

HAWORTH

Acoustic Design Guide



The science and art of sound.

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Effective Acoustic Design

The acoustic landscape is the science and art of sound. It draws people into conversations, supports work, and influences how your brand and space are experienced. From open and private work areas to social spaces, every environment is affected by sound. Here are trends, considerations, and inspiration for acoustically balanced spaces.



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Acoustic

Insights

Listen for What's Next

Tune in to 9 Trends

The way we work and live is constantly changing, affecting people's comfort, well-being, and performance. Acoustics are an integral element of space design and planning. Here are trends, research, and recommendations that may influence future projects and changing office environments.



Hybrid World

Now, and for the foreseeable future, 50% of the workforce will likely be experiencing a hybrid working ecosystem balancing the inherent distractions at the office, home, and third places. Hybrid work may mean adapting floorplates to create flexible spaces to accommodate collaborative, restorative, and focus activities with the right acoustics.



Speaking in Public

The social stigma around speaking to a device in public is a trend that is expected to reverse over time as Voice User Interfaces become better, more efficient, and more widely adopted. As people lean more heavily on their voice assistants and tools, it will be more acceptable to use them in shared spaces.



Comfort

Matching the level and quality of sound with the intended use of the space continues to be a trending factor for architects and designers. Their top concerns: acoustic, visual, and thermal comfort, along with air quality and ergonomics.



Double-Duty Products

With tight facilities maintenance budgets, the trend is to do more with less. Look for workplace product categories that continue to drive demand for high-performance acoustical products. For example pendant lights that help mitigate echoes and illuminate a space or an acoustically engineered pouf that absorbs sound and provides extra seating.



Biophilic

Capitalizing on the biophilic design trend, plants continue to do an excellent job of absorbing sound, in addition to their abilities to purify the air and improve mood. Creative placement of greenery or living walls can help block and redirect sound. Look for plants and trees with wider leaves for maximum sound absorption.



Industrial Elements

With its raw, urban, and edgy qualities, industrial workplace design seems to be holding a firm ground. Industrial elements such as exposed ceilings, beams, and brick walls require special acoustical considerations to counteract the proliferation of hard surfaces and open spaces. Think high-backed sofas, pods, and glazed meeting room walls. Sound paths and location of high traffic areas (team spaces, cafés, lobbies) are gaining focus.





Open, Activity-Based, and Unassigned

With organizations seeking the right balance of open and private spaces, ad-hoc and reservable meeting rooms, and traditional workspaces, the open office layout will continue to thrive and require a mix of sound dampeners from wall panels to ceiling baffles, phone booths to noise-canceling headphones.



Social Stimulation

Equating working from home with quiet and going to the office for social stimulation with noise is an amplified trend as a result of the pandemic. Identifying personalities that consume auditory spaces and deplete the energy of their coworkers is the first step. Given audio disruptions can dramatically deplete productivity, organizations need to create rules (and solutions) around noise preferences scaled to the workplace.



Sustainability

The trend toward healthier building materials has leaned toward plant-based or recycled materials for acoustic absorption. An example is BuzzzFelt, made of 100% upcycled plastic bottle waste. Look for an overall explosion of sound absorbing materials—the global market is predicted to reach US \$7,030 million by 2024.

Research & Knowledge: Well-Being

What Sounds Good

Sensory skills and stimulation, such as hearing, are often taken for granted in the workplace. There's merit in understanding how sound affects people both positively and negatively. Distractions in the open-plan environment such as video conference calls, spontaneous meetings, and interruptions by coworkers are stressful.

Organizations can unlock the potential of space design with a thoughtful acoustics plan to enhance well-being—leading to healthier, engaged, and high-performing employees.



Did You Know? The uniquely identifiable aspect of a sound is like a fingerprint or signature, and the subjective nature of sound can dramatically affect us emotionally and—consequently—physiologically.

Workplace Noise



#1 Noise is the #1 employee complaint across office spaces.



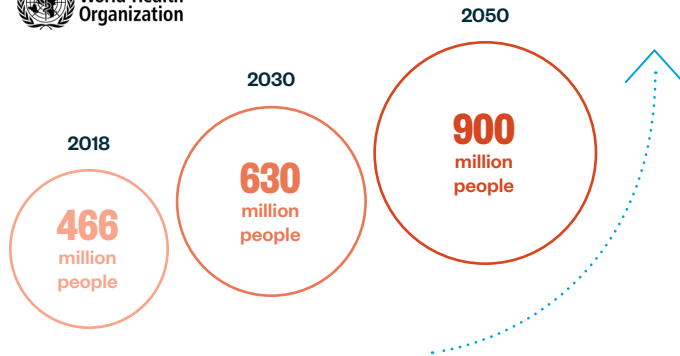
Nearly every experience we have includes an acoustic component. Over time, observing the physical setting and mentally noting the resulting acoustical effect on your perception builds an internal knowledge base that will allow your eyes to begin to hear.



Loud Music & Unhealthy Food

20% In a study, when music was played at a **higher volume** (around 70dB) there was a 20% increase in patrons' orders of unhealthy food.

