



The Healthy Choice
For Acoustic Wall Design

QuietRock[®]

sound reducing drywall

by  PABCO[®] Gypsum



ACOUSTICS IN HEALTHCARE

Patient comfort and safety are critical objectives for healthcare facilities being built today. Private rooms, biophilic design, infection control, comfortable waiting rooms and spaces for families are all important considerations when designing today's healthcare facilities. Just as important is the acoustic comfort that occupants experience.

WHY ACOUSTICS?

Many sounds are typical in hospital environments—everything from medical equipment, beepers and alarms to HVAC systems and conversations. Research studies have revealed that these sounds can be antagonistic to patients who are already in a difficult situation.¹ The acoustical environment plays a key role within the healthcare setting for several reasons.

- A pleasant acoustic environment can help support the safety, health, healing and well-being of patients and caregivers²
- Speech privacy is critical both for meeting HIPAA requirements as well as reducing medical errors by supporting open conversations with patients²
- Sleep can be disrupted by noise which can negatively impact patient health and well-being³
- Unwanted noise can result in elevated stress levels for patients, visitors and caregivers





COMMON ACOUSTIC MEASUREMENTS FOR HEALTHCARE

When it comes to acoustics there are several common measurements used in the healthcare industry. Here are just a few of them.

SOUND TRANSMISSION CLASS (STC)

- Effectiveness of walls in reducing sound transmitting from one space to another
- STC ratings for a specific space need to be determined before partitions are specified
- Wall systems with an STC lower than 35 are considered poor sound barriers while those with an STC above 55 are considered very good²

SPEECH PRIVACY CLASS (SPC)⁴

- Speech privacy needs to be assessed where patient information is shared such as in consultation rooms
- SPC is a laboratory or field metric that is calculated based on a measurement of the sound transmission loss between two enclosed rooms as well as the background noise

SPC LEVELS OF SPEECH PRIVACY⁵

SPC	Level of Speech Privacy
70	Minimal speech privacy
75	Standard speech privacy
80	Standard speech security
85	High speech security
90	Very high speech security

DESIGNING FOR IMPROVED ACOUSTIC ENVIRONMENTS

Several studies have been conducted regarding strategies for improving acoustical design in healthcare facilities. The specification of noise-reducing materials is one of them.² Choosing the appropriate wall design is one solution that can help support patient privacy while minimizing noise transmission. The chart below provides the recommended STC performance between various rooms and spaces within a healthcare space.

DESIGN CRITERIA FOR MINIMUM SOUND ISOLATION PERFORMANCE BETWEEN ENCLOSED ROOMS

Table: Recommended sound isolation performance between enclosed rooms

Adjacency Combination		STC
Patient Room	Patient Room (horizontal)	45 ¹
Patient Room	Patient Room (vertical)	50
Patient Room	Corridor (with entrance)	35 ²
Patient Room	Public Space	50
Patient Room	Service Area	60 ³
Exam Room	Corridor (with entrance)	35 ²
Exam Room	Public Space	50
Toilet Room	Public Space	45
Consultation Room	Public Space	50
Consultation Room	Patient Room	50
Consultation Room	Corridor (with entrance)	35 ²
Patient Room	MRI Room	60 ³
Exam Room	MRI Room	60 ³
Exam Room	Exam Room (no electronic masking)	50
Exam Room	Exam Room (with electronic masking)	40
Public Space	MRI Room	50

Notes:

¹ In cases where greater speech privacy is required when both patient door on either side of a patient room wall are closed, the wall performance requirement shall be STC 50.

² The performance of this construction assumes a closed door.

³ STC 60 ratings should be relaxed if compliance with room noise requirements is achieved with lower performance construction.

Source: Sound and Vibration Guidelines for Health Care Facilities, 2010⁶

QUIETROCK® BY PABCO® GYPSUM

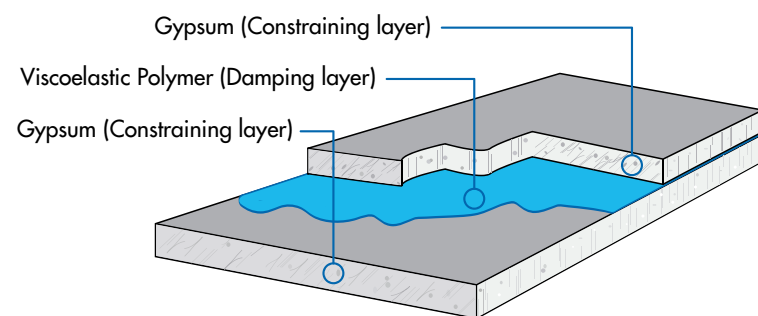
When it comes to reducing noise transmission from one space to another, PABCO® Gypsum has the solution for you. QuietRock® is the first and most technically advanced sound reducing drywall in the industry. The product achieves high sound attenuation and fire-resistance in one panel using less space, material and labor than the conventional sound reduction alternatives. It can be used for new construction or retrofit projects with no demolition required.

