CertainTeed

a better healthcare environment

High Performance Gypsum Walls

CLEANER AIR • QUIETER SPACES • DURABILITY • SUSTAINABILITY

CertainTeed
SAINT-GOBAIN

Your choice in evidence-based design for healthcare facilities

A growing body of research shows that the physical environment of a healthcare facility plays a vital role in determining patient outcomes. In a well-designed space, doctors and nurses make better decisions, the quality of care improves and patients recover more quickly.

CertainTeed Gypsum focuses on four key challenge areas in healthcare building design, providing evidence-based product quality and performance:

Indoor Air Quality

Acoustics

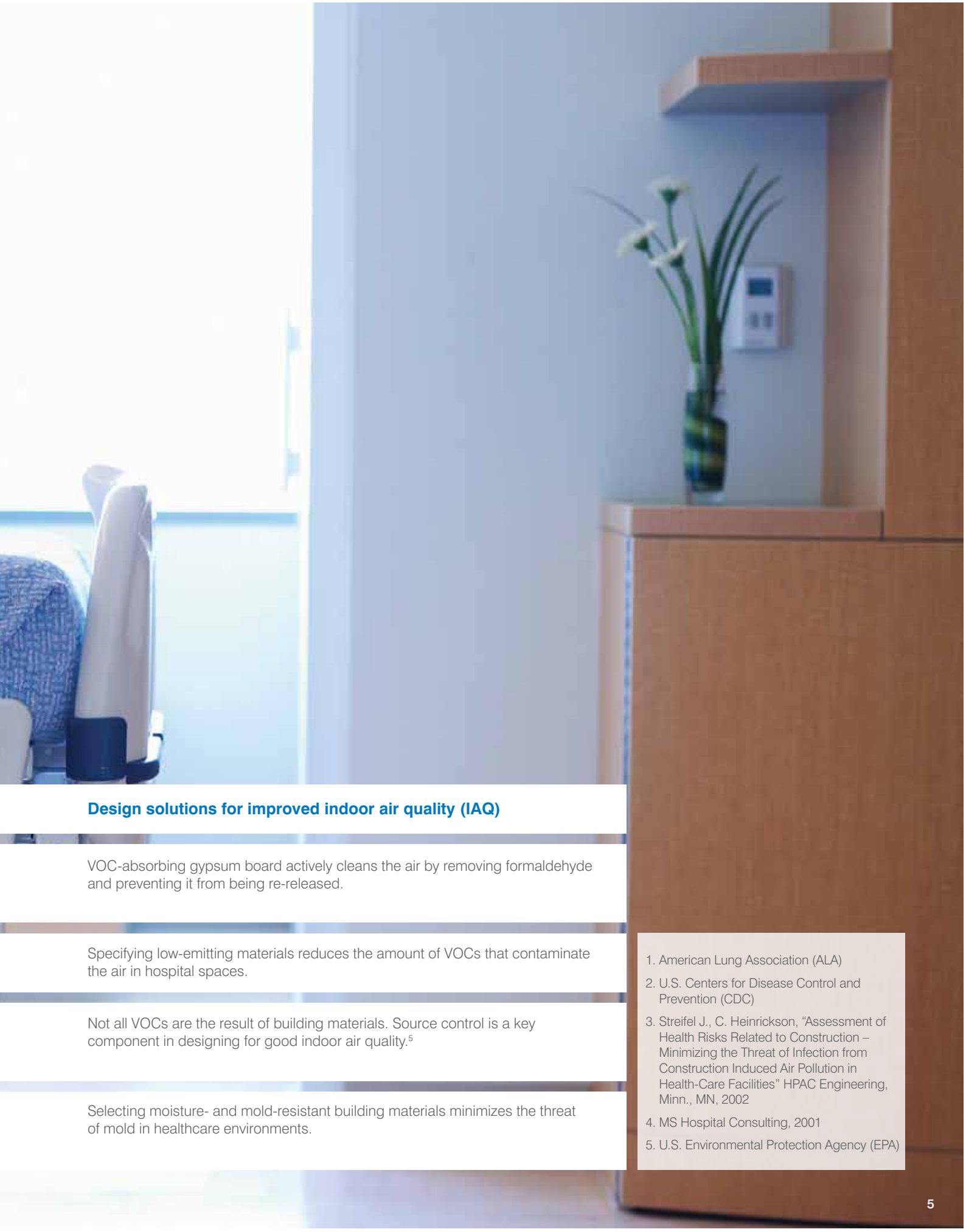
Durability

Sustainability

A healthier place to heal.

Studies demonstrate that indoor air is often more polluted than outdoor air, a fact that is especially threatening within healthcare settings. Volatile Organic Compounds (VOCs) can be inhaled, affecting patients' weakened immune systems. Designing for good indoor air quality helps to promote better healthcare.

