facilities, our encompassing range brings acoustic comfort, lighting wellbeing and safety from our products' best hygiene performances.

© Shutterstock

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

## 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 INDUSTRY

In the food 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.

© Rob van Esch

7

# 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

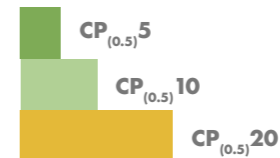Determines the concentration of particles emitted by the ceiling into the room.

ISO 9      ISO 1

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.

$CP_{(0.5)}5$

$CP_{(0.5)}10$

$CP_{(0.5)}20$

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.

M1

M10

M100

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.

© Shutterstock

# THREE MAIN CRITERIA

# 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.
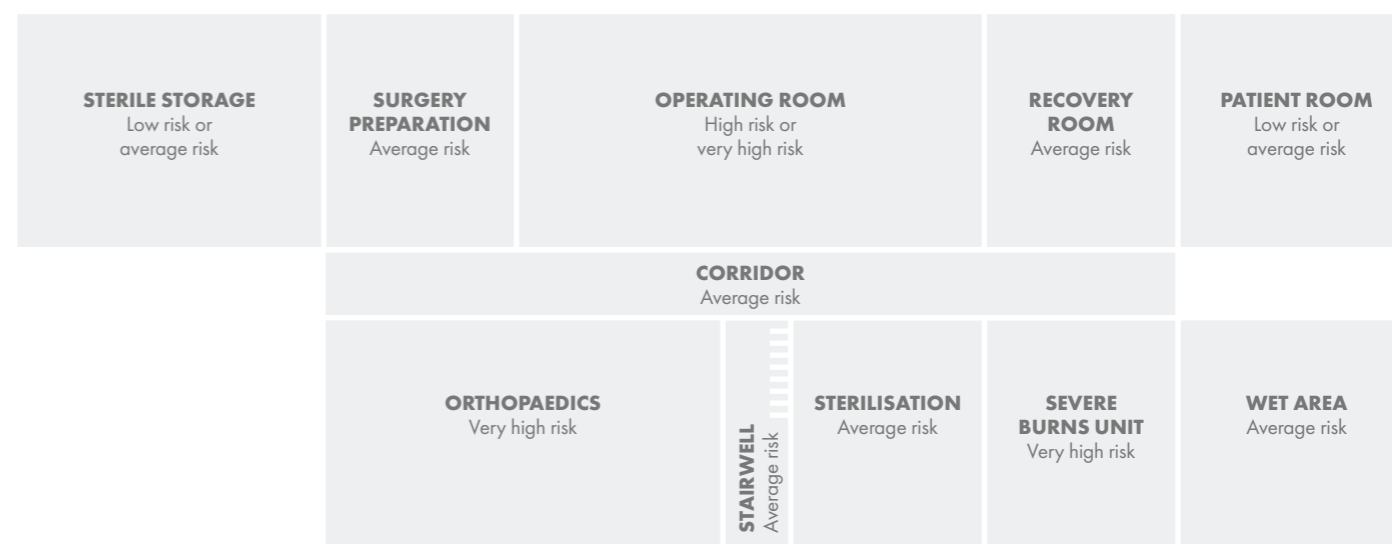
© Shutterstock

**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 |

## 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 Low risk or average risk |
|---|---|---|---|---|---|
| | | CORRIDOR Average risk | | | |
| ORTHOPAEDICS Very high risk | | STAIRWELL Average risk | STERILISATION Average risk | SEVERE BURNS UNIT Very high risk | WET AREA Average risk |

# HYGENA & MEDIGUARD

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.

## 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 specifc coating, HYGENA limits the growth of bacterias*, making it a strong choice for hygiene and healthcare applications.

## 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

*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 HYGENA and MEDIGUARD products meet the highest standards within LEED(R) (US), BREEAM (UK), DGNB (Germany) and Blue Angel, achieving A+ under the French VOC regulation.