Hearing Loss Is on the Rise



Did You Know? It's possible for a space to be too quiet. Microsoft's anechoic chamber, recognized as the quietest place on earth at -20.3 dBA, is so quiet people can hear their own heartbeat—and have not been able to tolerate more than 45 minutes in the space.

Silence Is Healthy

It turns out that from a health standpoint, silence truly is golden. A 2013 Duke University study found that two hours of silence daily increased cell development in the hippocampus, the region of the brain centered on memory.





Research & Knowledge: Well-Being

Research & Knowledge: Privacy

Balancing Privacy Needs

Privacy and the ability to concentrate are essential for individual focus work as well as private collaboration. People need to be able to hear what they want to hear, when they want to hear it. They also need to know that confidential conversations are protected. Yet, knowledge workers continue to identify noise and the lack of speech privacy as leading sources of dissatisfaction in the workplace.

Appropriately addressing acoustical performance benefits both the organization and its employees. When construction elements work together to accurately control levels of speech intelligibility and honor privacy, the work environment fosters focus work, improved performance, and—ultimately, innovation.

To foster innovation...



of employees have a preference for quiet when focus is needed.

However...



are dissatisfied with the noise level at their primary workspace.



A door's sound rating is only as good as its frame, perimeter seals, and threshold.

Research & Knowledge: Focus Work

Distractions Affect Performance

In the built environment, workspace features that communicate where specific activities take place are essential. We call this legibility—and certain characteristics of the floorplate contribute to it. Designing spaces where people can manage visual and auditory distractions gives them more control over inferences and interruptions.

Science tells us there is no one-size-fits-all solution: Building a workplace strategy to support focus work starts with organizational culture to understand what people value. Then, carefully consider the overall arrangement and adjacency of the various activity zones—from quiet to active—in the floorplate.



Focus Work Defined

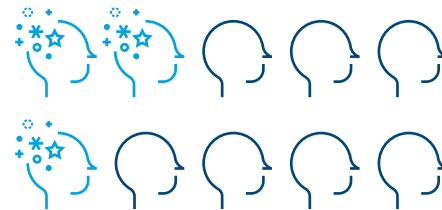
- A task requiring sustained (uninterrupted) attention that can vary in amount of mental effort.
- How long to sustain attention depends on the task.
- How much mental effort needed depends on the person.
- The less one knows, the more effort is needed—learning takes more deliberate effort.
- When mastery is achieved, tasks are more automated.



A Few Seconds to a Full Minute

How long it takes on average to reengage with a task after a distraction.

Did You Know? Noise distractions lead to lower productivity and higher absentee rates. That's why a workspace that minimizes distraction of all kinds isn't just an HR decision; it's a smart financial move. For example, the Information Overload Research Group estimates that digital distraction alone costs US companies almost \$1 trillion dollars annually.



Did You Know? A UK study found that 3 in 10 employees frequently lost their concentration due to chatter and buzz in their workspace.

3 Culprits That Sabotage Focus Work



Distractions

When unexpected off-task information captures our attention.

Just because it's unexpected, doesn't mean it's not beneficial to the person—even if it affects task performance.



Interruptions

When a distraction or interference pulls us off a task entirely to start a new task.

Oftentimes, these are also useful and necessary.



Interference

When off-task information gets confused with task information.

Unhelpful to the task, but might prompt switching to a new, more important task.

Designing for Focus Can:

Improve worker concentration by

48%

Lower work errors by

10%

Reduce employee stress by

27%

Eliminate conversational distractions by

51%

Basics: Acoustics 101

Overview

Whether you're considering the ceiling, floor, walls, or products in between, it's important to understand terms commonly used in acoustics.



What Is Sound?

Sound is a pressure wave, transmitted through a medium (air, liquid, or solid). The human ear detects the pressure waves and transmits them to the brain as a signal we perceive as sound.

Low Tone

Long wave - Low frequency
(50 - 250 Hz)

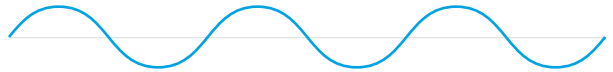
E.g., heating systems, ventilation, elevators, copy machines, server rooms



Mid Tone

Mid-length wave - Speech frequency
(250 - 2500 Hz)

E.g., speech, vowels, consonants



High Tone

Short wave - High frequency
(2500 - 12000 Hz)

E.g., ringtones, typing sounds, clicking sounds, kids



Sound waves have two fundamental properties:

Frequency

The number of wave cycles per second, expressed in Hertz (Hz). We experience this property as tone—the higher the frequency, the higher the tone. The frequency range audible by humans is between 20 and 20,000 Hz.