Health challenges	Evidence-based links to indoor air quality (IAQ)
Respiratory illnesses and formaldehyde exposure	Nearly fifty percent of respiratory illnesses, including asthma, are caused or aggravated by poor indoor air. Airborne formaldehyde acts as an irritant to the conjunctiva and upper and lower respiratory tract.[1]
Hospital-acquired illnesses	Formaldehyde and other aldehydes pose a potential health threat for cancer as well as respiratory illnesses.[2]
VOCs from cleaning and maintenance materials	VOCs come from many sources including cleaning solvents and materials, treated fabrics, personal hygiene products, building materials, paints, glues, etc. Patient illnesses can often be exacerbated due to airborne VOCs.[3, 5]
Mold and mildew exposure	Among VOCs that contribute to poor health are airborne fungal spores and mold (such as Aspergillus) that originate on water-damaged building materials that remain wet more than 72 hours.[4]



Design solutions for improved indoor air quality (IAQ)

VOC-absorbing gypsum board actively cleans the air by removing formaldehyde and preventing it from being re-released.

Specifying low-emitting materials reduces the amount of VOCs that contaminate the air in hospital spaces.

Not all VOCs are the result of building materials. Source control is a key component in designing for good indoor air quality.[5]

Selecting moisture- and mold-resistant building materials minimizes the threat of mold in healthcare environments.

1. American Lung Association (ALA)
2. U.S. Centers for Disease Control and Prevention (CDC)
3. Streifel J., C. Heinrickson, "Assessment of Health Risks Related to Construction – Minimizing the Threat of Infection from Construction Induced Air Pollution in Health-Care Facilities" HPAC Engineering, Minn., MN, 2002
4. MS Hospital Consulting, 2001
5. U.S. Environmental Protection Agency (EPA)

Clear the air.

AirRenew® M2Tech® Indoor Air Quality Gypsum Board is the first and only gypsum board that actively cleans indoor air. This formaldehyde-absorbing board uses two technologies to continually improve air quality, helping to create a healthier place to heal.

AirRenew® M2TECH®

Health Product DECLARATION™

The Health Product Declaration™ and logo is owned by the Health Product Declaration Collaborative™ and is used with permission.

GREENGUARD

PRODUCT CERTIFIED FOR LOW CHEMICAL EMISSIONS
UL.COM/GG
UL 2818

GOLD

VALIDATED

- ✓ MEASURED PERMANENT FORMALDEHYDE ABSORPTION CAPACITY OF 0.4 G/M² OF SURFACE AREA
- ✓ MOLD RESISTANT PER ASTM D 3273
- ✓ RECYCLED CONTENT MINIMUM POST-CONSUMER 1.9%, PRE-CONSUMER 90.5%
- ✓ REGIONAL MATERIALS MINIMUM 88.5%

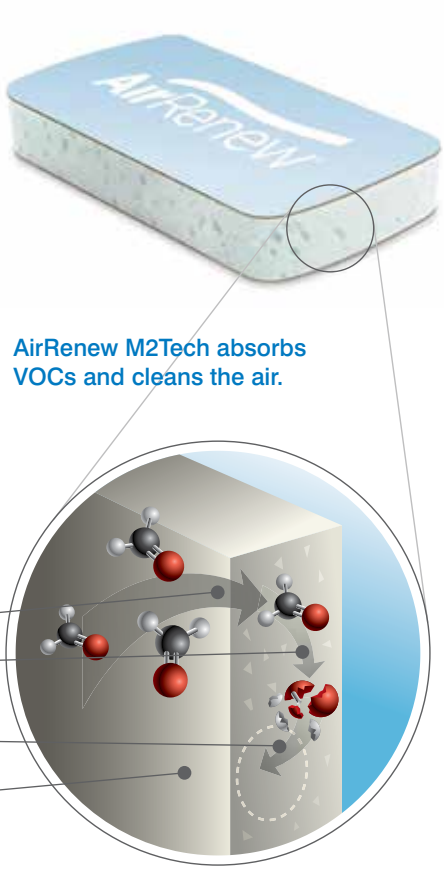
How it works

AirRenew® M2Tech® captures VOCs, specifically formaldehyde, and converts it into inert compounds that safely remain within the core of the board.

AirRenew M2Tech provides up to 75 years effective absorption based on tests and analysis, cleaning the air even when finished with multiple coats of water-based acrylic or epoxy paints and breathable wallpaper.

The added benefit of M2Tech® technology provides enhanced moisture- and mold-resistance. M2Tech achieves less than five percent water absorption per ASTM C473 as well as the highest possible score of 10 for mold resistance per ASTM D3273.

AirRenew M2Tech, like regular gypsum board, can be easily recycled.