With QuietRock® as part of the PABCO® Gypsum product portfolio, you gain the benefit of working with a company that is known for providing consistently high-quality drywall, personal high-touch service, and sound technical advice from experts in the field.

HOW QUIETROCK WORKS

QuietRock reduces noise by using constrained layer damping (CLD) technology. CLD panels contain a viscoelastic polymer layer that allows the gypsum layers to independently shear, dissipating the acoustic energy of the sound wave. This results in less audible energy passing through the board, in essence reducing the sound transfer between rooms.

CONSTRAINED LAYER DAMPING



Cross section of a QuietRock CLD panel.

THE QUIETROCK® ADVANTAGE

QuietRock offers many benefits specifically for the healthcare setting.

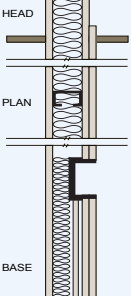
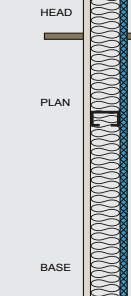
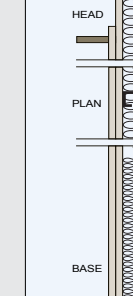

- **HIGH ACOUSTIC PERFORMANCE**—Achieves higher STC ratings at a lower installed cost than other sound reduction options
- **ONE DESIGN**—UL/ULC fire-rated walls and tested STC performance in one design
- **MOUNTED FIXTURES**—STC performance not affected with headwall systems and mounted fixtures
- **SEVERAL OPTIONS**—High impact, mold-resistant, RF shielding
- **SUSTAINABILITY**—Certified low VOC per CDPH Standard
- **EASY INSTALLATION**—Installs and finishes just like standard drywall, no special tools needed

WHERE TO USE QUIETROCK

- Patient rooms
- Exam/treatment rooms
- Consultation rooms
- MRI rooms
- NICU
- Mental health facilities
- Birthing suites
- Mechanical rooms
- ICU
- Medical auditoriums
- Medical Labs
- Dental Offices

QUIETROCK IN ACTION: CALIFORNIA MEDICAL CENTER, SAN FRANCISCO, CA

The hospital required different STC requirements for their walls depending on where the walls were situated. For example, walls between patient rooms and bathrooms required an STC of 45. Walls between exam rooms and public spaces and consultation rooms required an STC of 50. The initial specification for the STC 45 wall design called for 3 layers of Type X gypsum board and the STC 50 wall was originally designed using 4 layers of Type X gypsum panels. As you can see, QuietRock ES outperformed the multi-layer gypsum panels for each of the STC requirements.

Required STC 45 Wall		Required STC 50 Wall	
3 Layers Type X	1 Layer QuietRock ES	4 Layers Type X	2 Layers QuietRock ES
			
FAIL - STC 44	PASS - STC 49	FAIL - STC 47	PASS - STC 53
Construction: 54 mil (16 ga.) steel framing, 16" O.C.			
Source: Acoustic performance test by WEAL (Western Electro-Acoustic Laboratories), a NVLAP-accredited laboratory (National Voluntary Accreditation Program).			

PRODUCTIVITY ANALYSIS

IMPROVED STC AND LOWER COSTS WITH QUIETROCK

Replacing double layer of gypsum with a single layer of QuietRock resulted in the following:

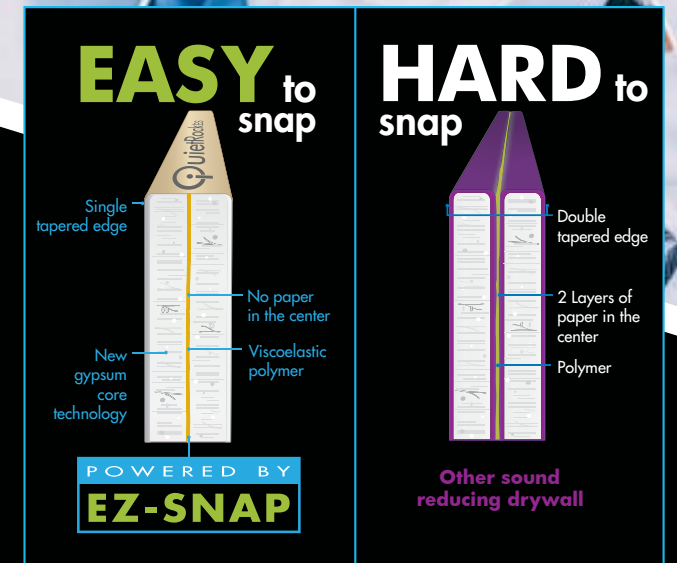
- **5** STC points higher than multi-layer gypsum assembly
- **101,339** fewer square feet of gypsum
- **13** fewer truck deliveries to the job site
- **178** carpenter man days saved on the job
- **10,000+** Less drywall fasteners used
- **2-3** fewer code inspections per assembly
- **1,300** square foot increase in floor space



