



Custom Acoustical Glass Fiber Wall & Ceiling Panels



THE **INSIDE** STORY

- Reduce Noise
- Improve Productivity
- Architectural Versatility
- Aesthetically Pleasing
- Functional

Custom Acoustical Panels

Create Productive Environments

Partnering with CISCA

This brochure was developed to assist you with the design and specification of customized acoustical wall and ceiling panels and the selection of the most effective materials for each application.

Going forward, there are sections on:

- Finishes
- Core Materials
- Product Quality

Each section can help ensure that your designs are effectively carried out and the finished job meets both the functional and aesthetic requirements.

The Ceiling and Interior Systems Construction Association (CISCA) and its Acoustical Wall Panel Committee serve as technical resources for you.





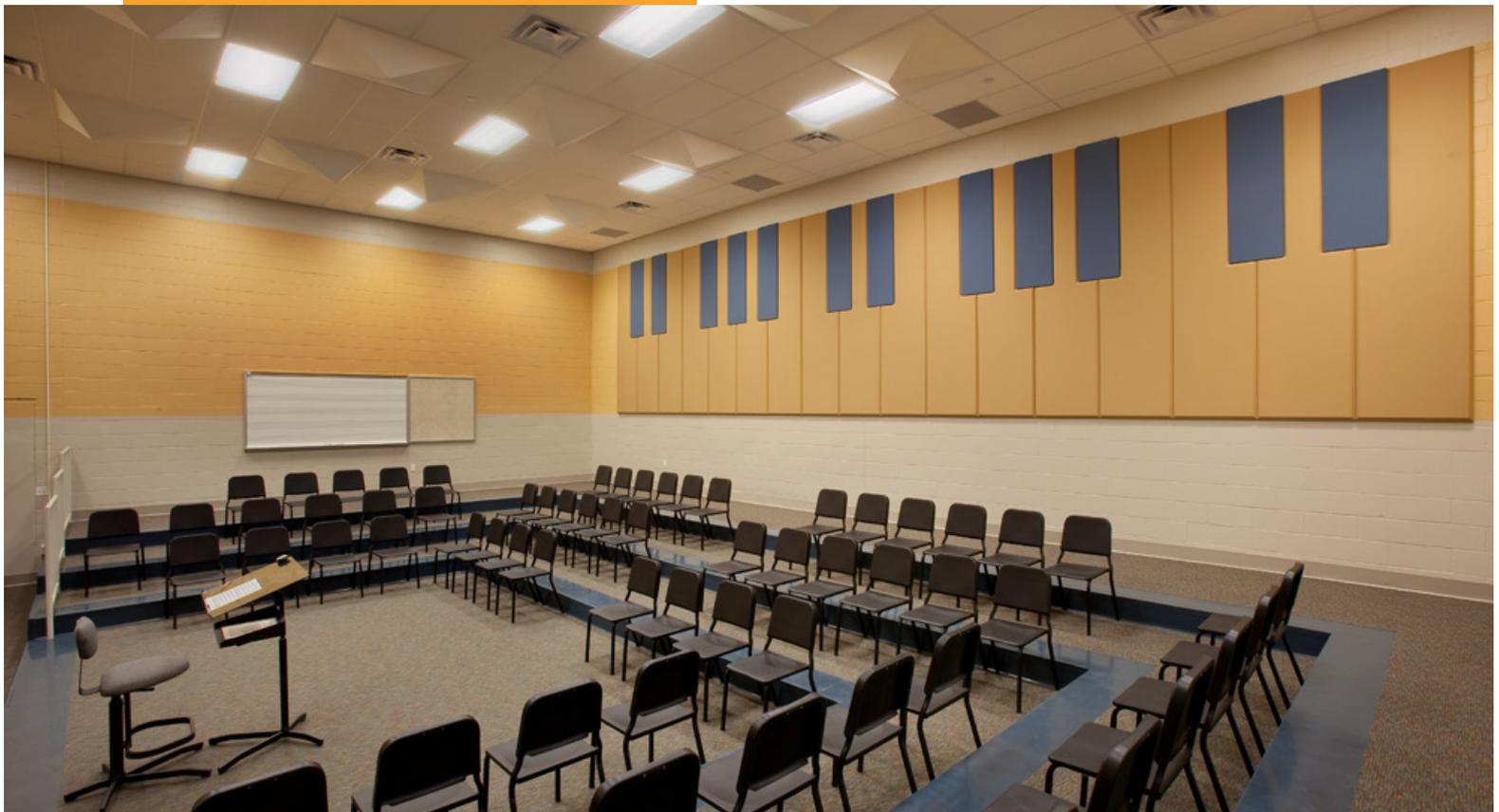
- **Reduce noise and reverberation**
- **Improve speech intelligibility**
- **Enhance speech privacy**
- **Improve productivity**
- **Address ADA concerns**
- **Allow architectural versatility**
- **Customize acoustical design**
- **Combine aesthetics and functionality**
- **HIPAA Health Care Regulation for Speech Privacy**