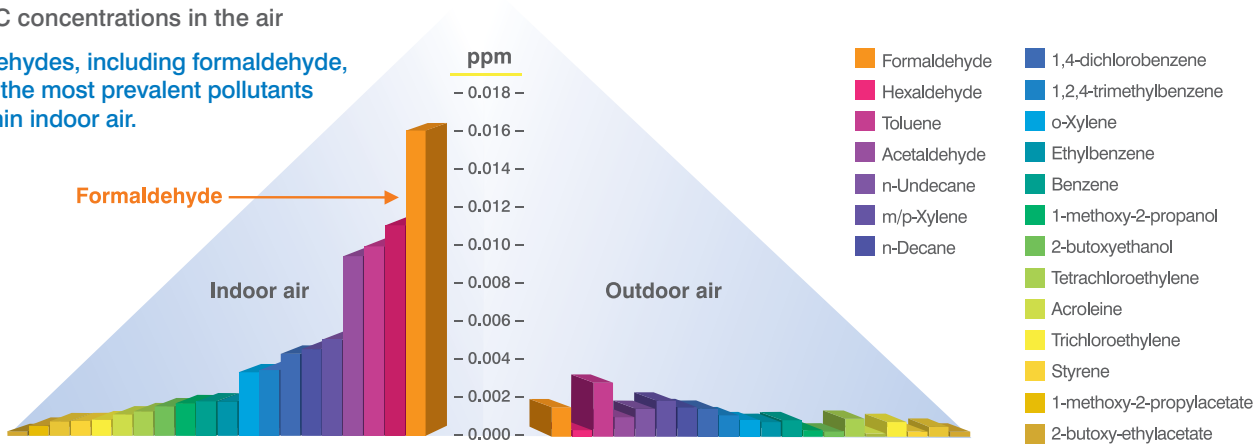


AirRenew M2Tech absorbs VOCs and cleans the air.

- Captures formaldehyde
- Converts formaldehyde into inert compounds
- Inert compounds remain safely within gypsum board
- Enhanced moisture- and mold-resistance

VOC concentrations in the air

Aldehydes, including formaldehyde, are the most prevalent pollutants within indoor air.



Analysis of chemical concentrations in residences, daycare centers and school buildings indicate that VOCs (volatile organic compounds) are the most prevalent pollutants, with significantly higher levels in indoor air than in the outdoor atmosphere.

Performance-Based

The effectiveness of AirRenew M2Tech has been proven per ISO 16000-23 performance test, UL Environmental, tests conducted by Cornerstone Labs LLC, third-party witnessed tests at CertainTeed Research Center in Blue Bell, PA and qualifies for LEED IEQ Credit 3.2.

A quiet place to heal.

Beyond regulatory and code requirements for acoustic controls, a well-designed acoustical environment is essential in healthcare settings. Noise disturbance can not only negatively affect patient recovery, but also impact medical staff effectiveness.

Health challenges	Evidence-based links to noise disturbance
Prolonged healing	Noise stimuli in CCUs have been associated with physiological stress in patients and patients who undergo surgery are more likely to suffer surgical site infections (SSIs) if the operating theater is noisy.[6, 8]
Increased need for medication	Patients exposed to continuous noise experience anxiety, higher blood pressure, memory alteration, increased agitation, less pain tolerance and even increased cholesterol. Noise above 50 dB increases the need for analgesia in post-operative patients.[7, 10, 16]
Regulatory requirement	The HIPPA (Health Insurance Portability and Accountability Act) Privacy Rule provides federal protections for personal health information held by covered entities and gives patients an array of rights with respect to that information.[13]
Noxious environment	Hospital noise levels well exceed World Health Organization guideline values of 35 dB(A) during the day and 30 dB(A) at night in patient rooms, with recommended nighttime peaks of 40 dB(A). Peak hospital noise levels often exceed 85 dB(A) to 90 dB(A).[14]
Increased medical errors	High noise levels in healthcare environments have shown to have adverse physiological and psychological effects on patients and on the error proneness of critical care personnel.[17]

Design solutions for an improved acoustical environment

Attention to noise prevention in operating and recovery rooms is becoming a routine requirement in patient care.[9]

Designing for acoustic controls can ultimately shorten hospital stays and readmission rates. This leads to cost savings for the hospital and patients.[7, 11]

Designing for acoustic controls helps to meet HIPPA requirements by helping to ensure speech privacy, rendering confidential conversations unintelligible in adjoining rooms or other healthcare spaces.[12]