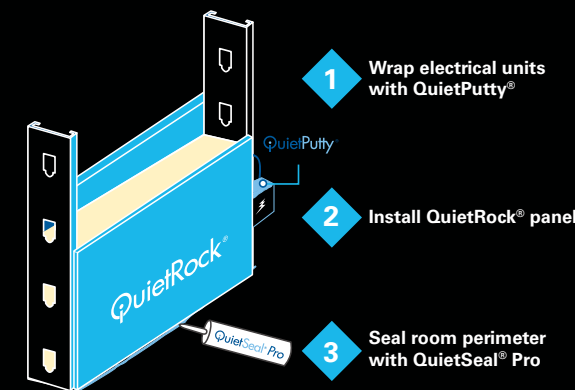
EASY INSTALLATION WITH QUIETROCK

QUIETROCK ES—WITH EZ-SNAP® TECHNOLOGY

With its patented EZ SNAP® technology, QuietRock ES easily scores and snaps just like standard gypsum panels. There is no paper or metal in the center of the panel making it easier to score, cut and install resulting in less time and labor costs than other acoustical treatments.



The Quiet® Sound Damping System in 3 easy steps:



QUIET® SOUND DAMPING SYSTEM FOR OPTIMAL ACOUSTIC PERFORMANCE

To maximize and maintain the acoustic performance of assemblies it's important to use the complete QuietRock® system. This includes QuietSeal® Pro and QuietPutty®.

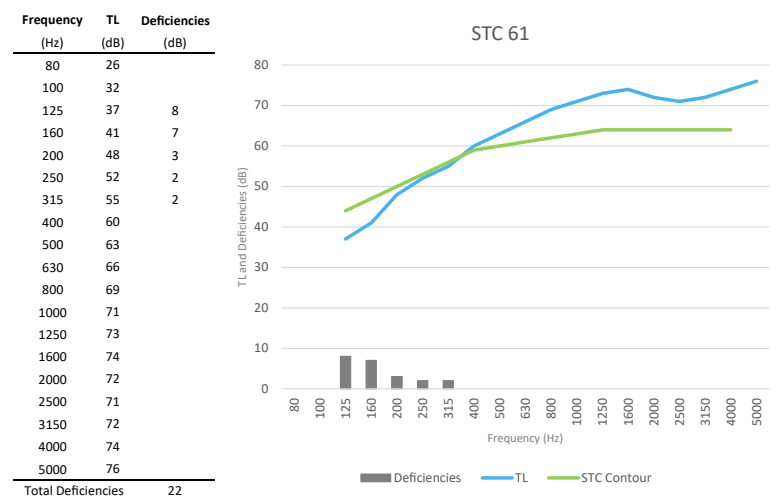
- QuietSeal Pro should be used around the perimeters of the walls to prevent noise leaks in your assembly.
- QuietPutty should be used on electrical outlet boxes, rocker switches, HVAC ducts, water hookups, cable systems or any other penetrations in the wall.

DEDICATION TO ACOUSTIC TESTING

PABCO® Gypsum has conducted over 1,000 ASTM E90 Sound Transmission Loss (STL) tests with varying framing and panel configurations. This level of testing and analysis on building noise control is rare and reflects PABCO Gypsum's commitment to the development and progress of the building construction industry. You can be confident that the tested assemblies when built will meet your expectations. In addition, we test our assemblies for fire and sound so you don't have to guess the STC performance when you build to the fire-rated assembly details.

VERIFIED TEST REPORT FROM THIRD PARTY ACCREDITED LABORATORY

Acoustic Data			
Test Site:	North Orbit Acoustic Laboratories P.O. Box 6948 Minneapolis, MN 55406-0948	Test Number:	NOAL 17-0925
Assembly Type:	Wall	Test Date:	9/20/2017
Method:	ASTM E90-09	Report Date:	10/24/2017



STC and Transmission Loss (TL) at various frequencies for tested wall assembly PGD-01-00-018.