Green Building Design with Acoustical Panels

Creating excellence in room acoustics using custom acoustical panels can also contribute to efforts in more environmentally-friendly building design. Many product design applications for acoustical panels, baffles or clouds contribute to LEED credits, the United States Green Building Council's certification system for green building design.

Acoustical wall and ceiling treatments can contribute to LEED credits in many types of buildings:

- **LEED for New Construction, Schools, Commercial Interiors, Core & Shell (4 rating systems)**
 1. Recycled content: MR Credit 4 – earn up to 2 points. Majority of acoustical panels have 25% to 35% recycled material content, depending on the fabric selected.
 2. Regional material: MR Credit 5 – earn up to 2 points. Dependent on jobsite location in relation to the source and manufacturing locations for all raw and finished materials within products.



- **LEED for Schools**

1. Low Emitting Materials – EQ Credit 4.6, Ceiling and Wall Systems – earn 1 point. Panel types available which meet standards for low VOC emissions and have GreenGuard for Schools Indoor Air Quality certification.

2. Minimal Acoustical Performance: IEQ Prerequisite 3 – Core learning spaces must meet specific acoustical requirements for background sound levels and reverberation levels based on ANSI standard S12.60-2002.

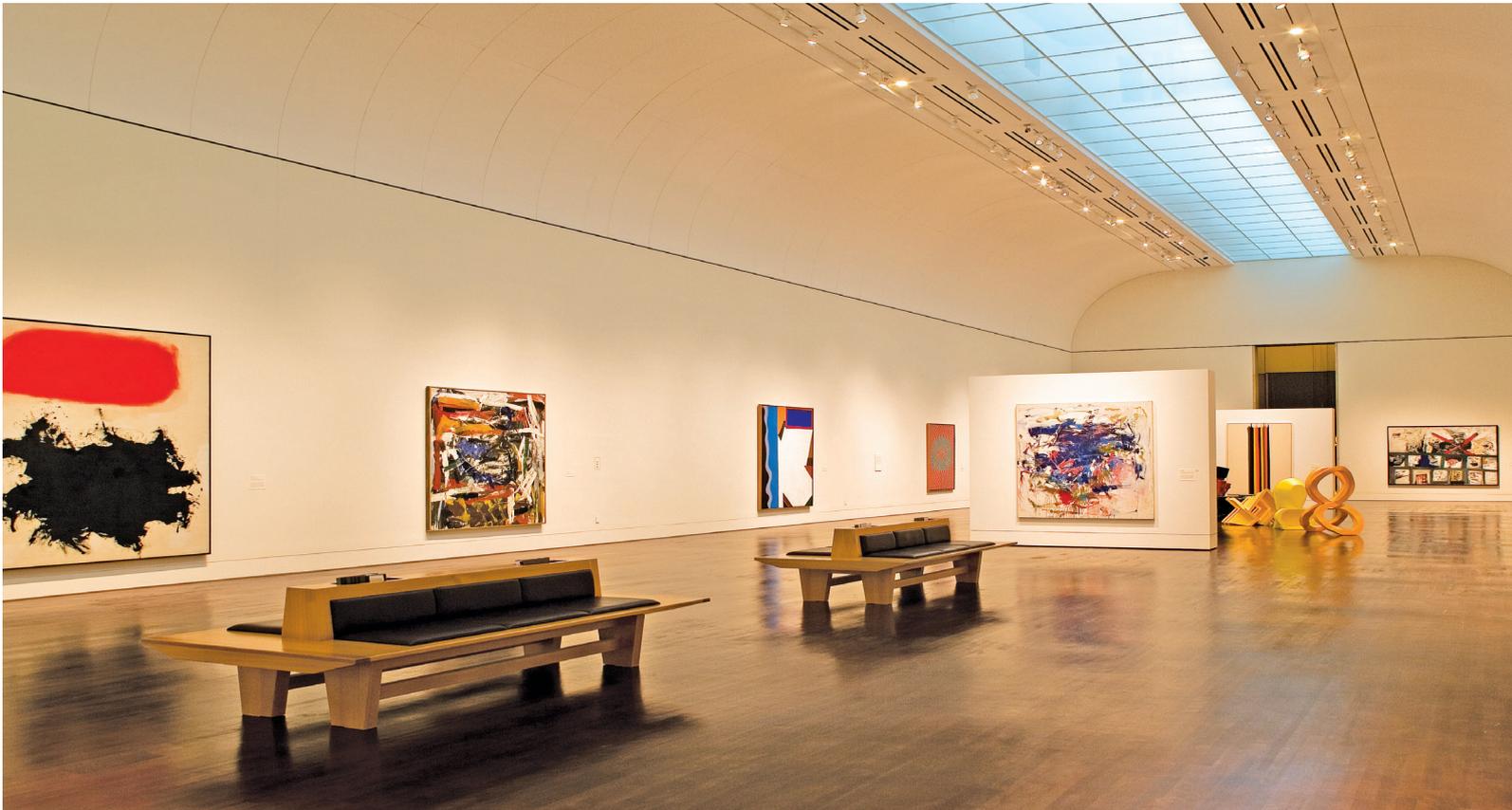
3. Enhanced Acoustical Performance: IEQ Credit 9 – earn 1 point. By exceeding the minimum prerequisite and achieving lower background and reverberant sound levels, an additional point can be earned.

- **LEED for Existing Buildings**

Occupant Comfort: Occupant Survey: EQ Credit 2.1 – earn 1 point. Credit based on completion of occupant comfort survey, which covers various environmental quality assessments, including acoustic comfort.