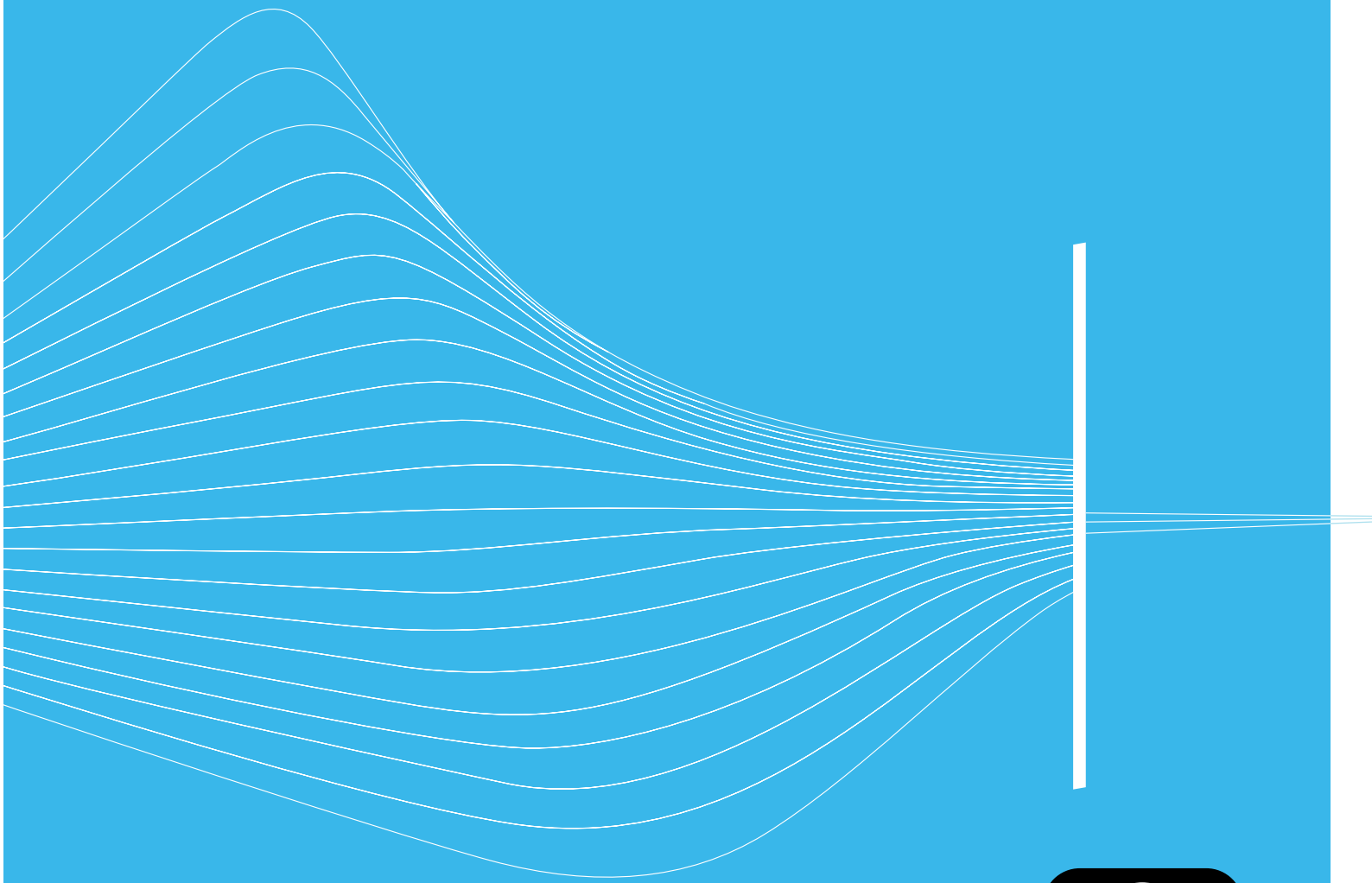
Sound reflecting rather than sound absorbing surfaces cause sounds to have long reverberation times even after the sound source has been removed. Sound absorbing materials are more effective in reducing noise.[15]

Noise prevention helps heal and protect. Acoustical building materials are specially designed to help clear the noise.

6. International Journal of Cardiology
7. Occupational and Environmental Medicine, 2005
8. *British Journal of Surgery*, 2011
9. *Journal of Clinical Anesthesia*, Vol. 12, 2000, 298-302
10. Roger S. Ulrich, Professor, Center for Health Systems and Design, Texas A&M University
11. Healthcare at the Crossroads, 2002
12. Facilities for Mortuary of post mortem Room Services HBN20
13. US Department of Health and Human Services
14. World Health Organization (WHO)
15. The Center for Health Design, Issue Paper #4, Jan 2004
16. *British Medical Journal* 292, Feb 1986 305 Cmiel.C et al Noise Control Feb 2004
17. Critical Care Medicam, 1977, How Noisy is Intensive Care

Clear the noise.

SilentFX® Noise-Reducing Gypsum Board has built-in acoustical controls that reduce transmission of distracting noises through walls and ceilings, which is critical for patient healing and comfort as well as efficiency of medical personnel.



Health Product DECLARATION™

The Health Product Declaration™ and logo is owned by the Health Product Declaration Collaborative™ and is used with permission.

GREENGUARD

PRODUCT CERTIFIED FOR LOW CHEMICAL EMISSIONS
UL.COM/GG
UL 2818

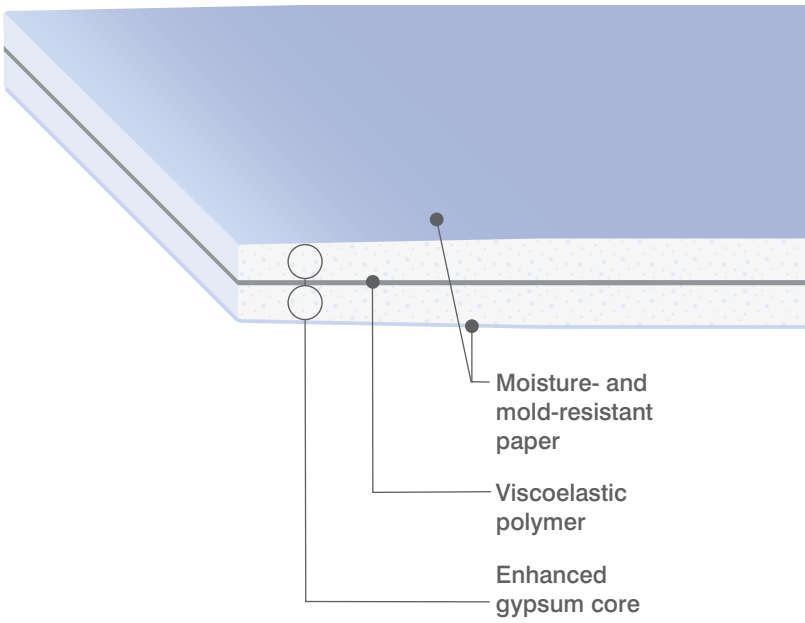
GOLD

How it works

SilentFX® features a sound dampening viscoelastic polymer and is specifically designed for systems requiring high STC ratings. It is more reliable than complex techniques, such as clips or resilient channel.