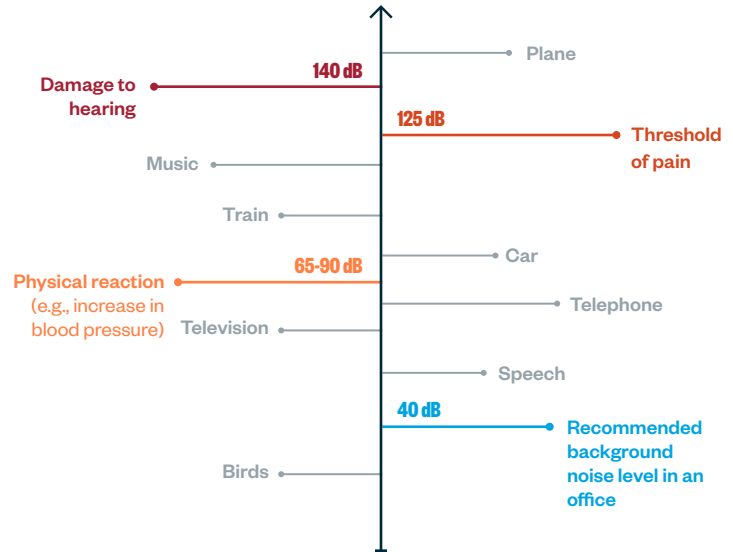
Level

The size of the pressure wave, typically expressed using decibels (dB). We experience this property as loudness. The human ear can detect sounds between 0 and 140 dB, depending on the frequency.

There is no relationship between the frequency and level of sound. A train and a car might emit sounds at the same frequencies, but at different levels, while a violin and a tuba might play at the same levels, but at different frequencies.

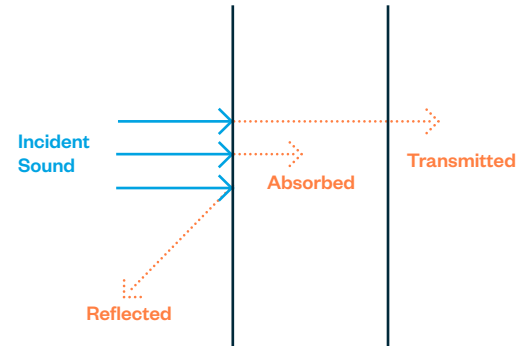
Did You Know? Wallace Clement Sabine is the founder of the study of architectural acoustics, responsible for defining “reverberation time.” He founded Riverbank Acoustical Laboratories, where Haworth conducts much of its testing. The unit of sound absorption is the sabin, in his honor.

Levels



How Sound Travels

As a sound wave spreads from a source, the sound level decays with distance. If there are no obstructions, it will eventually fall below the level of the surrounding background sound, where it becomes inaudible.



Room Acoustics Defined

- When the listener and sound source are in the same room.
- Sounds are reflected or absorbed by surfaces.
- Excessive reverberation elevates sound levels and makes understanding speech difficult.
- Adding absorptive materials reduces reverberation, reducing sound levels and improving speech intelligibility.
- Within the room, adding diffusors spreads the sound evenly.

Building Acoustics Defined

- When the listener and sound source are in different rooms.
- Sound is transmitted into the room from adjacent spaces. Intruding sounds may include speech, footsteps, building systems, and traffic or environmental sounds.
- The difference in sound levels between two rooms is the noise isolation, which is the combined effect of the transmission lost in the construction, and the sound absorbed in the receiving space.
- Increasing transmission loss of the construction improves isolation.

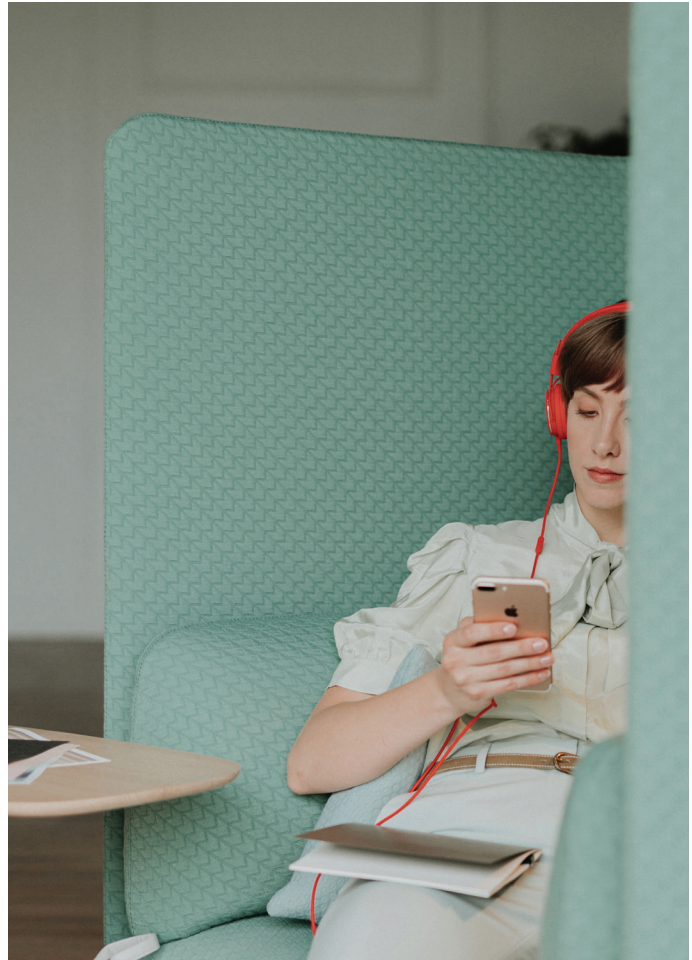


Basics: Speech Intelligibility & Privacy

Whether in open plan offices or between closed rooms, achieving privacy requires adequate attenuation and background levels:

1. The sound must be adequately attenuated between the talker and listener, and
2. The speech sounds at the listener's ear must be well below the background sound.