© Shutterstock

### HYGENA PLAIN

HYGENA Plain offers a white, smooth surface that creates an elegant ceiling appearance and provides excellent light reflection. 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

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.

### 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.

### MEDIGUARD PLAIN

MEDIGUARD Plain combines good cleanability alongside superior anti-microbial resistance, making it an ideal solution for 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.

### 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.

| | | HYGENA PLAIN | HYGENA ACOUSTIC | HYGENA ALPHA | HYGENA AQUATEC | MEDIGUARD PLAIN | MEDIGUARD ACOUSTIC | MEDIGUARD ALPHA | METAL SOLUTIONS BIOGUARD |
|---|---|---|---|---|---|---|---|---|---|
| **NF S 90-351:2013** Risk zone 4 requirements | Min. ISO 5 | ● | ● | ● | ● | ● | ● | ● | ● |
| | $CP_{(0.5)}5$ | ● | ● | ● | ● | ● | ● | ● | ● |
| | M1 * | ● 4 bacteria & fungi | ● 4 bacteria & fungi | ● 4 bacteria & fungi | ● 3 bacteria & fungi | ● 8 bacteria & fungi | ● 8 bacteria & fungi | ● 8 bacteria & fungi | ● 8 bacteria & fungi |
| **ACOUSTIC ($\alpha_w$)** | 0.10 | | | | | | | | ● |
| | 0.20 | ● | | | | ● | | | |
| | 0.65 | | | | | | ● | | |
| | 0.80 | | ● | | | | | | |
| | 0.90 | | | | ● | | | | |
| | 0.95 | | | ● | | | | ● | |
| **CLEANING** | Dry cloth | ● | ● | ● | ● | ● | ● | ● | ● |
| | Moist cloth | ● | ● | ● | ● | ● | ● | ● | ● |
| | Sponge | | | | ● | | ● | ● | ● |
| | Scrubbable | | | | | | ● | ● | |
| | Steam | | | | | | ● | ● | ● |
| | Chemical resistance | | | | ● + high pressure | | ● | ● | ● |

* Microbiological cleanliness class

**HYGENA**

**Tested against:**
- Escherichia coli
- Staphylococcus aureus
- Candida albicans
- Aspergillus Niger (except HYGENA Aquatec)

**MEDIGUARD**

**Tested against:**
- Escherichia coli
- Staphylococcus aureus
- Bacillus cereus
- Streptococcus pneumoniaie
- Acinobacter baumanii
- Klebsiella pneumoniaie
- Candida albicans
- Aspergillus brasiliensis

# 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.

© Shutterstock

| ROOM TYPES | RISK | CRITERIA | HYGENA PLAIN | HYGENA ACOUSTIC | HYGENA ALPHA | HYGENA AQUATEC | MEDIGUARD PLAIN | MEDIGUARD ACOUSTIC | MEDIGUARD ALPHA | METAL SOLUTIONS BIOGUARD |
|---|---|---|---|---|---|---|---|---|---|---|
| **ACOUSTIC** | | | 0.20(L) | 0.80 | 0.95 | 0.90 | 0.20(H) | 0.65 | 0.95 | 0.10(L) |
| **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, MRI** | 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.

# HYGENA Plain

| Edge details | | Board | Tegular 24 | Tegular 15 |
|---|---|---|---|---|
| Thickness (mm) | | 15 | 15 | 15 |
| Dimensions (mm) | | 600 x 600<br>610 x 610<br>1200 x 600<br>1220 x 610 | 600 x 600 | 600 x 600 |
| System | | Exposed demountable - System C | | |
| Weight | | 3.8 kg / m² | | |
| Colour | | White | | |

| Sound absorption | | EN ISO 354 | | $\alpha_w$ = **0.20 (L)** as per EN ISO 11654 - **Class E** | | | |
|---|---|---|---|---|---|---|---|
| | | Frequency $f$ (Hz) | 125 | 250 | 500 | 1000 | 2000 | 4000 |
| | | $\alpha_p$ | 0.45 | 0.25 | 0.15 | 0.15 | 0.20 | 0.25 |
| | | NRC = **0.20** as per ASTM C 423 | | | | | |