SilentFX makes it possible to build effective noise-reducing walls with less material, gaining valuable square footage and saving construction time and material cost.

SilentFX features M2Tech® for enhanced moisture- and mold-resistance. It has a high-density core and is enclosed in up to 100% recycled moisture- and mold-resistant front and back papers.



More than 30 wall systems* have been tested per ASTM E90, achieving STC ratings of 50 and higher.

SilentFX helps meet sustainability requirements in many building programs and codes including:

LEED for Healthcare
IEQ Credit 2
Acoustic Environment

Green Guide for Healthcare
IEQ Credit 9.1
Acoustic Environment

International Green Building Code
Section 807
Acoustics

Use of SilentFX to improve STC rating	Traditional method to improve STC rating
	
STC Rating: 57 (OL 11-0646) Fire Rating: 1-hr UL (U465 / GA WP 1081) Wall Thickness: 4.875"	STC Rating: 55 (TL 93-300) Fire Rating: 1-hr UL (U420) Wall Thickness: 7.250"

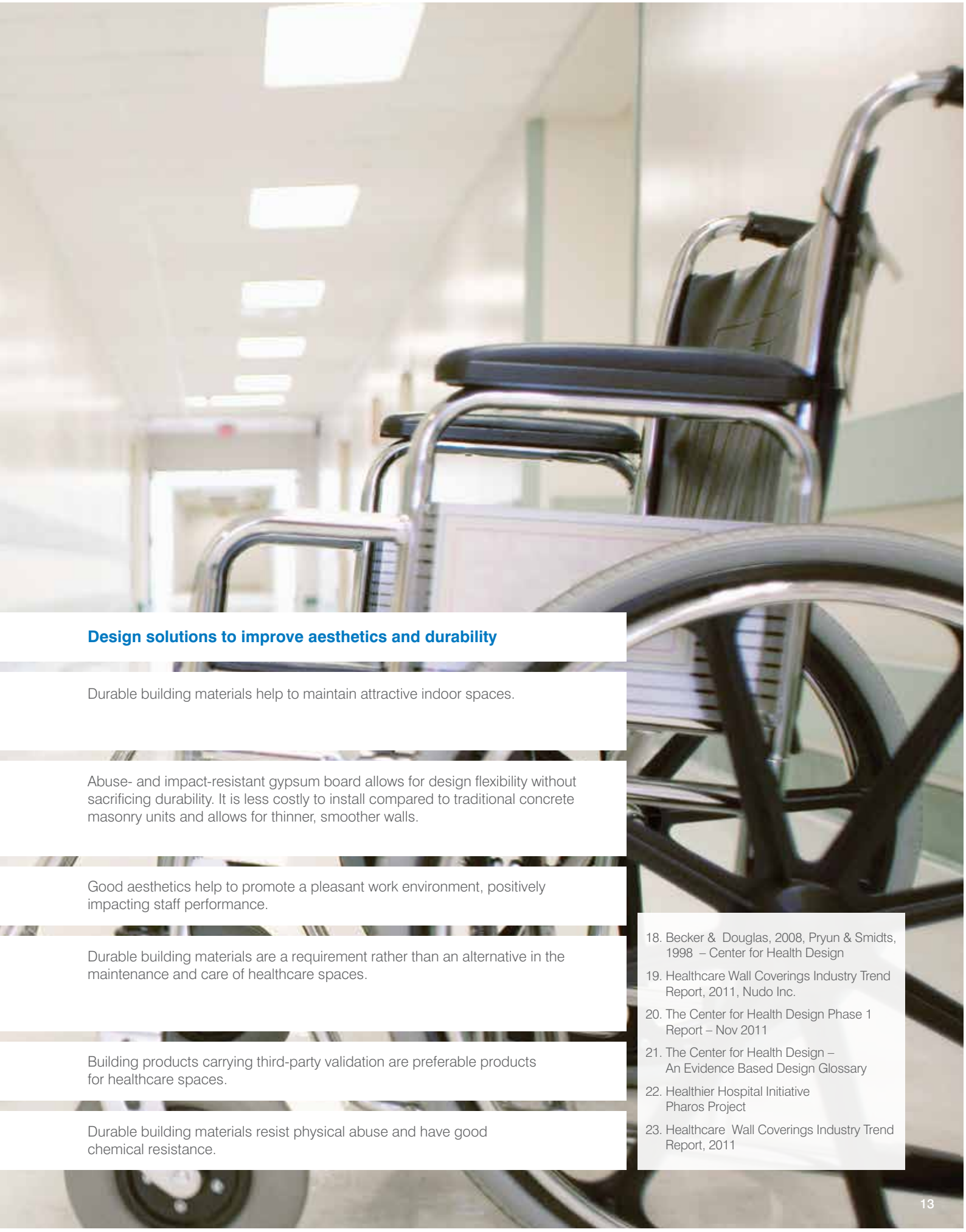
Comparable Wall Assemblies

*Refer to our online library and SilentFX product brochure for a list of wall assemblies suitable for your project at **www.CertainTeed.com/SilentFX.**

A safe place to heal.