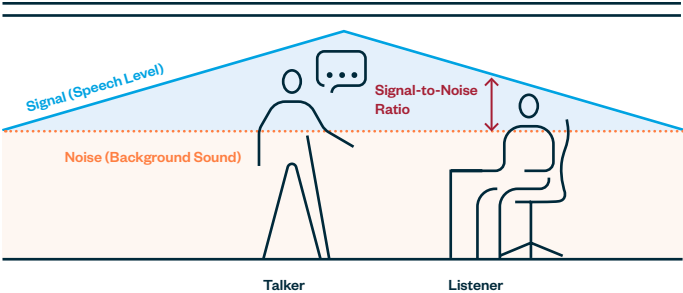
Did You Know? Lack of speech privacy was the single greatest source of dissatisfaction in a landmark study of 50,000+ workers in 351 buildings.



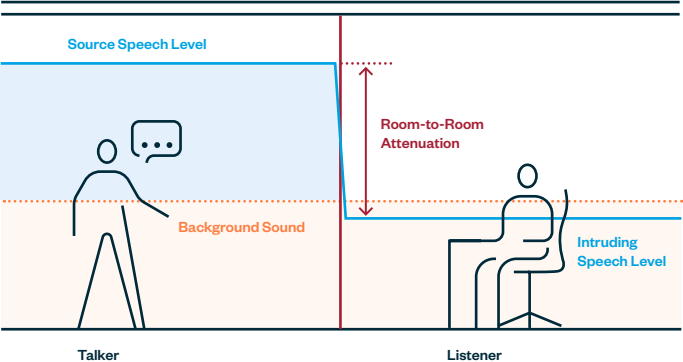
Intelligibility and privacy are determined at the listener's ears.

Signal > Noise
Intelligible Speech

Signal < Noise
Privacy/Unintelligible Speech



Privacy



66%

The reduction in productivity for employees exposed to just one nearby conversation.

Basics: Design Fundamentals

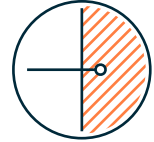
A to D

A holistic approach to effective acoustic design means several solutions are applied in various combinations to serve the needs of the space and people within it. Think of “ABCD” as the building blocks of acoustics.



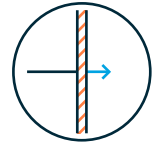
Absorb

absorb sounds within the space



Block

block sounds between the spaces



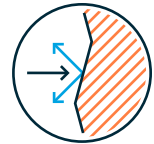
Cover

cover intruding sounds with background sound



Diffuse

spread sound energy evenly in a space



TIP

Consider highly absorptive ceilings, carpeted floors, freestanding solutions, and/or acoustic lighting.



Absorb: Managing Reverberation



Reverberation time is what's needed for an original sound source to decay 60 dB and is expressed in seconds. In order to generate excellent speech intelligibility and clarity, the reverberation time should be adjusted and balanced with an absorptive material for the specific acoustical issues in a given space. The recommended reverberation time will always have to be adapted to the room volume and the type of activity.

Using Absorptive Materials

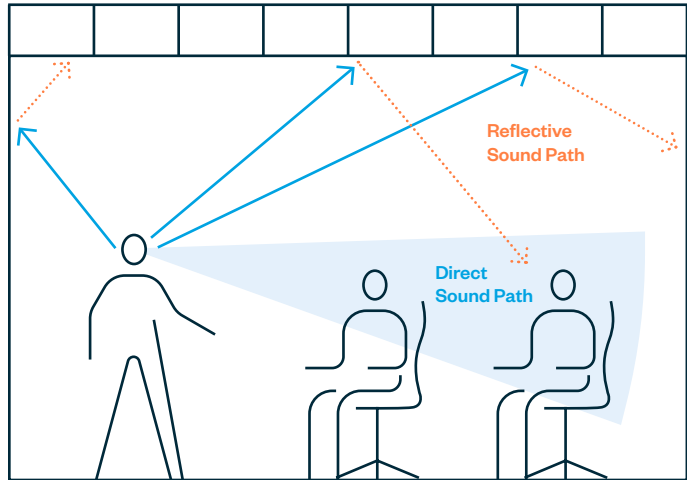
Open Areas, Collaborative Spaces

- Minimize reflections
- Reduce overall sound levels

Closed Rooms

- Reduce overall sound levels
- Enhance speech intelligibility
- Minimize "late reflections"

Absorb

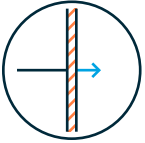


Did You Know? Reverberation is influenced by: Volume of the room, room temperature, and absorption coefficient of materials, objects, and people in a room.



The RT60 app from BuzziSpace measures the reverberation time in a room and suggests products to improve sound quality. The simulation tool shows the acoustical impact of products within the space.

Block



The amount of sound blocked by a wall, floor/ceiling assembly, ceiling panels, room dividers, desk screens, and acoustic solutions is called sound transmission loss—or attenuation. It's a lab-measured property of the wall alone, but in practice, sound travels between spaces through multiple paths. For this reason, field measurements of sound isolation (NIC or D_w) between spaces will normally be several dB lower than the idealized transmission-loss rating of a wall (STC or R_w), and more representative of what people actually experience in the space.