- **Innovation in Design**

Part of all LEED rating systems – Earn credits for excellent acoustical design. Reducing ambient noise levels and improving speech privacy, enhanced with the application of acoustical panels and baffles, are examples of innovative design criteria that have been rewarded.



Custom Acoustical Ceiling Panels

Don't forget to look up

Custom acoustical ceiling panels provide acoustic treatment in a decorative and unique manner.

They provide what it takes to meet any truly custom need:

- Size
- Shape
- Thickness
- Variety of edge treatments available
- Form – Free-floating “clouds,” pre-curved up or down, conical, wave, or dome shapes
- Variety of mounting options
- Systems – Can be engineered into standard or specific integrated ceiling systems.
- Many access options
- Alignment – Close joints (butt or defined), reveal joints (open and covered), or variable joints
- Finishes – Fabric, vinyl, coatings, wood, aluminum, stainless steel, and more
- Fire – ASTM E84 Class A requirements. (For specific finishes, allow funds for a composite panel fire test as required by code.)
- Acoustics – Specific, superior acoustic performance while allowing freedom of design.





MOUNTING OPTIONS

The manner in which acoustical panels are attached to the underlying substrate is critical to its installation. Proper mounting hardware specification can make an installation go smoothly, safely and with a minimum of misunderstanding. CISCA's Acoustical Wall Panel Committee suggests these examples of mounting techniques for wall (W) and ceiling (C) applications:

Z-Clips: (W) (C) – Typically defined as a “two-part mechanical clip,” one part is attached to the acoustical panel, and one part to the substrate. They connect like a picture hook to hold the panel in place.