Healthcare spaces experience considerable wear and tear from gurneys, wheelchairs, medical carts and other mobile hospital equipment. Walls become damaged from repeated impact and abuse. In addition to affecting aesthetics and maintenance costs, this can lead to hospital-acquired injuries, putting patient safety at risk.

Facility challenges	Evidence-based impact of the physical environment
Perception of quality	Attractiveness of the physical environment impacts the overall patient perception of the quality of healthcare service provided. It also helps to reduce patient anxiety and influences a higher level of staff interaction.[18]
Trending towards hospitality image	Healthcare facilities are trending more towards providing a hospitality environment to avoid the intimidating institutional look which can cause patient anxiety. Hospital administrators are looking for upscale products that are durable and can hold up over time.[19]
Staff retention	Staff perception of the physical healthcare environment is directly correlated to staff turnover rate.[20]
Patient satisfaction	Once considered a passive backdrop to the process of care delivery, the physical care of the healthcare setting is now regarded as an active contributor to the health and well being of the environment's users and a business driver of healthcare organizations.[21]
Industry standards	The Healthier Hospital Initiative (HHI) demands evidence-based product performance claims to ensure product durability and sustainability.[22]
Effects of cleaning products	Healthcare facilities are cleaning walls more often, requiring products that stand up to chemicals and solvents as well as the abrasive cleaning process.[23]



Design solutions to improve aesthetics and durability

Durable building materials help to maintain attractive indoor spaces.

Abuse- and impact-resistant gypsum board allows for design flexibility without sacrificing durability. It is less costly to install compared to traditional concrete masonry units and allows for thinner, smoother walls.

Good aesthetics help to promote a pleasant work environment, positively impacting staff performance.

Durable building materials are a requirement rather than an alternative in the maintenance and care of healthcare spaces.

Building products carrying third-party validation are preferable products for healthcare spaces.

Durable building materials resist physical abuse and have good chemical resistance.

18. Becker & Douglas, 2008, Pryun & Smidts, 1998 – Center for Health Design
19. Healthcare Wall Coverings Industry Trend Report, 2011, Nudo Inc.
20. The Center for Health Design Phase 1 Report – Nov 2011
21. The Center for Health Design – An Evidence Based Design Glossary
22. Healthier Hospital Initiative Pharos Project
23. Healthcare Wall Coverings Industry Trend Report, 2011

Protect and shield.

AirRenew® Extreme Abuse and AirRenew® Extreme Impact Gypsum Boards provide increased protection and durability required for areas subjected to repeat wear and tear. Both products feature M2Tech® technology for enhanced moisture- and mold-resistance while actively absorbing VOCs, specifically formaldehyde.

AirRenew® Extreme Abuse

AirRenew® Extreme Impact

Health Product DECLARATION™

The Health Product Declaration™ and logo is owned by the Health Product Declaration Collaborative™ and is used with permission.