| Sound attenuation | | EN ISO 10848-2<br>$D_{n,f,w}$ = **34 dB** as per EN ISO 717-1 | CAC = **36 dB** as per ASTM E 413-10 |
|---|---|---|---|
| Sound reduction | | EN ISO 10140-2<br>$R_w$ = **21 dB** as per EN ISO 717-1 | |
| Fire reaction | | Euroclass **A2-s1, d0** as per EN 13501-1<br>**Class A** as per ASTM E 84 | |
| Light reflectance | | **87%** | |
| Thermal conductivity | | $\lambda$ = **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, Candida albicans, Aspergillus niger | |
| Sustainability | | 26% | |

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.

# HYGENA Plain

HYGENA Plain offers a white, smooth surface that creates an elegant ceiling appearance and provides excellent light reflection.
The surface is washable and anti-microbial.

- Limits the growth of bacteria and fungi
- Cleanable with dry and damp cloth
- White, smooth surface that provides excellent light reflection
- Complies with Zone 4 risk requirements according to NF S 90-351:2013
- Ideal for healthcare environments and laboratories

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

**03/2023**

# HYGENA Acoustic 15mm

| Edge details | | Board | Tegular 24/90 | Tegular 15/90 |
|---|---|---|---|---|
| Thickness (mm) | | 15 | 15 | 15 |
| Dimensions (mm) | | 600 x 600<br>610 x 610<br>625 x 625<br>1200 x 600<br>1220 x 610<br>1250 x 625 | 600 x 600<br>610 x 610<br>625 x 625 | 600 x 600<br>610 x 610<br>625 x 625 |

| | | |
|---|---|---|
| System | | Exposed demountable - System C |
| Weight | | 2.9 kg / m² |
| Colour | | White |

**Sound absorption**

EN ISO 354      $\alpha_w$ = **0.80 (H)** as per EN ISO 11654 - **Class B**

| Frequency $f$ (Hz) | 125 | 250 | 500 | 1000 | 2000 | 4000 |
|---|---|---|---|---|---|---|
| $\alpha_p$ | 0.55 | 0.75 | 0.75 | 0.80 | 0.95 | 1.00 |

NRC = **0.85** 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
$R_w$ = **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 | | $\lambda$ = **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 Q |

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.

# 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 industry, laboratories, etc.

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

**03/2023**

# HYGENA Alpha

| Edge details | | Board | Tegular 24/90 | Tegular 15/90 |
|---|---|---|---|---|
| Thickness (mm) | | 19 | 19 | 19 |
| Dimensions (mm) | | 600 x 600<br>610 x 610<br>625 x 625<br>1200 x 600<br>1220 x 610<br>1250 x 625 | 600 x 600<br>610 x 610<br>625 x 625 | 600 x 600<br>610 x 610<br>625 x 625 |
| System | | Exposed demountable - System C | | |
| Weight | | 3.3 kg / m² | | |
| Colour | | White | | |

| Sound absorption | EN ISO 354 | | | $\alpha_w$ = **0.95** as per EN ISO 11654 - **Class A** | | | |
|---|---|---|---|---|---|---|---|
| | Frequency $f$ (Hz) | 125 | 250 | 500 | 1000 | 2000 | 4000 |
| | $\alpha_p$ | 0.50 | 0.80 | 0.90 | 0.90 | 1.00 | 1.00 |
| | NRC = **0.90** as per ASTM C 423 | | | | | | |