TIP

The CAC rating only applies if the ceiling covers both rooms, not just one.

Blocking Sound

Use screens, panels, walls, ceilings, and doors to block sound travel between spaces.

In every application, beware of unplanned flanking transmission, which can dramatically undermine the effort to block sound transmission.

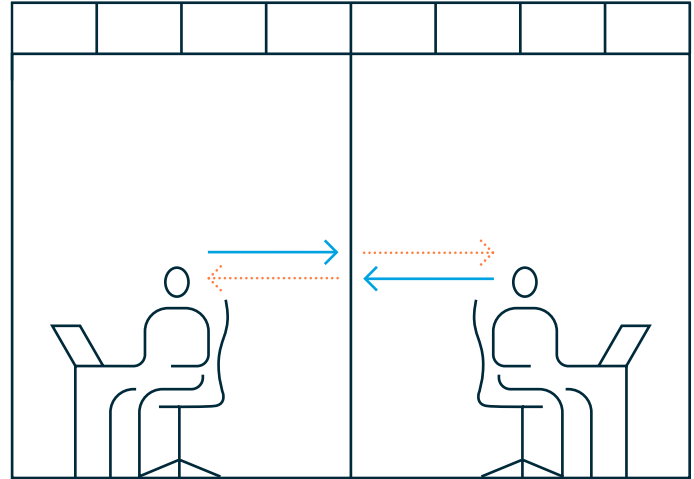
Metrics

- Space: Noise Isolation Class (NIC)
- Materials:
 - Sound Transmission Class (STC)
 - Ceiling Attenuation Class (CAC)

Transmission

- Direct (through walls, ceilings, and floors)
- Flanking (through gaps and adjacent structure)

Block



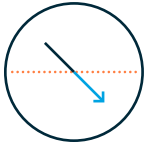
TIP

For rooms under a common plenum, if the ceiling CAC is lower than the wall STC, the ceiling rating will limit the overall performance of the spaces.

TIP

Privacy pods are uniquely able to assure a level of performance because they are a complete, integrated product. For these products, the sound isolation is expressed by a special measurement: "Speech Level Reduction" ($D_{S,A}$).

Cover: Managing Intelligibility/Privacy



If you can't block or absorb sound adequately, you have to cover it. Carpet and acoustical ceilings reduce the activity noise, and well-engineered HVAC systems are more efficient and quiet, leaving background levels too low. A well-designed and properly installed electronic sound masking system ensures a minimum background level always exists, so privacy and intelligibility are never left to chance.

Space for Collaboration

Maximize communication

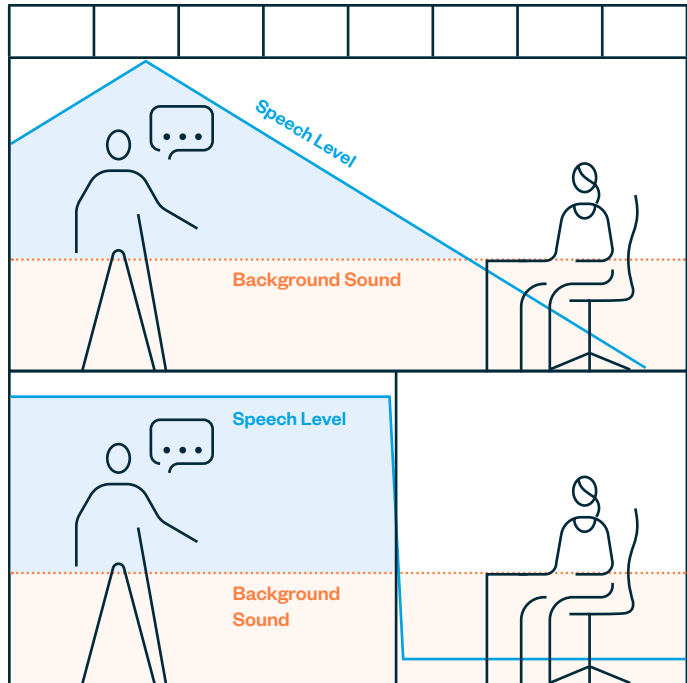
Space for Focus Work

Minimize distraction

Space for Privacy

Confidentiality

Cover



Did You Know? The American Society of Heating, Refrigerating, and Air-Conditioning Engineers publishes standards for HVAC-related background sound in various spaces.

Covering Sound (Using Sound Masking)

In Open Areas

Use sound masking to reduce the distance in which people can overhear conversations (i.e., the radius of distraction).

In Closed Areas

Use sound masking to ensure the desired level of privacy exists by controlling the background sound.

Metrics

- Space
 - Articulation Index (AI)
 - Privacy Index (PI)
- Components: A weighted decibels (dBA)

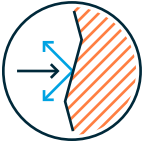


47%

Sound masking technology improves employee focus by 47% and short-term memory accuracy by almost 10%.

