

In any acoustical panel system there are basically three components—the core material, the panel fabric and the method of application. It may seem to the end user that the fabric is the most important element because it is the primary aesthetic component, or what we see. However, the finish and the panel fabric are only the visual part of the design process that has other important criteria.

An acoustical panel system has many purposes and often has multiple uses. They must function properly in various environments that the design team may not be aware of. **Truetone**<sup>®</sup> fabric wrapped panels, as a rule, have acoustics in mind. A glass fiber core provides high acoustical value. It is a versatile core material constructed of noncombustible fibrous glass mat bonded and manufactured into a rigid board. It can be cut to specified shapes and sizes. Edges can be profiled to produce a variety of details and are typically reinforced with chemical hardeners. The ability to use the panel as a tackable surface, impact resistance, cleanability, fabric interchangeability, design cycle and costs are important design factors. **Tacwall**<sup>®</sup> panels are made of a lightweight mineral fiberboard. The inorganic mineral fibers resist moisture which minimizes expansion and warpage. The environment in which the panel performs is often a forgotten element, which must be addressed during the design stage.

At **Signature Craft**, we strongly believe that the proper acoustical panel system should be chosen first, as this selection controls the types of finishes. All acoustical panel systems attach the fabric in one of two ways, either by stretching the fabric over the core material (**Snap-Tex**<sup>®</sup>), or the fabric is adhesively applied (**Truetone**<sup>®</sup>, **Tacwall**<sup>®</sup>, or **Chroma**<sup>®</sup>). Systems that stretch the fabric over the core material (**Snap-Tex**<sup>®</sup>), also known as stretched fabric wall systems, are inherently superior because they have more flexibility. The fabric can be replaced and such systems are easily cleaned by normal upholstery cleaning methods. Snap-tex<sup>®</sup> has a rigid polymer track that resists cracking onto which the fabric is tension attached and assembled on site, thus minimizing the lead-time. Stretched fabric wall systems are much more adaptable to “site built” conditions, and have much finer fit tolerances under varying substrates and adjoining work conditions. In addition, since they stretch the fabric over the acoustical material and not adhesively applied, the fabric will not mirror the surface characteristics of the infill or substrates.

Pre-manufactured panels (**Truetone**<sup>®</sup>, **Tacwall**<sup>®</sup>, or **Chroma**<sup>®</sup>) use an adhesive procedure to fasten the fabric to an acoustical core material. This type of panel makes up the overwhelming majority of pre-manufactured acoustical panels applications. Pre-manufactured fabric wrapped panels were the first panel type to become popular in the marketplace and are generally less expensive. Price tends to outweigh the limitations of adaptability, cleaning and repair costs, tolerances, and fit issues. Always remember that there are limits to types of fabrics and finishes that work well with this type panel system, and that industry tolerances are + or – 1/16” of an inch thickness, edges, dimension, radii, cord. And these tolerances can be on top of any drywall, CMU, or adjoining work tolerances. Generally very fine fits that may be desirable in high end office finishes are not possible. Clearly mockups should be done so that the end users expectations can be properly engineered. There are (definite) limits to the fabrics and finishes that can safely work with this panel system.

Framed stretched fabric panels usually have PVC or aluminum frames. Aluminum is superior as it is more rigid than PVC and is very durable. However, the aluminum frame rigidity does not allow any flexibility. PVC framed panels have proven too flexible to install with quality joints, producing less-than-optimum results. Framed panels are no longer in wide use as the advent of resin hardened fiberglass edges made the need for a frame obsolete.



Only the most stable, purpose-designed panel fabrics should be used with fabric wrapped acoustical or tackable panels. These types of woven fabrics undergo minimal expansion and contraction caused by humidity and/or temperature changes. Always keep in mind that operators of large spaces, such as theaters and conference facilities often regulate the HVAC units, causing temperature and/or humidity levels to rise or fall. The fluctuation in temperature and/or humidity can have disastrous effects such as bubbling or sagging on acoustical panels covered with a fabric or vinyl having a high moisture regain or dimensional instability.

Other considerations are jobsite readiness, material handling, prolonged storage and/or transportation that do not reflect environmental conditions approximating that of occupancy.

Pre-manufactured panels (**Truetone<sup>®</sup>**, **Tacwall<sup>®</sup>**, or **Chroma<sup>®</sup>**) are best used where quality of appearance and stable fabrics are desirable. Lower parameters in these areas equal lower cost, often desirable for the short life cycle installations. Installation is aesthetically compromised because this type of fabric wrapped panel is rigid as a result of the acoustical core material, regardless if framed or not. Dealing with variations in the dry-wall, structural substrate and adjoining ceiling or vertical work makes this pre-manufactured product second to a stretched fabric wall system. Exceptions are when such fabric wrapped panels are mounted independent of each other and where variations in the dimension of the fabric wrapped panel cannot be detected. The pre-manufactured panel industry has mutually agreed on a tolerance of +/- 1/16 of an inch for thickness, edge straightness, overall length and width, chords, radii and diameters, squareness from corner to corner as published by the CISCA Acoustical Wall Panel Committee.

Now you have an idea of the proper panel system to use. At this time the architect or designer should have discussions with the client regarding finish-level expectations, costs, scheduling, lead-times and expected environmental conditions. The panel fabric selection is the next step in the process; compatible with design criteria, the effect of lighting on the finish should be considered.