| Sound attenuation | EN ISO 10848-2<br>$D_{n,f,w}$ = **28 dB** as per EN ISO 717-1 $\qquad\qquad$ CAC = **29 dB** as per ASTM E 413-10 |
|---|---|
| Sound reduction | EN ISO 10140-2<br>$R_w$ = **14 dB** as per EN ISO 717-1 |
| Fire reaction | Euroclass **A2-s1, d0** as per EN 13501-1<br>**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 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+ $\quad$ E1 $\quad$ INDOOR AIR COMFORT eurofins GOLD CERTIFIED PRODUCT |
| Cleanability | |
| Anti-microbial characteristics | Tested against: Escherichia coli, Staphylococcus aureus, Candida albicans, Aspergillus niger |
| Sustainability | EN ISO 14021 60% $\quad$ BIOSOLUBLE WOOL EC 1272/2008 Annex Q |

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.

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

**03/2023**

# 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 industry, laboratories, etc.

# 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 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<br>610 x 610<br>625 x 625<br>1200 x 600<br>1220 x 610<br>1250 x 625 | 600 x 600<br>610 x 610<br>625 x 625 | 600 x 600<br>610 x 610<br>625 x 625 | 600 x 600<br>625 x 625 |
| System | | Exposed demountable - System C | | | Concealed, demountable - System A.2 / A.3 |
| Weight | | 5.2 kg / m² | | | |
| Colour | | White | | | |

| Sound absorption | | EN ISO 354 | | | | $\alpha_w$ = **0.90** as per EN ISO 11654 - **Class A** | | |
|---|---|---|---|---|---|---|---|---|
| | | Frequency $f$ (Hz) | 125 | 250 | 500 | 1000 | 2000 | 4000 |
| | | $\alpha_p$ | 0.60 | 0.70 | 0.85 | 0.90 | 1.00 | 1.00 |
| | | NRC = **0.90** as per ASTM C 423 | | | | | | |

| Sound attenuation | | EN ISO 10848-2<br>$D_{n,f,w}$ = **29 dB** as per EN ISO 717-1 | CAC = **29 dB** as per ASTM E 413-10 |
|---|---|---|---|
| Sound reduction | | EN ISO 10140-2<br>$R_w$ = **16 dB** as per EN ISO 717-1 | |
| Fire reaction | | Euroclass **A2-s1, d0** as per EN 13501-1<br>**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 m³/hm²) 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 | | EN ISO 14021 52%    EC 1272/2008 Annex Q | |

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.

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

**03/2023**

## MEDIGUARD Plain

| Edge details | | Board | Tegular 24 | Tegular 15 |
|---|---|---|---|---|
| Thickness (mm) | | 15 | 15 | 15 |
| Dimensions (mm) | | 600 x 600<br>1200 x 600 | 600 x 600 | 600 x 600 |
| System | | Exposed demountable - System C | | |
| Weight | | 3.6 kg / m² | | |
| Colour | | White | | |

**Sound absorption**

EN ISO 354 — $\alpha_w$ = **0.20 (L)** as per EN ISO 11654 - **Class E**

| Frequency $f$ (Hz) | 125 | 250 | 500 | 1000 | 2000 | 4000 |
|---|---|---|---|---|---|---|
| $\alpha_p$ | 0.40 | 0.25 | 0.15 | 0.15 | 0.20 | 0.30 |

NRC = **0.20** as per ASTM C 423

| Sound attenuation | | EN ISO 10848-2<br>$D_{n,f,w}$ = **35 dB** as per EN ISO 717-1 | CAC = **35 dB** as per ASTM E 413-10 |
|---|---|---|---|
| Sound reduction | | EN ISO 10140-2<br>$R_w$ = **19 dB** as per EN ISO 717-1 | |
| Fire reaction | | Euroclass **A2-s1, d0** as per EN 13501-1<br>**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 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    GOLD | |
| 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   24%    BIOSOLUBLE WOOL EC 1272/2008 Annex Q | |

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
# Plain

MEDIGUARD Plain combines good cleanability alongside superior anti-microbial resistance, making it an ideal solution for healthcare environments.

