

Design for hospital care



How acoustic solutions help improve patient healing and well-being.

Sounds Beautiful

Are you looking to build, renovate or refurbish a hospital?

Then this brochure is for you.

Get all the critical insights and essential knowledge that you'll need about hospital design in this easy-to-navigate booklet. Developed for Architects, Building Consultants and Facility Managers, this brochure will guide you on how acoustic solutions reinforce healing architecture, helping you get inspired to find the right solutions for your project.

Well-being is at the heart of everything we do.
Our beautiful, sustainable acoustic solutions bring healing to hospitals."

Parik Chopra

Managing Director, Rockfon

Content









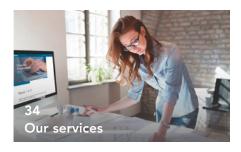












Current **trends** driving hospital design

The built environment in hospitals is responsible for generating the right atmosphere that keeps patients and caregivers feeling comfortable, safe and healthy.

We're excited to share some interesting insights and upcoming trends that impact modern hospital design and support the needs of patients, visitors and healthcare workers.

- Evidence-based design
- 2 Adaptive architecture
- 3 Connectedness

Evidence-based design

The science is in, showing that hospitals are being designed using research and hard data. The hospital of the future shouldn't feel like an institution, so the importance of nature, access to daylight and use of colours are growing in order to create calm and inviting spaces for patients and hospital staff.

Where do we fit in?

Our acoustic solutions are available in many different hues, enabling you to accent spaces with subtle colouring that impacts healing. If you're looking to optimise natural light our acoustic ceilings can draw light 11% further into a room, making it a perfect complement to any biophilic design.



Adaptive architecture

As we've seen, hospitals can be forced to cope with a sudden surge of patients. Flexibility and responsiveness is vital when we're faced with a pandemic, requiring hospitals to expand or contract the architectural layout quickly. Designers and building owners must, early in the planning phase, consider options that accommodate both for changes in space in the short-term and adaptive change over a longer period.

How can we help?

Our ceilings are designed for modularity, meaning that it is easy to create a multi-functional space. The flexibility enables quick conversion from one room function to another without having to fret whether the building materials meet the hygiene codes required in a hospital. Our acoustic solutions are easy to clean, and they are made from stone wool, which is naturally resistant to mould and bacteria.





Connectedness

Hospitals of the future are all about personalisation, privacy and connectedness. Gone are the days of regular visiting hours and conventional recovery rooms. Patients will want more independence and comfort, a homely feeling where they feel at ease and have privacy. Remote care is also something we will see more and more. Doctors are staying in touch with their patients via modern technologies, while the patient recovers in care centres or at home.

What's our role?

Our acoustic solutions provide the very best combination of sound absorption and sound insulation. They keep the inside of a room calm and quiet, while simultaneously insulating noise, ensuring the privacy of patients.

How to design for different **spaces** in a hospital

Different people, different needs

Hospitals service many people every day, and they interact in the space each in their own way. This heightens the building's complexity and influences the way we think about the design of a hospital.

Strength of Rockfon

Our broad range of acoustic solutions empower you to design, whether you are looking at dampening the noise in the corridors or need extra hygienic properties in the ICU, we have an acoustic solution to match.

- Reception and waiting rooms
- 2 Corridors and offices
- 3 Intensive Care Units
- 4 Patient and recovery rooms
- 5 Break areas



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Reception and waiting rooms

The reception and waiting rooms are the first interaction on a patient's journey, making it crucial to create a calm and nourishing atmosphere that doesn't overwhelm the senses.

The importance of a first impression

A reception should be a bright and warm space that visually cultivates a feeling of care and wellbeing while providing vital information. It is often a busy space with people coming and going, but by thinking in soft flooring, acoustic ceilings, space dividers, among other things, the noise levels can be controlled.

Waiting rooms are part of the treatment

Waiting rooms should be part of the treatment. Create a tranquil and cosy room by incorporating nature, natural light and serenity in the form of paintings, colours and acoustic materials.

Morriston Hospital

Swansea, Wales, United Kingdom

The new double height atrium in Morriston Hospital was designed to be a welcoming and attractive environment for patients.

Rockfon Eclipse islands are suspended at different heights and sizes to create a floating wave sculpture. The islands keep reverberation times to a minimum in this busy area, whilst providing interesting patterns of light and visual variety to the large space.





