

Holistic design to encourage healing.



USG Ceiling Solutions



Healthcare design comes with many challenges and considerations. From designing private spaces for caregivers and patients to discuss medical information, to ensuring cleanliness standards are met to reduce the risk of infections, from designing clearances for medical equipment, to creating cleanrooms for laboratories — the design imperatives for healthcare environments including cleanliness, privacy and comfort are many.

As you design and specify products to meet the demands of healthcare environments, USG's portfolio of ceiling solutions provide balanced acoustics, sustainable and durable options for every space — to help put patient healing at the center of your design.

DESIGN CONSIDERATIONS

ACOUSTICS

Maintaining a tranquil environment through noise control is imperative in healthcare design. From busy emergency rooms lobbies to protecting patience privacy in clinical rooms and treatment areas, HIPAA (Health Insurance Portability and Accountability Act), HCAHPS (Hospital Consumer Assessment of Healthcare Provider Systems), and the FGI (Facilities Guidelines Institute for Healthcare) provide guidelines for privacy and noise requirements within the healthcare environment.

In the ¹Center for Health Design report¹, "Sound Control for Improved Outcomes in Healthcare Settings," the impact of noise on patients are many; annoyance, sleep disruption and awakening, decreased oxygen saturation, elevated blood pressure, increased heart and respiration rate among neonatal intensive care patients. These negative outcomes lead to a decreased rate of wound healing and a higher incidence of rehospitalization. For hospital staff, high levels of noise lead to an increase in fatigue and emotional exhaustion, an increase in perceived work pressure, stress and annoyance.

Selecting ceiling panels that offer balanced acoustics, which provide a combination of sound absorption (NRC) and sound blocking (CAC) for improved privacy, and is necessary to ensure a successful design that facilitates healing for patients, limits unnecessary stress for guests and increases workplace productivity for staff. Building materials have been proven to have the ability to help facilitate both speech intelligibility and the prevention of sound traveling. When designing patient recovery rooms, the management of noise directly contributes to healing. According to the World Health Organization's "Guidelines for Community Noise," research has shown that noise decreases the duration and quality of the patient's natural sleep cycles and inhibits recovery. Conversely, when the areas around patient rooms are quiet, occupants sleep better.

"Restorative sleep decreases the need for pain medication, reduces patient fall rates, lowers average length of stays, and improves medical outcomes."

World Health Organization,"Guidelines for community noise."

"A well-designed acoustical environment is critical in addressing [the] problems related to noise and communication of information. Noise levels can be effectively reduced by providing single-patient bedrooms, installing high-performance sound-absorbing acoustical ceiling tiles, and removing or reducing loud noise sources on hospital units. Also, acoustical ceiling tiles improve speech intelligibility by reducing sound reverberation and increase speech privacy by reducing sound propagation into adjoining areas."

- The Center for Health Design, "Sound Control for Improved Outcomes in Healthcare Settings."

NOISE REDUCTION COEFFICIENT (NRC)

Products with a high NRC absorb sound and minimize reverberation and echoes within a space.

CEILING ATTENUATION CLASS (CAC) Products with a high CAC help contain or block sound transmission between rooms with a common ceiling plenum. They inhibit unwanted noise from disrupting activities.



SAFETY AND CLEANLINESS

Healthcare environments hold safety and hygiene in high regard. Airborne pathogens can be transmitted through the air and reside on surfaces for weeks. The CDC Guideline for Disinfection and Sterilization in Healthcare Facilities² outlines specific disinfection and sterilization of healthcare environments to ensure safety for all. Therefore, the selection of ceiling panels that meet standards for washability, anti-mold, anti-microbial, fire safety and seismic requirements is imperative.

For rooms that require ISO 14644 cleanroom environments, USG offers ceiling panels with full encapsulated edges that have been third-party tested by Acorn Industries or UL Environment to meet ISO 14644 requirements.

COLOR AND LIGHTING

Colors, shapes and light all play a vital role in creating a holistic environment that is calming, encouraging and facilitates healing.

Colors evoke emotions

Patients frequent hospitals for a variety of needs and experience a varying range of emotions. Whether designing a calm, soothing waiting room for



psychiatry patients or creating a fun, playful pediatric care center, colors contribute to evoking emotions and moods. Blues, browns and natural colors are considered calming, green has been classified for safety and red can be overstimulating in laboratories and MRI rooms.

Leading the way

Colors can help visitors in wayfinding when used appropriately in signage. The ISO has color-coding standards (ISO 3864-1) for safety colors, signs and graphics are specifically designed to reduce accidents and injuries in public facilities. Furthermore, research has shown that elderly patients benefit from rooms with higher contrast, as the change in contrast helps patients with deteriorating vision.

Lighting

Exposure to light is essential to human life and healing. Neuroscientific research and studies of circadian rhythms demonstrate that the color spectrum of light directly influences human biological systems and health outcomes (Edelstein, 2008). Using ceiling panels that have a high light reflective value (LR) helps diffuse and increase light in the built environment.

SHAPES AND PATTERNS

Design doesn't have to be boring. Creative shapes, patterns and colorful design can encourage and inspire, and provide visual ques for patients. USG Ceilings offers Renditions™, with endless shapes, patterns and custom design options, that don't sacrifice acoustics. For non-traditional, open plenum reception and cafeteria areas, USG Halcyon™ Canopies offer colorful shapes and designs, which can be installed in an endless array of patterns and help reduce noise.