Rotofast Anchors: (W) (C) – Unique plastic device designed to attach to the substrate using a typical mechanical fastener. Using a proprietary tool which is pushed through the acoustical panel, the anchor is corkscrewed into the back of the panel creating a secure attachment without adhesive.

Impaling Clips or Pins: (W) – A piece of metal with protruding points designed to be attached to the wall with points facing out. Construction adhesive is applied to the back of the panel, and the panel is then pushed onto the protrusions. The clips are designed to hold the panels in place while the adhesive sets up. Angle impaling clips can be used to install fiberglass acoustical panels without adhesive.

Construction Adhesive: (W) – Advances in these products now allow for easy and inexpensive installation of panels to wall substrates using adhesives alone. Construction adhesives must be water based to be effective. A combination of high initial grab strength and quicker cure time allows for safe and fast installation in certain applications.

T-Grid: (C) – Typical suspended ceiling hardware can be used for mounting a panel in a “cloud” or horizontal position. Attaching T-grids to the back of a panel provides hanging points for the installation and adds a stiffener to the panel to help maintain its shape.

Eye-hooks: (C) – A simple eye-hook embedded in a hardened spot allows for a simple, secure hanging point for smaller panels in “cloud” installations. One in each corner of the panel is typically all that's required.

Please note: custom installation hardware is constantly being designed and tested. With any method of installation, the first thought is always to create a safe and secure attachment of panel to substrate. Other factors must be considered and rarely is there only one specific method that is correct. Consult the product manufacturer for up-to-date and expert ideas.

Lighting and Fabric Panels

Consideration of the lighting environment is important. While cross-lighting can enhance the aesthetic and dramatic appearance of an acoustical wall panel, be aware that it can also lead to undesirable effects for the fabric panels.

Ask the panel manufacturer to make a mock-up panel, using the specified fabric and substrate, and conduct test lighting that simulates the lighting that will occur on the project. After observing the results, decide whether to: accept the look of the panel; select a new panel; or soften the cross-lighting.

Since some fabrics do better than others in cross-lighting, avoid:

- Thin fabrics that accent inherent irregularities in the panel substrate
- Shiny fabrics that may look bubbled or dented in light reflections
- Fabrics with large, open weave that accent inherent irregularities in the panel substrate. Contact your manufacturer for recommended fabrics.



Acoustical Testing

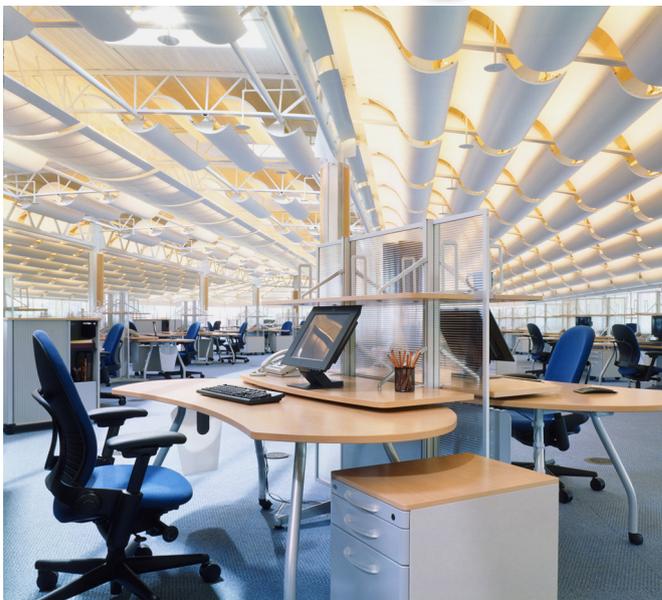
Acoustics of a room are those qualities that determine its character with respect to distinct hearing – the acoustical environment. This environment can be made pleasant with wanted sounds – or it can be polluted by unnecessary and unpleasant sounds.

The reflection of sound signals can enhance the quality and signal strength of both speech and music – and noise, such as echoes and reverberation. A sound wave reflected by a surface always loses part of its energy. The fraction of energy that is not reflected is called the sound absorption coefficient of the reflecting surface.