First impressions count

Reception and waiting room design solutions

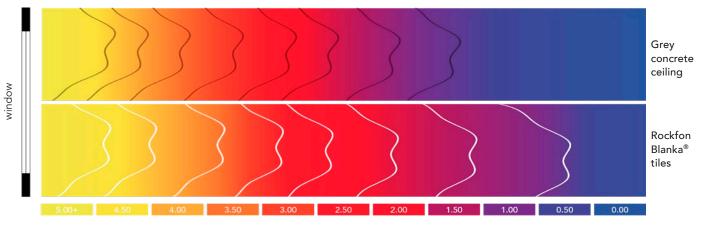
Keep your ceiling looking smooth and bright

A ceiling for today and tomorrow

When creating that bright and inviting entry point to your hospital, our Rockfon Blanka ceiling is the ideal choice. Not only is it our whitest and brightest tile, but it also provides best in class acoustics, so that you can control the noise in this busy space.

We know that public areas with high footfall takes it toll on the building. Don't worry we got you covered. Rockfon Blanka has a highly durable surface which is resistant to dirt and easily cleaned, keeping your ceiling looking as bright as the day it was installed.

Potential annual energy saving with 10 W/m²



Distribution of natural light in a waiting room.

Here are the products we recommend

Chicago Metallic™ Matt-White 11

Its unique surface reduces the visual contrast between your grid and tile, giving you an elegant and almost monolithic look.

Rockfon Blanka®

Its smooth, deep matt, super white surface has high light reflection and light diffusion properties, creating a bright and comfortable indoor space. In fact, the surface draws in natural daylight 11% further than many other ceilings.



Acoustic design advice

Three suggestions for creating a great acoustic environment in the reception and waiting rooms.

- 1. Whilst Class C sound absorption is required to meet minimum HTM08-01 Acoustics requirements, ceilings with a higher level of sound absorption (Class A or B) contribute to a more pleasant acoustic environment.
- Calm the senses by installing paintings or colored acoustic wall panels on the vertical surfaces. Bring in plants and vertical planting to break up the space and soften the echoes.
- 3. Use soundproof glass windows, blocking sound coming in from busy streets. Use soft flooring, acoustic ceilings, space dividers, to regulate the noise levels.

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Patients in hospitals have shown to display higher levels of agitation in rooms with less light."

Anjali Joseph,Ph.D. Director

Ph.D., Director of Research, The Center for Health Design



Corridors and offices

Corridors and offices perform vastly different functions in a hospital. Corridors are the busy arteries of a hospital, travelled by patients, visitors, staff and medical equipment and trolleys. Meanwhile offices are meant to be a calm oasis from the traffic in a hospital, a safe space where patients and physicians can speak freely and comfortably.

The interconnectivity between the corridors and offices creates a nexus of design complexity.

The hospital highway

Because of the many functions that hospital corridors perform, it is vital to design these spaces with high functionality and proactive design that emphasise fluidity and easy access to the plenum, where all building services are hidden.

Confidentiality matters

Privacy is an essential component of patient care and their comfort. It is vital that doctors and patients are able to freely discuss critical and sensitive information in a confidential, undisturbed and restful space.

Forth Valley Royal Hospital

Falkirk, Scotland

The ceiling voids of the corridors within the Hospital were highly congested, crammed full of pipes, ductwork, cable trays and other essential building services which required regular access for maintenance.

The designers chose ceiling tiles in a larger 'plank' format to create an elongated design aesthetic for the corridors, using MediCare Plus to absorb sound and meet the stringent hygiene requirements.





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We always try and relate to the indoor environment, but we also need to take the building's technical solutions and life cycle into account."

Juhani Takkinen, Architect, RE-Suunnittelu Oy

Acoustic design advice

Three things you can do to improve the acoustic environment in corridors and offices

- Construct full height walls to achieve appropriate levels of sound insulation and privacy.
- 2. Ensure that you have highly soundabsorbing materials on the ceilings. Use colored acoustical ceilings to both enhance wayfinding and reduce noise levels.
- 3. Use sound-masking to cover outside noise from the adjacent rooms.