- Water repellent
- Scratch resistant
- Limit growth of extended scope of bacteria & fungi
- Resistant to disinfectants and can be cleaned with dry, damp and wet cloth

- Complies with Zone 4 risk requirements according to NF S 90-351:2013
- ISO 4
- Excellent light reflectance (88%)
- Ideal for healthcare environments and laboratories

**03/2023**

## MEDIGUARD Acoustic

| Edge details | | Board | Tegular 24/90 | Tegular 15/90 |
|---|---|---|---|---|
| Thickness (mm) | | 19 | 19 | 19 |
| Dimensions (mm) | | 600 x 600<br>1200 x 600 | 600 x 600<br>1200 x 600 | 600 x 600<br>1200 x 600 |
| System | | Exposed demountable - System C | | |
| Weight | | 5.0 kg / m² | | |
| Colour | | White | | |

| Sound absorption | | EN ISO 354 | | $\alpha_w$ = **0.65(H)** as per EN ISO 11654 - **Class C** | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Frequency f (Hz) | 125 | 250 | 500 | 1000 | 2000 | 4000 |
| | | $\alpha_p$ | 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<br>$D_{n,f,w}$ = **38 dB** as per EN ISO 717-1 | CAC = **39 dB** as per ASTM E 413-10 |
|---|---|---|---|
| Sound reduction | | EN ISO 10140-2<br>$R_w$ = **22 dB** as per EN ISO 717-1 | |
| Fire reaction | | Euroclass **A2-s1, d0** as per EN 13501-1<br>**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 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   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  35%   BIOSOLUBLE WOOL EC 1272/2008 Annex Q | |

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 industry, laboratories, etc.

SK UVN SNP Hospital, Ružomberok, © Jakub Joachim

**03/2023**

## 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      $\alpha_w$ = **0.95** as per EN ISO 11654 - **Class A**

| Frequency $f$ (Hz) | 125 | 250 | 500 | 1000 | 2000 | 4000 |
|---|---|---|---|---|---|---|
| $\alpha_p$ | 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 $D_{n,f,w}$ = **25 dB** as per EN ISO 717-1     CAC = **25 dB** as per ASTM E 413-10 |
|---|---|---|
| Sound reduction | | EN ISO 10140-2 $R_w$ = **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 | | $\lambda$ = **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 Q |

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 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 industry, laboratories, etc.

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

**03/2023**

## 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/m$^2$ 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** $\varnothing$: 2.5mm Open area: 16% | Micro-perforation **Rd 1522** $\varnothing$: 1.5mm Open area: 22% | Extramicro perforation **Rg 0701** $\varnothing$: 0.7mm Open area: 1.5% |
|---|---|---|---|

**Sound absorption**

| | | | EN ISO 354 | | | | | | | EN ISO 10848-2 | EN ISO 10140-2 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\alpha_w$* | Class | Frequency (Hz) $\alpha_p$ | | | | | | NRC** | $D_{n,f,w}$*** | $R_w$*** | CAC**** |
| | | | 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 |

*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.

| 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 | | ≈14%    Silver* |
| Design options | | Dimensions   Colours   Perforations   Acoustic Infills   Cut-Outs |

---

# 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

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

**03/2023**

# 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 ($\alpha_w$) or to ASTM C 423-01 (NRC).

**Sound Absorption Class**
A classification for sound absorption (A – E) based upon the sound absorption $\alpha_w$ value.

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

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

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

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

**Humidity Resistance**
Maximum relative humidity conditions for installation and lifetime of ceiling.

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

**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.

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

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

**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).

**Indoor Air Comfort Gold**
Higher level "Indoor Air Comfort GOLD - Certified Product" shows additional compliance of product emissions with the critera 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.

**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.

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

**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).

**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.

**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).

Scrubbable 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.