"Human exposure to light and dark patterns is associated with changes endocrine function, growth, digestion, core body temperature, reaction times, fatigue, cognitive function and mood states. Research has demonstrated statisticallysignificant changes in heart rate variability (HRV), a reliable indicator of health risks, as well as cognitive engagement, even in the presence of short-term exposure to electrical light."

 Ewing, Phillip & Haymaker, John & A. Edelstein, Eve.
 (2017). Simulating Circadian Light: Multi-Dimensional Illuminance Analysis.

SUSTAINABILITY

Hospitals operate 24 hours a day, making hospitals one of the top energy consumers in the built environment. According to the Commercial Buildings Energy Consumption Survey, healthcare is the third most energy intensive commercial building type. USG's EcoBlueprint[™] portfolio provides transparency, making it easier to find and specify sustainable, low VOC, eco-friendly products that contribute to a healthy and healing facility. Each EcoBlueprint[™] product meets the following stringent criteria:

- Has Health Product Declarations (HPDs)
- Has Environmental Product Declarations (EPDs)
- Has Declare labels
- Are free of Red List chemicals per Living Building Challenge 3.0
- Meet California Department of Public Health (CDPH) low emissions standards

- Contribute to LEED® v4
- Contribute to Living Building Challenge
- Contribute to WELL Building Standard[™]

ECOBLUEPRINT.

HEALTHCARE PRODUCT GUIDE

AREA	SPECIFIC CONSIDERATIONS	RECOMMENDED USG PRODUCTS
Lobbies and Waiting Rooms	Lobbies and waiting areas require balanced acoustics to manage noise, as well as creative design to engage and inspire visitors.	 USG Mars™ USG Mars™High-NRC / High-CAC USG Mars™ Healthcare USG Mars™ Healthcare With Aircare™ Coating USG Halcyon™ Healthcare USG Halcyon™ Canopies USG Eclipse™ High-NRC USG Frost™ USG Millennia™ USG Orion™ USG Renditions™
Corridors	Corridors require durable ceiling panels due to the shallow plenums where MEP materials are located, which require frequent access. Balanced acoustics will help manage noise.	 USG Mars[™] USG Mars[™] High-NRC/ High-CAC USG Mars[™] High-NRC Logix USG Mars[™] Healthcare With Aircare[™] Coating USG Halcyon[™] USG Halcyon[™] Logix USG Eclipse[™] High-NRC USG Frost[™] USG Millennia[™] USG Orion[™]
Patient Rooms	Patient rooms require privacy and noise control to meet HIPAA requirement, as well as washable, scrubbable panels to ensure cleanliness.	 USG Mars[™] High-NRC / High-CAC USG Mars[™] Healthcare USG Halcyon[™] USG Halcyon[™] Healthcare
Emergency and Treatment Rooms	These busy spaces require excellent noise control.	 USG Mars[™] USG Mars[™] High-NRC / High-CAC USG Mars[™] Healthcare USG Halcyon[™] Healthcare USG Eclipse[™] High-NRC USG Frost[™] USG Millennia[™] USG Orion[™]
Clean Rooms	Depending on the usage of the room, the cleanroom will need to meet ISO 14644 standards for cleanroom classifications	 USG Sheetrock[®] Brand Lay-In Ceiling Panels Clean Room[™] USG Clean Room[™] Class 100 (ISO 5) Panels USG Clean Room[™] Class 10M-100M (ISO 7) Panels USG Mars[™] Healthcare Clean Room[™] Panels
Laboratories	Laboratory spaces require balanced acoustics to reduce noise, as well as washable, scrubbable panels to ensure cleanliness.	 USG Mars[™] USG Mars[™] High-NRC / High-CAC USG Mars[™] Healthcare Clean Room USG Halcyon[™] USG Halcyon[™] Healthcare USG Orion[™]
Exterior Spaces and Hydrotherapy Rooms	Exterior spaces require durable ceilings with sound blocking (CAC) performance, that have been tested and approved for use in areas where wind up-lift could be a concern.	 USG Sheetrock[®] Brand Lay-In Ceiling Panels USG Radar[™] Ceramic Acoustical Panels

¹Joseph, A. Ph.D. Ulrich, R. Ph.D. (January 2007). "Sound Control for Improved Outcomes in Healthcare Settings" The Center for Health Design.

²William, R, Ph.D., Weber, D. M.D., & the Healthcare Infection Control Practices Advisory Committee (May 2018). "Guideline for Disinfection and Sterilization in Healthcare Facilities, 2008" Center for Disease Control and Prevention.



PRODUCT INFORMATION For the most up-to-date product information, visit usg.com or cgcinc.com

CUSTOMER SERVICE

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TECHNICAL SERVICE

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SOURCES International Standard ISO14644

LIMITATIONS Interior applications only

NOTICE We shall not be liable for incidental and consequential damages, directly or indirectly sustained, nor for any loss caused by application of these goods not in accordance with current printed instructions or for other than the intended use. Our liability is expressly limited to replacement of defective goods. Any claim shall be deemed waived unless made in writing to us within thirty (30) days from date it was or reasonably should have been discovered.

SAFETY FIRST! Follow good safety/industrial hygiene practices during installation. Wear appropriate personal protective equipment. Read SDS and literature before specification and installation.



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