Design improves patient experience

Corridor and office design solutions

Your perfect corridor

A well-designed corridor has proper lighting, easy navigation, hassle-free cleanability and good acoustics to make the busy space quiet.

Functional integration

Many technical installations are accessed behind the ceiling. This means more than just great acoustics; it requires quick access and a ceiling that can be easily demounted.



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Private conversations

A functioning office has the right balance of sound absorption and sound insulation. It gives privacy and peace of mind to patients, keeping the conversation in the room and noise outside.



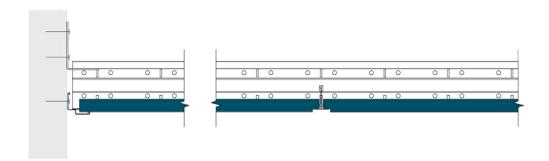
Here are the products we recommend

Rockfon® System Maxispan T24 A,E™

This is a unique, cost-efficient and very stable installation system that is perfect for the wide corridors found in hospitals. It provides quick and easy access to services in the ceiling void.

The system spans up to three meters wide, and due to the strength of the profiles, there is no need for soffit fixed hangers, providing more flexibility and easier maintenance of the services.

The system is ideally combined with either Rockfon Blanka or Rockfon MediCare Plus tiles, giving you the perfect combination of function and design.



Rockfon Blanka®

For corridors, we recommend Rockfon Blanka because it exceeds the minimum sound absorption requirements of Class C and allows for more services or plasterboard margins to be incorporated into the ceiling.

Rockfon® MediCare® Standard

An outstanding balance of acoustic comfort and cleanability that doesn't contribute to the growth of MRSA and ensures low particle emission.



Intensive Care Units (ICU)

Communication is critical in the life saving departments of the ICU, placing an extremely high value on room acoustics and solid sound absorption.

Sadly, ICU's are notoriously loud, in fact, one study showed that noise levels of over 100dB have been measured in intensive care units which can increase a patient's heart rate, blood pressure and breathing.*

Make communication easier

Being understood is a critical resource in ICU's because it can have consequential implications for a patient's safety. To avoid reducing speech intelligibility introducing acoustic solutions with best in class sound absorption helps calm these stressful, busy and loud environments of a hospital

A healthy clean environment

A building material's surface plays an important role in limiting the spread of bacteria and infection, and nowhere is that more important than in good ICU design. 5-10 % of all patients contract hospital-acquired infections and cleaning and hygiene are good methods of prevention.¹

Make your ceiling work for you

Getting the right acoustic solutions goes beyond just great acoustics and hygienic properties, it also means have a ceiling design that facilitates the installation of medical equipment while still creating the environment that empowers doctors to work.

¹source:https://www.ncsl.org/research/health/hospital-acquired-infections-faq.aspx

^{*} https://assets.publishing.service.gov.uk/government/ uploads/system/ uploads/attachment_data/file/144248/ HTM_08-01.pdf



One study showed that communication interference due to noise is the leading cause of **poor operation outcomes**.

Katz, J. D, MD, Noise in the Operating Room, The American Society of Anesthesiologists, Inc.; 2014



Acoustic design advice

Here are three things you can do to create a great acoustic environment in the ICU

- 1. Ensure that you have minimum Class A soundabsorbing materials on the ceilings and walls.
- 2. Use sound-masking and high performance doors to cover noise from surrounding rooms
- 3. Construct full height walls to achieve appropriate levels of sound insulation and privacy.

Create a room to **excel**

Solutions for Intensive Care Units

A room designed to save lives

Regulating room acoustics can be vital for ICU's but so is hygiene and cleanability. We offer several products which combine high sound absorption with excellent hygienic properties. We have also developed unique accessories to complement the ceiling installation in a hospital setting.

Keeping the ceiling in place

Our hold down clips perfectly complement any ceiling design that is frequently and thoroughly cleaned. The clips ensure that although the tiles are touched regularly, they will be kept in place and look nice.



Exemplary illustration

	Sound absorption	Light reflection	Microbiological class	Dust resistance	Humidity resistance
Rockfon® MediCare® Air	Class B	85%	M1	ISO 3	up to 100%
Rockfon® MediCare® Block	Class B	74%	M1	ISO 2	up to 100%



Here are the products we recommend

Rockfon® MediCare® Air

Is specifically designed to be used in pressurised healthcare environments where differential air pressure is required to prevent infection.