Did You Know? Active Noise Cancellation (ANC) and Sound Masking are not the same thing. Masking systems work by adding noise to make other sounds less noticeable. ANC systems introduce an inverse sound wave matching the incoming sound, reducing overall sound levels. Current ANC systems work only at low frequencies and are unable to cancel speech sounds. Sound Masking effectiveness is mostly determined by the quality of the tuning, not the hardware. Look for systems that automate the tuning to ensure the best result.

Diffuse



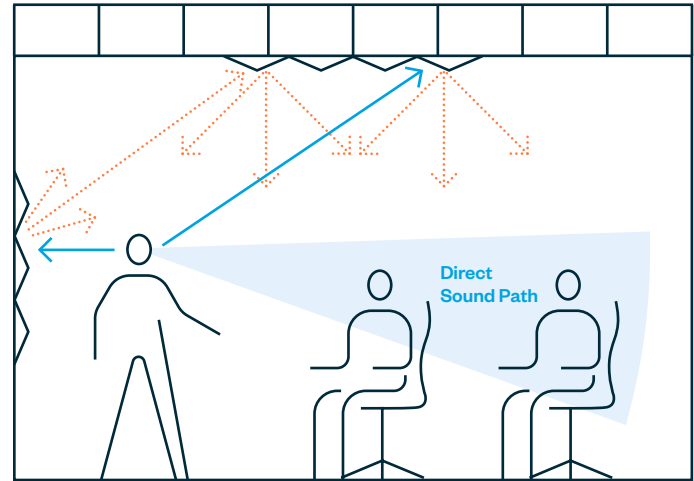
In some applications, it makes sense to have sounds scattered uniformly, or diffused, throughout the space. Too much absorption, for example—in the ceiling of a large conference room—can make it difficult for a person talking at one end to be heard at the other because the sound of their voice is absorbed before reaching the listener. Thoughtfully placed diffusion solutions help reflect and scatter the desired sounds, so they can be heard everywhere.



Diffusing Sound

In larger spaces, place sound diffusers on the walls and ceiling surfaces to scatter desired sounds throughout the room.

Diffuse





Basics: Definitions

Absorption Coefficient (α)

A measure of the fraction of sound absorbed by a material, at a frequency. Values range from 0 to 1.

Ceiling Attenuation Class (CAC)

A laboratory rating of the ability of a suspended ceiling to block sound transmission between adjacent rooms through a shared plenum. Approximately equivalent to STC for ceilings. A higher number reflects less transmission.

Confidential Privacy

A condition where overheard speech is not intelligible, even though it may be audible. Corresponds to privacy index (PI) of 95 or greater.

Decibel (dB)

A unit of measure of sound pressure level, at a specific frequency.

Decibel, A-weighted (dBA)

Weighted average of sound pressure levels across a frequency range, reflecting the sensitivity of the human ear to different frequencies.



Flanking

The transmission of sound via paths other than directly through the construction separating two spaces.

Frequency

The number of cycles of a sound pressure wave, measured per second (1 cycle/second = 1 Hertz). Corresponds to the “tone” or “pitch” of a sound in music.

Impact Isolation Class (IIC)

A rating of the floor assembly’s ability to impact sound—like footsteps. A larger number means more impact sound is being blocked. The whole number is calculated based on sound reduction in 16 frequencies from 100 to 3150 Hz.

Noise Isolation Class (NIC)

A rating of the sound isolation between adjacent rooms or spaces. A higher number reflects more isolation. (Used primarily in North America; see Weighted Level Difference.)

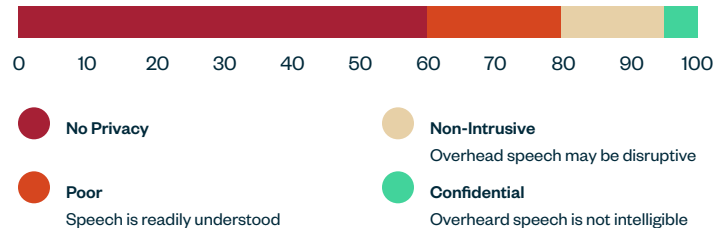
Did You Know? NIC/D_w measures the sound reduction and includes the effect of absorptive material in the receiving room. Because this varies with finishes and room volume, the NIC/D_w is directional.

Noise Reduction Coefficient (NRC)

A measure of the ability of material to absorb sound, obtained by averaging the absorption coefficients at 250, 500, 1,000, and 2,000 Hz. Values range from 0 to 1, with higher numbers indicating more absorption.

Privacy Index (PI)

A measure of the degree of speech privacy between two spaces. Values range from 0 to 100. Not a measure of fraction of speech understood. Standards define levels of speech intelligibility and speech privacy.



Sound Transmission Class (STC)

A laboratory rating of the ability of a wall to block sound transmission between adjacent rooms. A higher number indicates less transmission. ASTC (Apparent STC) is based on field measurements, which will include flanking transmission. (Used primarily in North America; see Weighted Sound Reduction Index.)

Speech Intelligibility

The degree to which speech sounds are understood by a listener.

Speech Level Reduction ($D_{s,A}$)

A measure, expressed as decibels (dB), of the reduction in the voice level of a talker as perceived by a listener on the outside. May be expressed as a letter-grade Classification, with A+ indicating highest performance.