All acoustical panel manufacturers must have their products tested to determine each product's ability to absorb noise/sound. These properties are included in manufacturers' published literature. The sound absorption tests are conducted by NVLAP-certified test labs under test procedures as spelled out by ASTM C 423. Tests determine the sound absorption at eighteen third octave band center frequencies between 100 Hz and 5000Hz. The Noise Reduction Coefficient (NRC) and the Sound Absorption Average (SAA) are derived from this data.

The design authority must ensure that their project manufacturers have invested in sound tests because significant differences result from various manufacturing controls. For example, too much adhesive applied can mask the sound absorption qualities, reducing the product's Sound Absorption Coefficient. Similarly, a heavy acrylic backing will also reduce the absorptive ability of one fabric over another.

It should be noted that custom acoustical panel manufacturers most often test their products using standard fabrics and finishes. Designers are urged to contact manufacturers if there is some doubt about a covering material.



Flame Spread Ratings

Many factors influence fire spread in buildings, and one of the most important is the selection of interior finish material.

The purpose of testing is to provide design authorities with adequate information so they can select the appropriate materials for building interiors.

Designers should be cautioned that most manufacturers will have had flame spread testing done for common fabrics. It is important to consider testing results for the many combinations of fabrics, core material and adhesives used. It cannot be assumed that testing has been done for all combinations. Quality manufacturers are always prepared to provide their test results.

Allowances should be provided to have any needed flame spread testing done. Not all fabrics will pass a flame spread test. The design authority is encouraged to re-search local building codes and consult with a reputable manufacturer to avoid problems and liabilities.



Considerations

Paper backing and acrylic backing have negative impact on acoustical transparency. Perforations, provided that there is no healing of the perforations, can have a positive effect. Consult your manufacturer.

Environmental Conditions

Many fabrics are affected by humidity and temperature variations, therefore affecting stability. Manufacturers can provide guidance. Testing fabrics to ASTM D6207 will show their dimensional stability.

Lighting

Consideration of the lighting environment is important. Lighting can enhance the aesthetic appearance of an acoustical panel. However, be aware that where panels are washed in light that is stronger from one direction than others, it may create unwanted shadows and impact appearance.

Repeat Patterns

If the finish material has a repeat pattern, provide the manufacturer with a detailed description of the pattern and how you want it to repeat horizontally and vertically. Even “random” patterns have repeat. This should be required in the shop drawings.

Minimum Fabric Orders

Be aware of possible special fabric minimum order quantities and other special requirements. For example, some special fabric manufacturers require the purchase of up to 20 percent of overrun quantities.

Repair and Replacement

Consider how much attic stock should be kept on hand for replacing worn or damaged panels. This should be based on actual panel sizes.

Cross References

Include the wallcovering cross reference in the specifications so the supplier of the panel finish material can coordinate dye lots, as well as the suitability and acceptability of the fabric by all concerned.

Customer-Own Material

If you require fabrics to be supplied by the customer(s), identify the customer-own-material (COM) fabric as precisely as possible. Provide the panel manufacturer with all the information needed to develop accurate manufacturing price data. Include vendor source for special fabrics.