Rockfon® MediCare® Block

Is designed for use in sensitive healthcare environments where frequent cleaning is required to avoid the spread of infection.

Patient and recovery rooms

A well-designed patient room should be an oasis for patients. A place where they can go and regain their strength in a calm, quiet and comfortable space that does not feel clinical.

Evidence-based design talks about the importance of incorporating biophilic design, big windows, to give ample access to natural light, the outdoors, fresh air and comfortable noise levels. All the small details that will make a patient feel at home and relaxed.

In the same way, hygiene is an equally paramount factor when designing patient and recovery rooms. Keeping patients safe and healthy is absolutely essential in the recovery phase, where the immune system is weakened, and the body more prone to infections.



Liverpool, United Kingdom

This new hospital will deliver a wide range of highly-specialist cancer care including pioneering chemotherapy, immunotherapy, gene therapy, radiotherapy. It incorporates 110 fully-single ensuite patient bedrooms in an open-plan space with views across the city. Every patient has a dedicated treatment bay, separated from each other by a purpose-designed screen complete with sockets and Wi-Fi connection.

Rockfon Medicare Plus was used throughout the building, with Blanka dB being used to areas where the walls did not extend to the soffit and therefore, where higher acoustic insulation was required.





Harness the power of acoustics

Patients have an increased need for sleep and rest when hospitalised, but studies show that most patients suffer from poor sleep. Approaches, such as more single-bedrooms and reducing the surrounding noise levels, have led to improve patient sleep patterns.¹

Bringing in daylight

Having recovery rooms around the outer rim of the hospital building lets you have lovely big windows, giving patients access to daylight, which can also be a critical factor in reducing hospital stay. Studies show that access to daylight in patient rooms helps to maintain the circadian rhythm, improve sleep and reduce pain.^{2&3}

15% fewer days

in hospital for people recovering with access to natural light.

Kathleen M Beauchemin, Peter Hays, Sunny hospital rooms expedite recovery from severe and refractory depressions, Journal of Affective Disorders 40 (1996) 49-51

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 $^{^1}$ Southwell MT, Wistow G (1995). "Sleep in hospital at night – are patients' needs being met?". Journal of Advanced Nursing. 21

² Wakamura T, Tokura H (2001). "Influence of bright light during daytime on sleep parameters in hospitalized elderly patients". Journal of Physiological Anthropology and Applied Human Science.

³ Malenbaum S, Keefe FJ, Williams AC, Ulrich R, Somers TJ (2008). "Pain in its environmental context: Implications for designing environments to enhance pain control"

Contribute to a **faster** recovery

Solutions for patient and recovery rooms

How ceilings can improve a hospital stay

Not only can acoustic ceilings reduce noise levels indirectly, they can also help patients sleep better and recover faster.

By utilising the high light reflection of the ceiling surface, you can also bring daylight further into the room, which positively impacts the patient's circadian rhythm. A big part of healing is also hygiene. Its important that the building materials in recovery rooms are cleanable and don't contribute to the growth of MRSA or other harmful bacteria, all while maintaining their basic function and aesthetic character.





make it possible to build for people and for better care - and not just for institutional requirements."

Parik Chopra

Managing Director, Rockfon

Acoustic design advice

Here are the three things you can do to create a quiet space for patients in recovery rooms

- 1. Install sound absorbing-materials on the ceilings and walls in both the corridors as well as the recovery rooms.
- 2. Use high performance doors with long lasting and reliable sealing strips on patient and recovery rooms.
- 3. Construct full height walls to achieve appropriate levels of sound insulation and privacy.

Here is the product we recommend

Rockfon® MediCare® Plus

Is perfect for demanding healthcare applications that require cleaning with a damp cloth or that uses standard detergents and specialist dry steam and high-pressure cleaning.

Rockfon MediCare Plus doesn't contribute to the growth of MRSA and is ISO Class 3 certified. These features help keep recovery rooms safe for patients.