Weighted Level Difference (D_w)

A measure of the sound isolation between adjacent rooms or spaces, expressed in dB. A higher number reflects more isolation. (Used globally outside North America, see NIC.)

Weighted Sound Reduction Index (R_w)

A laboratory measure of the ability of a wall to block sound transmission between adjacent rooms, expressed in dB. A higher number indicates less transmission. Apparent SRI (R'_w) indicates a field measurement, which will include flanking transmission. (Used globally except in North America; see STC.)



STC ratings do not predict privacy because the testing is done in a lab; the effect of background and voice levels are not included.





Acoustic

Applications

Invisible Design for Performance and Well-Being

When designing environments with acoustics in mind, there are two ways to approach space design: Planning at floorplate level to incorporate architectural acoustics and planning by application.

Effective acoustical design may be invisible to most people, but the benefits are easy to see. Employees will be more comfortable at work knowing they have spaces for privacy and connection—where they won't disturb others who are concentrating on focused tasks nearby. Whether you're supporting individual tasks or group interactions, acoustics has the potential to enhance the user experience. See our recommendations in the following eight applications—and get inspired for your space design projects.



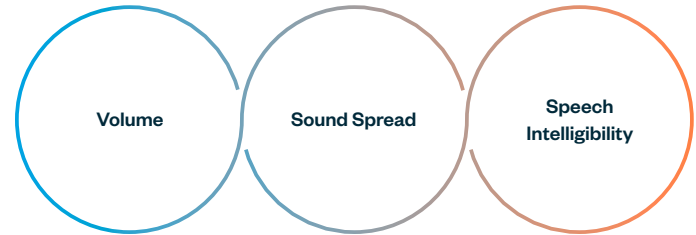
Sound Advice for Good Planning

Determine Purpose

Acoustics should be addressed when planning buildings and the spaces within. Construction strategies, materials, and placement of solutions after build-out require understanding the needs of people and the purpose of the space.

Building acoustics is concerned primarily with sound transmission between spaces. This can be environmental sounds originating outside the building, as well as activity and speech sounds transmitted between rooms. Room acoustics pertains to sound behavior within individual rooms. Both are important.

Room acoustics are balanced when volume, sound spread, and speech intelligibility are in sync.



TIP

For an overview of workplace noise and preventing hearing loss, download *Occupational Exposure to Noise: Evaluation, Prevention and Control* by the World Health Organization and see Chapter 1, Fundamentals of Acoustics.

Did You Know? Version 4.1 of the U.S. Green Building Council's Building Design and Construction guidelines makes acoustic LEED credits more achievable. As an added incentive, each space in most projects now only has to achieve two out of three of its acoustic goals for the entire project to achieve LEED acoustic credit. A bonus credit is awarded to projects where spaces meet all three acoustic goals.

Step One

Determine Objectives

Do you need to:

- Support individual conversations or group discussions?
- Enhance focused concentration?
- Offer a quiet space for respite?
- Create a sense of energy through sound?
- Protect the confidentiality of conversations?

Step Two

Align Objectives with Construction Methods

- Collaboration areas can be as free-form as you desire—the key is to contain sound if adjacent spaces need quiet.
- Focus work areas need to block out adjacent sights and sound—consider walls and dropped ceilings, or screens.
- Respite spaces benefit from distraction-free comfort—think walls with doors, dropped ceilings, and comfy chairs.
- Vibrant acoustic spaces can help create buzz—incorporate highly reflective surfaces like glass and concrete, and use absorptive materials only when necessary.
- Confidentiality requires maximizing all techniques above—think full-height walls, high-performance doors and/or ceilings, sound masking, and absorption through soft surfaces that reduce extraneous noise.

Step Three

Measure Performance

Subjective:

- How do users feel about the space?
- Is it meeting the acoustic design intent?

Objective:

- NC: Noise Criterion—a measure of background sound
- NIC: Noise Isolation Class—a rating of room-to-room isolation
- RT: Reverberation Time—a measure of absorption within a room

Planning for a Variety of Spaces

Preserving spaces for distraction-free work while enabling group work and speech privacy involves understanding the organization's culture and goals. Intentional design includes a variety of spaces, appropriate adjacencies, and acoustics management for people to work alone and with others. Reference the color-coded icons to guide your design based on the intent for users.

High Impression

Spaces that set the tone and make an impression, impacting how people feel and connect with your culture and brand.

Restore & Connect

Quiet havens or community spaces that help people refresh, rejuvenate, and interact to foster well-being.

Team Engagement

Formal or informal collaborative spaces for idea generation, strategic activities, and learning, generally away from hightraffic areas.



Café



Individual Workstation



Meeting and Conference



Lobby



Home Office



Project Room



Retreat



Community

Café

Cafés are multi-purpose spaces that encourage relaxation and social interactions among various group sizes. Cleanability concerns in cafés often dictate the need for hard surfaces, so noise can be a concern in these social hubs. The first priority is to absorb as much sound as possible; the second priority is to contain it within the space.