© lenshagen - stock.adobe.com

© Shutterstock

| | HYGENA PLAIN | HYGENA ACOUSTIC | HYGENA ALPHA | HYGENA AQUATEC | MEDIGUARD PLAIN | MEDIGUARD ACOUSTIC | MEDIGUARD ALPHA | METAL SOLUTIONS BIOGUARD |
|---|---|---|---|---|---|---|---|---|
| **ZONE 1** Low risk | ● | ● | | ● | ● | ● | | ● |
| **ZONE 2** Average risk | ● | ● | | | ● | ● | | |
| **ZONE 3** High risk | | ● | ● | | | ● | | ● |
| **ZONE 4** Very high risk | | ● | ● | ● | | ● | ● | ● |
| **DETAILS** | Board, Tegular 24 & 15 | Board, Tegular 24/90 & 15/90 | Board, Tegular 24/90 & 15/90 | Board, Tegular 24/90 & 15/90, Finesse | Board, Tegular 24 & 15 | Board, Tegular 24/90 & 15/90 | Board, Tegular 24/90 & 15/90 | Various edge details available |
| **DIMENSIONS (MM)** | 600x600, 610x610, 1200x600, 1220x610 | 600x600, 610x610, 625x625, 1200x600, 1220x610, 1250x625 | 600x600, 610x610, 625x625, 1200x600, 1220x610, 1250x625 | 600x600, 610x610, 625x625, 1200x600, 1220x610, 1250x625 | 600x600, 1200x600 | 600x600, 1200x600 | 600x600, 1200x600 | Various modules and dimensions available |
| **THICKNESS (MM)** | 15mm | 15mm | 19mm | 19mm | 15mm | 19mm | 20mm | n/a |
| **LAMINATED** | NO | YES | YES | YES | NO | YES | YES | n/a |
| **SOUND ABSORPTION** $\alpha_w$ | 0.20 | 0.80 | 0.95 | 0.90 | 0.20(L) | 0.65 | 0.95 | 0.10(L) |
| **ABSORPTION CLASS** | Class E | Class B | Class A | Class A | Class E | Class C | Class A | n/a |
| **SOUND ATTENUATION** | 34 dB | 28 dB | 28 dB | 29 dB | 35 dB | 38 dB | 25 dB | up to 44 dB |
| **LIGHT REFLECTANCE** | 87% | 87% | 87% | 87% | 88% | 88% | 88% | up to 87% |
| **HUMIDITY RESISTANCE** | 95% | 95% | 95% | 100% | 95% | 95% | 95% | 90% |
| **CLEAN ROOM** | ISO 4 | ISO 4 | ISO 4 | ISO 3 | ISO 4 | ISO 4 | ISO 3 | up to ISO 1 |
| **ANTI-MICROBIAL** | YES (4 Bacteria & fungi) | YES (4 Bacteria & fungi) | YES (4 Bacteria & fungi) | YES (3 Bacteria & fungi) | YES (8 Bacteria & fungi) | YES (8 Bacteria & fungi) | YES (8 Bacteria & fungi) | YES (8 Bacteria & fungi) |
| **CLEANABILITY** | Dry, Damp | Dry, Damp | Dry, Damp | Dry, Damp, Wet, High pressure | Dry, Damp, Wet, Resistant to disinfectants | Dry, Damp, Wet, Steam, Resistant to disinfectants | Dry, Damp, Wet, Steam, Resistant to disinfectants | Dry, Damp, Wet |
| **WATER REPELLENCY** | NO | NO | NO | YES | YES | YES | YES | YES |
| **SCRATCH RESISTANCE** | NO | NO | NO | YES | YES | YES | YES | YES |
| **FIRE REACTION** | A2-s1,d0 | A2-s1,d0 | A2-s1,d0 | A2-s1,d0 | A2-s1,d0 | A2-s1,d0 | A2-s1,d0 | A2-s1,d0 |
| **VOC** | A+ | A+ | A+ | A+ | A+ | A+ | A+ | A+ |

© Szymon Polański



# CLEAN
# AND PURE

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

EN - 04/2023
© Shutterstock