Break areas

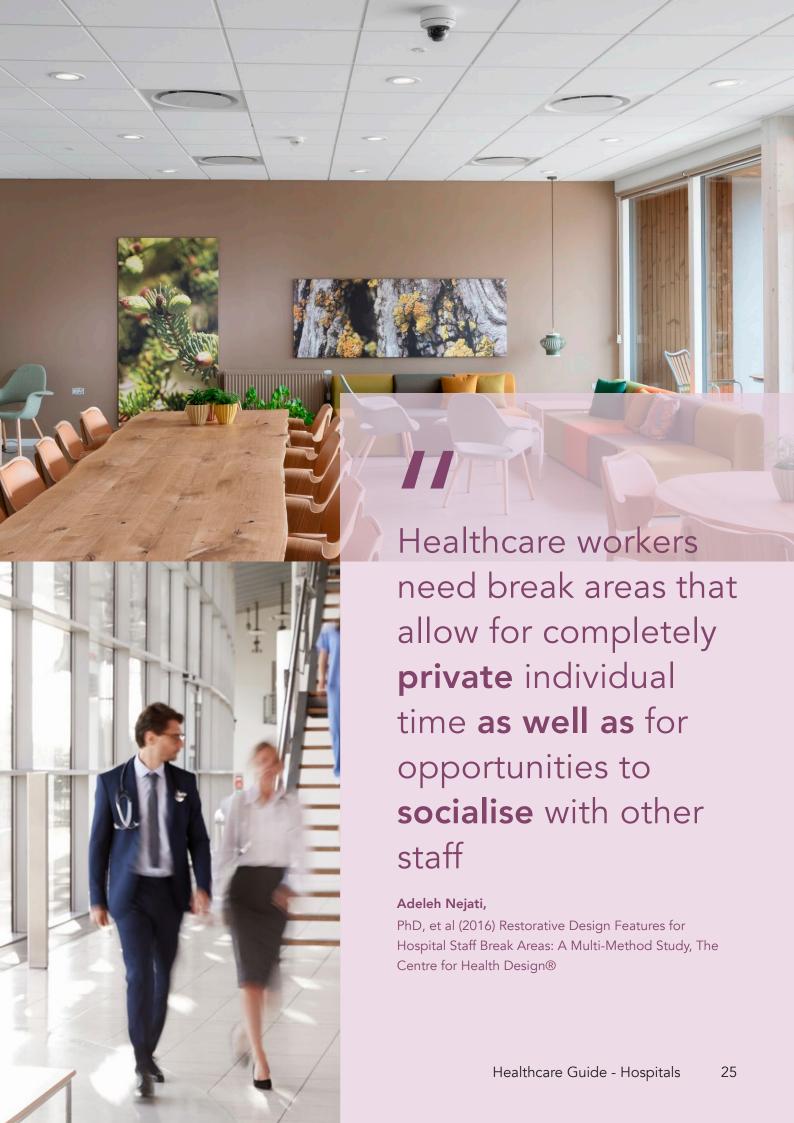
Hospitals are hectic busy spaces and healthcare workers need respite from the chaotic day-to-day of being in a hospital - a private space close to the patients, but where they can go to recharge their batteries and get some much needed psychological distance from their work.

Hospitals have historically suffered from high employee turnover. Work-related stress and burnout are significant causes, making it crucial for healthcare workers to have a place to relax and unwind. Easy access to nature, calming colours on the walls, floors or ceilings and plenty of natural light can help create a relaxing and calm atmosphere for staff to recharge in.

Sound comfort

Hospitals are buzzing with people and equipment, which overstimulates the senses. It is crucial for healthcare workers to be able to withdraw on their breaks, and find a piece of serenity or a quiet place to chat with a colleague.





A well-deserved break

Solutions for staff & children's play areas

A ceiling that enhances the mood.

Colours shape our mood and having the right colours in a break room can help stir the emotion and create a place where people can relax and unwind. Combine colour with enhanced acoustics and you get even more benefits from your design.

Colours can change a room

Our response to colour is total. Harnessing its powerful effect on well-being can positively influence us by triggering reactions that affect our behaviour. Sadly colour selection is frequently left to the end of the architectural design process, made peripheral to the structure of the building. This is rather unfortunate because choosing the right colours for your design enhances function and effect.



Here are the products we recommend

Rockfon Color-all®

Comes in 34 exclusive colours of acoustic ceiling and wall solutions to inspire and enhance your interior design scheme.

Rockfon MediCare® Standard

A great balance of acoustic comfort and cleanability that doesn't contribute to the growth of MRSA and ensures low particle emission.