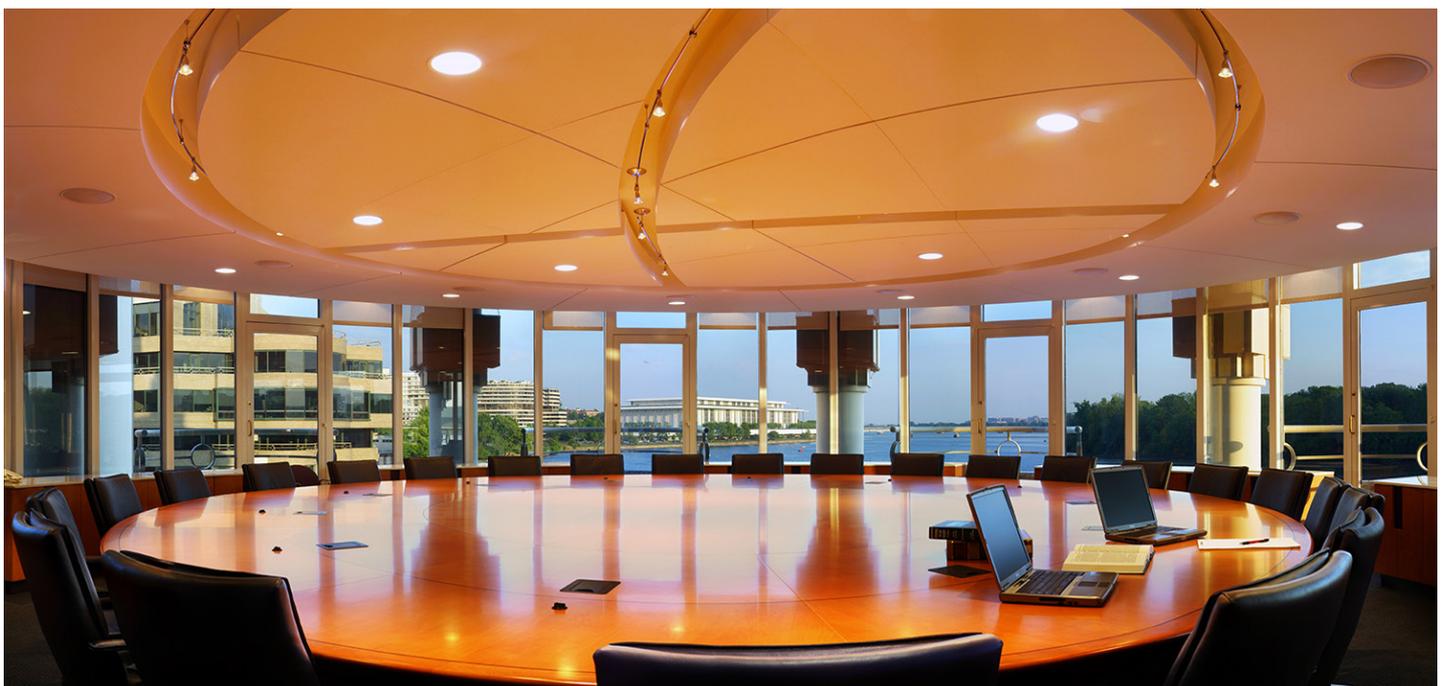
Care and Cleaning

Provide customers with fabric cleaning instructions to ensure the panels are properly maintained.

Product Testing

Specify adequate funds in the contract for appropriate composite fire tests, and make sure sufficient finish material is provided for these tests. The results of fire testing may not allow the use of the fabric you have selected.

If required, also provide sufficient finish material for suitability testing such as dimensional stability and acoustical performance. Be aware that the fabric of choice may not always be suitable.



Maintaining Quality

Field Dimensions

Taking accurate field dimensions is critical to quality control as precise measurements mean a better final product and fewer on-site modifications.

Most manufacturers have tolerances of +/- 1/16-inch for:

- Thickness
- Edge straightness
- Overall length and width
- Chords, radii and diameters
- Squareness from corner to corner

Mounting Methods

It is important to consult with manufacturers for the best method to mount wall and ceiling panels.

Installation

Selecting a quality contractor is equally as important as the materials you choose. The Ceilings and Interior Systems Construction Association can provide the names of contractors in your area.

CONCLUSION

Your requirements and instructions must be specific and clear because there are many people and organizations involved in your project. To ensure a successful project, this booklet provides a number of important considerations and encourages an open discussion of ideas and information with all team members.





Credits

Acoustical Wall Panel Committee

Reg Low, Sound Concepts Inc., Chairman

Chris Kysela, MBI Products Company, Inc.

Dave Gilbert, Sound Seal

Herb Golterman, G & S Acoustics (Golterman & Sabo)

Matt Swysgood, Kinetics Noise Control, Inc.

Ron White, Decoustics, Limited

Russell Leighton, Conwed Designscape, Owens Corning Co

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Sound Concepts Inc.

Sound Seal

True Textiles