GREENGUARD

PRODUCT CERTIFIED FOR LOW CHEMICAL EMISSIONS
UL.COM/GG
UL 2818

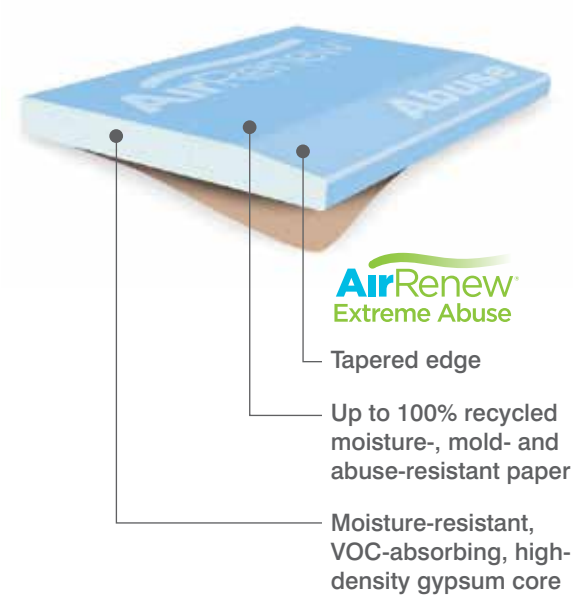
GOLD

VALIDATED

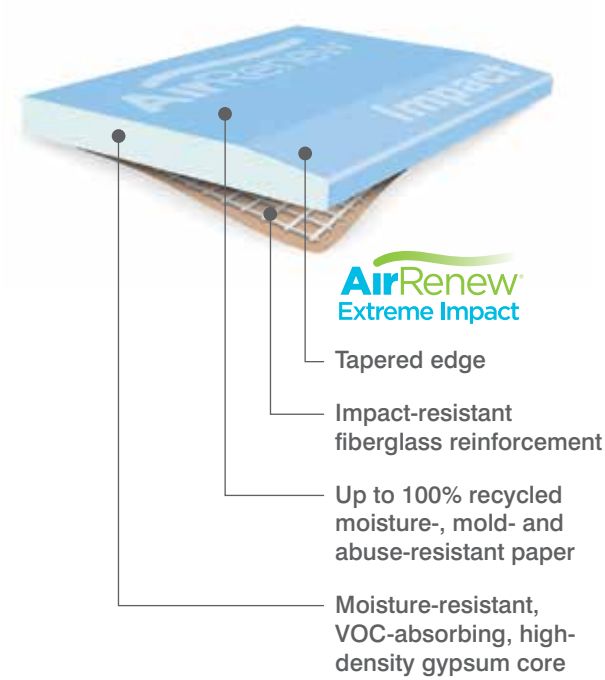
- ✓ MEASURED PERMANENT FORMALDEHYDE ABSORPTION CAPACITY OF 0.4 G/M² OF SURFACE AREA
- ✓ MOLD RESISTANT PER ASTM D 3273
- ✓ RECYCLED CONTENT MINIMUM POST-CONSUMER 1.9%, PRE-CONSUMER 90.5%
- ✓ REGIONAL MATERIALS MINIMUM 88.5%

How they work

AirRenew® Extreme Abuse protects against surface abrasion such as scratching and gouging of the wall face caused by people or objects under heavy but normal use. This damage can cause healthcare spaces to be aesthetically unattractive.



AirRenew® Extreme Impact protects against impacts that penetrate the wall surface and enter the wall cavity causing damage, such as holes or cracks. These are not only unsightly, but also costly to repair and potentially dangerous to patients and hospital staff.



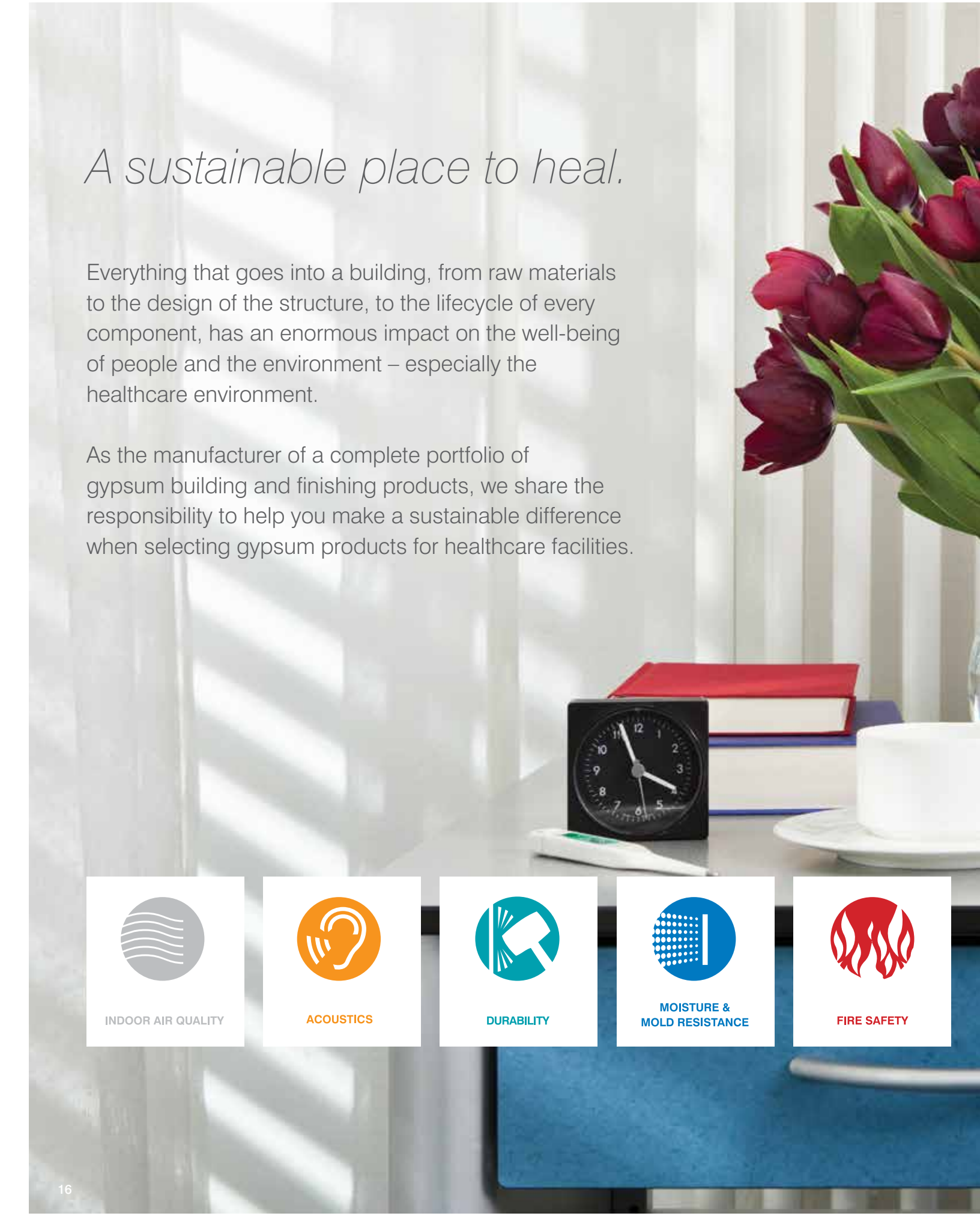
ASTM C1629	Surface Abrasion	Soft Body Impact	Hard Body Impact	Indentation Resistance
ASTM Test Method	**ASTM D4977** Tests resistance to scuffs and scratches: Board was subjected to abrasive back and forth motion of a wire brush for 50 cycles with 25-lb total load	**ASTM E695** Tests impact of heavy soft objects: 60-lbs of steel pellets in standard leather bag swung through an angular distance towards the board	**ASTM C1629 Annex A. 1** Tests resistance to hard objects into stud cavity: Board was struck with weighted steel ram with increasing weight added until board surface is penetrated	**ASTM D5420 Gardner Impact** Tests resistance to dents from small hard objects: 2-lb weight dropped onto hemispherical die on board from height of 36", striking with impact energy of 72 inch-pounds
Extreme Abuse Classification Levels*	3	2	1	1
Extreme Impact Classification Levels*	3	3	3	1