Hygienic break areas

Areas for a resting and grabbing a quick bite is essential in a hospital. Not just for staff, but for visitors too.

In areas where food is handled, hygiene is key and materials that can be thoroughly cleaned and sustain a humid environment is a must. We have solutions that fit perfectly to these requirements and on top of this help control the noise in these busy areas.

Acoustic design advice

Three things you can do to make break rooms an oasis for healthcare workers

- 1. Use high performance glass windows, blocking noise from coming in.
- 2. Choose highly sound-absorbing acoustic solutions on the ceilings and walls. Use colored tiles to further enhance well-being.
- 3. Use cleanable and highly sound-absorbing materials in the cafeteria where there are many hard surfaces and often high noise levels.



Hospital **product specs** and **where to use them**

Let's take a final look at the products and rooms that you've just seen

Prop	perties	Rockfon® MediCare® Standard	Rockfon® MediCare® Plus	Rockfon® MediCare® Air	Rockfon® MediCare® Block	Rockfon® Blanka®			
	Surface durability	-	Enhanced durability and dirt resistance	Enhanced durability and dirt resistance	Enhanced durability and water repellence	Enhanced durability, dirt resistance, and wet-scrub resistance			
	Cleaning	Vacuum, damp cloth	Vacuum, damp cloth, dry steam cleaning (twice a year)*+	Vacuum, damp cloth, dry steam cleaning (twice a year)*+	Vacuum, damp cloth, dry steam cleaning (daily)**	Vacuum, damp cloth			
	Hygiene	Class M1	Class M1	Class M1	Class M1	Stone wool provides no sustenance to microorganisms			
***	Clean room	ISO Class 5	ISO Class 3	ISO Class 3	ISO Class 2	-			
	Air pressure	-	-	Suitable for differential pressure	Suitable for differential pressure	-			
\$ 150 mg	Sound absorption	$\alpha_{\rm W}$ = 0.95 (Class A)	$\alpha_{\rm W}$ = up to 1.00 (Class A)	$\alpha_{\rm W}$ = 0.80 (Class B)	$\alpha_W = 0.85$ (Class B)	$\alpha_{\rm W}$ = up to 1.00 (Class A)			
	Light reflection	86%	85%	85%	74%	87% light reflection >99% light diffusion			
- ₀	Humidity and sag resistance		Up to 100% RH. No visible deflection in high humidity C/0N						
	Environment		All products are recyclable						
	Reaction to fire	A1	A1	A1	B-s1,d0	A1			

*Twice a year

** Daily

+ resistant to diluted solutions of
ammonia, chlorine, quaternary
ammonium and hydrogen peroxide.

The right product in the right space

The French norm NF S 90-351 classifies rooms in healthcare into **different risk zones** depending on the sensitivity to patient contaminiation. These zones have different performance requirements when it comes to air cleanliness



RECEPTION AND WAITING ROOMS

LOW RISK

Rockfon® Blanka®

Rockfon® MediCare® Standard



BREAK AREAS

LOW RISK

Rockfon Color-all®

Rockfon® MediCare® Standard



OFFICES AND CORRIDORS

LOW RISK

Rockfon Blanka®

Rockfon® MediCare® Standard

Rockfon® MediCare® Plus



PATIENT AND RECOVERY ROOMS

HIGH RISK

Rockfon® MediCare® Plus



ICU

HIGH RISK

Rockfon® MediCare® Air

Rockfon® MediCare® Block

Rockfon® MediCare® keeps everyone safe

The Rockfon MediCare family is perfect for hospital areas with multiple requirements. It comes in a wide selection of acoustic ceiling tiles that are perfect for hospital areas that require thorough and regular cleaning.







Rockfon® MediCare® Standard

It offers a perfect balance of acoustic comfort and cleanability — a dependable choice for regulating hospital acoustics.

Rockfon® MediCare® Plus

Essential for demanding healthcare spaces. The class-A sound-absorbing tile comes in a full range of dimensions and edges. It's the perfect all-round ceiling tile for general hospital areas that need to be cleaned.

Rockfon® MediCare® Air

Specifically designed for use in pressurised healthcare environments where differential air pressure is required to prevent infection spreading. This ceiling is appropriate for operating theatres, recovery rooms, intensive care units and much more.