RECOGNIZED BY OUR CUSTOMERS

“ We understood QuietRock is a premium product and would save us a lot of headache and hassle. A single layer installation's one-step process also means there's less labor involved, which makes quite a difference. We saved space, got the high sound requirement we needed, and cut down the labor and construction time involved. ”

Pat Young, Architect,
Giffin Bolte Jurgens, Portland, OR
Project: MultiCare Hospital, Tacoma, Washington

References

1. Mazer, S.E. (2005, March/April). Reduce errors by creating a quieter hospital environment. *Patient Safety & Quality Healthcare*. <http://www.psqh.com/marapr05/noise.html>
2. *Acoustics in Healthcare Environments*. Ceilings & Interior Systems Construction Association (CISCA). http://www.cisca.org/files/public/Acoustics%20in%20Healthcare%20Environments_CISCA.pdf
3. Gibson, Taylor (2017) *Sleep Deprivation in Hospitalized Patients*. Grand Valley State University. <https://scholarworks.gvsu.edu/cgi/viewcontent.cgi?article=1643&context=honorsprojects>
4. Gover & Bradley (NRCC) (2004 JASA article). *Measures for Assessing Architectural Speech Security (Privacy) of Closed Offices and Meeting Rooms*. <https://nrc-publications.canada.ca/eng/view/accepted/?id=0645818d-4e98-4e22-bd68-51a4d6ad8238>
5. Stout, Justin (2015, Cambridge Sound Management). *Speech Privacy Standards*. <https://cambridgesound.com/wp-content/uploads/2015/10/Speech-Privacy-Standards.pdf>
6. *Sound and Vibration Guidelines for Health Care Facilities*, 2010. <https://fgireadonly.madcad.com/library/230342/>

QUIETROCK PRODUCT PORTFOLIO

QuietRock products are suitable for commercial and residential projects most frequently used for education, healthcare, hospitality, entertainment, single and multi-family residential applications.

DRYWALL	PRODUCT	THICKNESS	DESCRIPTION	APPLICATIONS	INSTALLATION
	510	1/2" Regular	Lowest cost QuietRock panel option	Ideal for remodels and upgrades - installs over existing walls, with no demolition	Installs and finishes like standard gypsum panels, no special tools required.
	ES	5/8" Type X	The only Type X sound damping panel with easy score & snap technology	Hospitality, healthcare, education, single and multi-family applications	Easy installation. Scores, cuts and installs like standard drywall.
	ES MR	5/8" Type X	The only mold resistant Type X sound damping panel with easy score & snap technology	Hospitals, schools, government projects and other mold sensitive applications	Easy installation. Scores, cuts and installs like standard drywall.
	530	5/8" Type X	Heavy duty, impact and shear resistant, Type X	For use in high traffic or areas prone to impact abuse such as hallways, stairwells, and corridors	Cut with carbide cutter or electric drywall saw. Installs and finishes like standard drywall.
	530 RF	5/8" Type X	Impact-resistant Type X with radio frequency (RF) shielding material	High security environments such as SCIF, government offices and healthcare facilities	Special installation-see QuietRF Install Instructions on QuietRock website.
545	1-3/8"	Highest sound isolation performance at low frequencies (50 Hz to 100 Hz)	Commercial and home theaters, studios, and sound rooms	Cut with carbide cutter or electric drywall saw. Installs and finishes like standard drywall.	
ACCESSORIES	PRODUCT	UNIT SIZE	DESCRIPTION	APPLICATIONS	INSTALLATION
	QuietPutty	1/8" thick, 7" x 7"	Fire resistant acoustical putty designed to preserve the performance of STC rated assemblies	Use on electrical outlet boxes, rocker switches, HVAC ducts, water hookups, cable systems or other penetrations	Clean, easy to use and requires no tools to apply
	QuietSeal Pro	28 oz. Tube	Non-hardening acoustical sealant to maintain optimum acoustic performance	Apply around perimeters of walls, ceilings and floors to prevent noise leaks	Easy to use, fits any contractor size caulking gun, hassle free cleanup
	QuietSeam RF	1-gallon pail	Conductive sealing and bedding compound to reduce radio frequency transmission in construction of walls, ceilings, and floors	Use with QuietRock 530RF for high security environments	Special installation-see QuietRF Install Instructions on QuietRock website
	QuietRF Tape	3/4" Roll 1-5/8" Roll	Conductive tape for repairing QuietRock 530 RF edge during installation connecting metal-to-metal surfaces	Use with QuietRock 530RF and QuietSeam RF for SCIF installations	Special installation-see QuietRF Install Instructions on QuietRock website
	QuietGlue Pro	28 oz. Tube	High performance, low cost acoustical compound to create CLD lamination in the field	For small DIY and commercial projects such as subfloor laminations, curved walls, coffered ceilings	Apply glue evenly on drywall or wood; attach to installed panel using appropriate fasteners
QuietCoat	1-gallon pail 5-gallon bucket	Paintable or sprayable viscoelastic polymer for noise and vibration damping on metal or plastics	Plumbing and sewer pipes, electrical and mechanical enclosures, appliances, HVAC equipment. For use on steel, aluminum, brass, copper, alloys, and plastics.	Easily applied on any non-porous surfaces by brush, roller, or spray	



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