Helpful Tips

- Use absorption to reduce overall noise levels.
- Install full-height wall products to prevent sound from carrying from one space to another.
- Avoid locating quiet spaces such as individual workstations nearby.
- If using a café for large meetings, especially with PA systems, putting extensive absorption on the “back” wall, opposite the presenter, will greatly improve speech clarity for attendees.
- Maximize absorptive surfaces by adding wall and ceiling elements such as acoustical lighting and self-adhesive acoustical wallpaper.
- Use physical barriers with high STCs, like demountable wall systems, to help divide larger open spaces and block sound from traveling to nearby quiet spaces.
- Add screens to help reduce noise levels and define different spaces within the area and among groups.



Individual Workstation

With the trends of lower panels and open floorplates, distracting sounds and loud conversations are issues at the individual workstation, as well as in the surrounding touchdown areas. The main priority in these spaces is to add absorptive surfaces that minimize reflections and reduce overall sound levels.

Helpful Tips

- In open plan workstations that lack an acoustic drop ceiling, additional absorption may be required to maintain an acceptable reverberation time.
- Consider acoustic flooring materials such as carpet tile with an acoustic backer.
- Adding screens to open workstations helps reduce unwanted noise for better focus while still being able to stay connected with colleagues.
- Use full-height architectural walls to prevent sound from carrying from one space to another.
- Ensure adequate background sound levels, using well-tuned sound masking, to cover adjacent conversations.
- Create breakout spaces that pull conversations away from the primary focus areas—this can be achieved through distance and/or physical barriers like screens or walls.





Meeting and Conference

For meetings both large and small, this space should accommodate collaboration while also containing activity sounds from surrounding rooms and adjacent areas. Providing privacy for users is another requirement. To achieve this, full-height walls are required. Equally important is providing enough background sound to prevent sensitive conversations from being understood outside the room.

Helpful Tips

- Products that allow for double glazing will provide greater isolation than single glazed products.
- A soft surface such as a rug, textile, or foam product, can absorb sound to reduce extraneous noise in a room.
- Carpet and rugs—especially those with cushion—offer sound absorptive qualities to help create a comfortable level of ambient sound.
- Maximize intelligibility for remote listeners by placing microphones close to the talkers and absorptive lighting close over the table.
- Thoughtfully placed diffusion solutions help reflect and scatter the desired sounds, so they can be heard everywhere.
- Provide enough absorption to minimize reverberation so that conversations are intelligible—to those attending in person and via technology.





Lobby

This warm, welcoming, and memorable space is where first impressions are made—setting the tone for brand and culture, not echoes. Acoustics can play a big role in making a space feel inviting.

Helpful Tips

- Balance hard, noise reflective surfaces such as glass, concrete, and stone with acoustic materials such as upholstered furniture, rugs, or acoustical lighting.
- Position absorptive light fixtures over designated spaces where conversations take place to minimize sound transfer.
- Absorptive wall treatments along a corridor can reduce sounds transmission between connected areas.





Home Office

In today's private office, the office isn't just for focused work, but also a space for both formal and informal meetings. This takes on a whole new meaning for acoustics in the private office: It must limit distractions but also help contain private conversations of any size from outside adjacent areas.

Helpful Tips

- Transparency in office fronts can minimize the potential for someone to linger and overhear a conversation.
- Higher levels of absorption in small rooms not only convey a sense of calm, but also cause people to reduce their voice levels, which in turn minimizes the risk of being overheard.
- Curtains are another means of adding absorption and reducing reverberation, while also allowing user control of light and transparency.





Acoustic Applications

Project Room

This type of space is where innovation, creative ideas, and work gets done. With big ideas happening in this environment, most often noise will follow. Managing acoustics in a creative way is the mission for this space.

Helpful Tips

- Anticipate higher voice levels, so use absorptive materials to reduce sound levels within the space.
- Use full-height walls to contain activity sounds and minimize distraction of people in adjacent spaces.





Retreat

These quiet havens enable tranquility, rejuvenation, and collaborative work, fostering well-being. Proper acoustics help promote comfortable collaboration and empower choice.

Helpful Tips

- Consider low-cost vinyl films to provide visual interest and minimize visual distraction.
- Use window treatments to control the amount of natural light.
- Provide biophilic sound masking to cover intruding sounds and provide a sense of calm within the space.
- Consider maximizing the absorption in these spaces to invoke a greater sense of quiet.





Acoustic Applications

Community

This flexible space offers collaboration for a variety of group sizes to come together and connect in a comfortable setting; therefore, acoustics should be at the forefront. This space should not distract from the adjacent workspaces and should use absorptive pieces that are flexible and help define the space.

Helpful Tips

- Consider double glazing and room dividing panels to create visual interest and a hard, cleanable surface that defines the community space from the work area.
- Consider your privacy level needs as well as adjacencies and activities happening around the space.





Acoustic Applications



Acoustic

Solutions

Product Categories

Haworth offers the options you need to address all of your acoustic design needs. Combine solutions from our portfolio with those from our partner brands. Let us help you choose the solutions that address the ABCD of acoustic solutions to support people at work, influence well-being, and convey your brand.

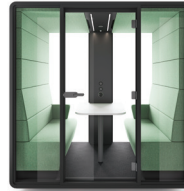
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Booths



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Ottomans & Poufs



Rugs



Seating & Lounge



Walls & Screens



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