Rockfon® MediCare® Block

Ideal for high-risk healthcare environments that need to be pressurised and frequently cleaned, such as emergency rooms, washing facilities and intensive care units.



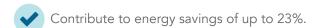


The power of Rockfon Blanka®

Its smooth, deep matt, super-white surfaces with its high light reflection and light diffusion, contributes to energy savings and a bright and comfortable indoor environment that complements any interior design.









Rockfon Blanka's durable surface makes it resistant to dirt and everyday wear and tear, keeping your ceiling looking as bright as the day it was installed.



Its smart, non-directional surface guarantees that your acoustic ceiling will look precisely the way you planned it. There's no wrong way to install it.



We are your sustainable building partner

Sustainability sits at the heart of our research and development. It's why we use natural stone, constantly reduce our carbon footprint and recycle to look after our planet and its people.

Hospitals are vital to public health and they are continuously being renovated, adapted or extended, impacting the environmental footprint for building materials.

Luckily for us, stone wool is a fully sustainable closed-loop product. It can be recycled again and again without any degradation in quality.

Rockfon is able to both recycle our own old stone wool tiles plus upcycle wet felted mineral fibre ceiling tiles from other manufacturers.

Visit our webpage for more information about our takeback scheme.





159 000 tonnes of stone wool were collected for recycling in 2019.

St. Barts and Royal London Hospital

London, England, United Kingdom

St Barts and Royal London Hospital were two historic hospitals that underwent a 10-year, £1 billion, redevelopment.

A crucial focus of this project was the environmental impact of the renovation, so we worked closely with both the main contractor and the ceiling contractor to ensure that all ceiling waste and off-cuts from both sites were recycled. Fifteen pallets of recyclate were diverted from landfill and sent to the ROCKWOOL factory in Pencoed (Wales) for recycling.





Be part of making the world sound better to everyone

Get started today

Rockfon is part of the ROCKWOOL Group and we are the world's leading acoustic company – and our mission is to keep things quiet.

We are the zzz in restful hospitals

Every day we are inspired to innovate with sound solutions that help people think, relax and enjoy life more. Our acoustic solutions do more than reduce noise, they also create calmer, healthier buildings for patients and staff.

We're here to help

We have 22 offices and 9 manufacturing facilities worldwide and we're on hand to help you find the right acoustic solutions for your next healthcare project.



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Your sustainable building partner

Our high-quality products are made from natural stone. They work, they're beautiful and they last – until they're recycled to make more. And we provide all the necessary documentation to support you in creating a sustainable hospital project.

Our online resources

Explore our website for sound calculations, instruction videos, documents, and a comprehensive BIM library with objects compatible with ArchiCAD and Revitt.

Speed up your design processes with this free to use support on:

en.rockfon.international

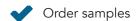
Let's connect

Give us a call whether you need advice on getting the right acoustic environment for your project, want to hear more about one of our products or just need technical support.

We're here to help.

971-4-214-6284

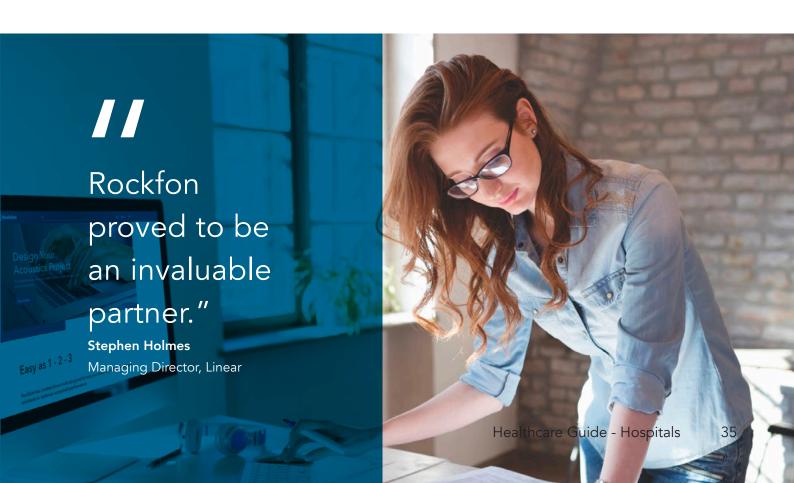






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Sounds Beautiful