*The highest possible classification level is 3.

A sustainable place to heal.

Everything that goes into a building, from raw materials to the design of the structure, to the lifecycle of every component, has an enormous impact on the well-being of people and the environment – especially the healthcare environment.

As the manufacturer of a complete portfolio of gypsum building and finishing products, we share the responsibility to help you make a sustainable difference when selecting gypsum products for healthcare facilities.



INDOOR AIR QUALITY

ACOUSTICS

DURABILITY

MOISTURE & MOLD RESISTANCE

FIRE SAFETY

SUSTAINABLE MATERIALS
RECYCLED CONTENT

CertainTeed Gypsum Online Sustainability Tools

www.CertainTeed.com/Sustainable

- ecoScorecard™ Sustainability Database
- Architectural Specifications
- Continuing Education Programs
- Sustainable Products Brochures
- Case Studies – Green Building Projects
- LEED Contribution Data Sheets
- BIM Objects and CAD Drawings
- Sustainable Products and Systems Guide
- Third-Party Certifications
- Corporate Sustainability Report


1
Protection for good indoor air quality
AirRenew M2TECH
2
Protection in high traffic spaces
AirRenew Extreme Abuse
AirRenew Extreme Impact
3
Protection from intrusive noise
silentFX

Applications for CertainTeed Gypsum products in healthcare building design

Interior

1 **AirRenew® M2Tech®**
Indoor Air Quality Gypsum Board

2 **AirRenew® Extreme Impact**
Impact-Resistant Gypsum Board

2 **AirRenew® Extreme Abuse**
Abuse-Resistant Gypsum Board

3 **SilentFX®**
Noise-Reducing Gypsum Board

4 **M2Tech®**
Moisture- and Mold-Resistant Gypsum Board

Easi-Lite®
Lightweight Gypsum Board

4 **Diamondback®**
*GlasRoc® Tile Backer**

GlasRoc® Shaftliner*
For Shaftwalls and Area Separation Fire Walls

Exterior

5 **GlasRoc® Sheathing***
High Performance Exterior Sheathing

GlasRoc® Roof Board*
High Performance Roof Board

**GlasRoc® family of products are paperless, glass-mat gypsum board*

For additional product information and specifications, visit www.CertainTeed.com/Gypsum

CertainTeed
SAINT-GOBAIN
Gypsum

CertainTeed Gypsum builds a better healthcare environment.

AirRenew® M2TECH®

AirRenew® M2Tech® formaldehyde-absorbing indoor air quality gypsum board with M2Tech® for added moisture- and mold-resistance.

AirRenew® Extreme Abuse

AirRenew® Extreme Impact

AirRenew® Extreme Abuse and AirRenew® Extreme Impact provide added durability, with M2Tech® for added moisture- and mold-resistance.

silentFX®

SilentFX® noise-reducing acoustical gypsum board with M2Tech® for added moisture- and mold-resistance.

M2TECH®

M2Tech® gypsum board is made with technology specially formulated for enhanced moisture- and mold-resistance.

Diamondback®

The GlasRoc® reinforced glass mat family of products include Diamondback® Tile Backer for use in moisture prone spaces.

GlasRoc®

GlasRoc® Sheathing, Shaftliner and Roof Board provide added moisture and mold resistance, fire resistance and durability. CertainTeed Type X and Type C gypsum boards provide added fire resistance to paper-faced products.

Easi-Lite®

Easi-Lite® lightweight interior gypsum board as well as other CertainTeed paper-faced gypsum boards, are made of up to 100% recycled paper and are easily recycled after use.

[BeCertain]™ Confidence worth building on.®

ASK ABOUT ALL OF OUR OTHER CERTAINTEED® PRODUCTS AND SYSTEMS:

ROOFING • SIDING • TRIM • DECKING • RAILING • FENCE
GYPSUM • CEILINGS • INSULATION

www.certainteed.com http://blog.certainteed.com

CertainTeed Corporation
20 Moores Road
Malvern, PA 19355

Professional: 800-233-8990
Consumer: 800-782-8777

© 10-2012 CertainTeed Gypsum. Rev. 01-2016
Printed in U.S.A. on recycled paper. CTG-2710/3M

SAINT-GOBAIN