The fabric industry offers many products designed specifically for acoustical panels. It should be noted that there is a difference between the terms "can be used for" and "designed specifically for" and "has been used." Most fabric manufacturers claim their fabrics literally can be used for just about any purpose. But are they really suitable? Most fabric wrapped panels are basically acoustical in nature. Occasionally other performance criteria may need to be integrated. The panel fabric selection or finish must be acoustically transparent for the fabric wrapped panel to function properly in the space. Secondly, the panel fabric selection or finish must function properly on the chosen panel system within the environmental conditions of the space.

The guidelines below outline **Signature Craft's** considerations in choosing a fabric for a fabric wrapped panel system. We recommend specifically designed acoustical panel fabrics. These are fabrics that are 66" wide and 100% polyester, and make up 90% of the market. Such fabrics are acoustically transparent, work well on typical panel core material or site-built system, in every normal or nominal environment, and pass all widely accepted fire codes. Be aware that flame-retardant chemicals can be very corrosive to tacks, which can rust and then stain the fabric finish. We recommend inherently flame-retardant fabrics.

**Signature Craft** is of the opinion that the panel fabric selection or finish choice should be aesthetically pleasing, have durability, and work with the type of acoustical panel system best suited to your client's space and budget. The design professional can get wedged in a clash between the client's expectations and the manufacturer's recommendation of the acoustical panel system. We must try to make many potentially conflicting design elements work together. A mockup aids the design team in bringing out



issues that might be related to substrate qualities. The panel fabric selection is only one piece of the puzzle. Mockups prior to full scale manufacture under jobsite conditions are highly recommended to assess substrate quality, fit, lighting issues, and fabric appearance.

There are acoustical panel fabrics available, designed specifically for acoustical panel systems. They are not dual-purpose fabrics, though they may be adaptable for other uses. Keep in mind; the fabric industry is in business to sell fabrics. Manufacturers such as **Signature Craft** do not manufacture the fabric or finishes, but can end up linked to the performance and the aesthetic appearance of the end result.

A knowledgeable acoustical panel manufacturer or site-built system contractor will reject fabrics with any significant content of *natural fibers* such as *cotton* or *linen*; or *synthetic fibers* such as *Rayon* or *Nylon*. Fabrics with these characteristics are unstable under certain environmental conditions. If these fabrics are used they must be in a stable environment, using a high tension, site-built stretched fabric wall system like **Snap-Text**<sup>®</sup>.

*Thin fabrics* should be avoided since they are very susceptible to adhesive bleed through when used on the typical fabric wrapped panel. When used on a stretched fabric wall system the *thin fabric* can slip out of the track under slight pedestrian pressure. *Thin fabrics* can also be translucent, which may result in the read through of the core material color and texture. *Coarsely woven fabrics* can also exhibit this characteristic. Site-built stretched fabric wall systems avoid adhesive bleed through problems. A lining or fiberglass scrim should be considered if fabric read through is undesirable in both fabric wrapped or stretched fabric wall systems.

*Light colored, finely woven and shiny fabrics* are subject to distortions from the weaving process, from stretching during manufacturing, stretching during installation or when adhered to substrates that are within normal surface tolerance. Under various lighting conditions or viewing angles these distortions can look unattractive. The distortions are very evident if the panel is washed in direct lighting mounted at or slightly above eye level.

*Heavy, stiff fabrics or wall coverings* may not tailor well on the edges or corners of fabric wrapped panels. In addition they often resist lying flat across the core material because they are difficult to stretch. There are some *vinyls* on the market designed specifically for wall covering that carry the label of panel fabric. Care should be taken to check with **Signature Craft** before you specify one of these fabrics to make sure it will work on the panel core material you have specified. The inability to adhere these fabrics to the core material can be a problem and may require additional laminating methods that can severely affect acoustical performance.

*Patterned fabrics* should not be used without extensive research and thought. Always keep in mind that fabrics with a pattern can be very difficult to match at the seams. Patterns are usually off register to some degree, and the panel size itself dictates whether a match is possible. When a particular *patterned fabric* is able to match up on side by side panels, or can be installed in a stretched fabric wall system, then the pattern and register will govern the subdivision of the design. Stretched fabric acoustical wall panel systems have an advantage when you want to use *patterned fabrics* as they allow for the sewing of the seams, so you can force a match if there is not too much of a register problem. The installer will then stretch out the distortion caused by forcing the match when he applies the fabric. This requires the use of **Snap-Text**<sup>®</sup>, or some other high tension stretched fabric acoustical wall panel system.

*Backed fabrics and vinyl wall coverings* can be used as a panel finish for pre-manufactured panels, but need perforating for greater acoustical transparency. Such materials may need special backings so they can properly adhere to the acoustical core material. Unstable backing materials should not be used on



fabrics that are going to be used to cover a pre-manufactured acoustical panels. *Heavy stiff vinyls* and *heavily backed fabrics* do not tailor well creating unsightly corners. Care should be taken to investigate their expansion and contraction characteristics. Their use is not recommended.

Painted (**Chroma**<sup>®</sup>) acoustical panels are also available from **Signature Craft**. This type of panel is not well suited for use at pedestrian height, as they are easily damaged. Paint touch up and repairs may not be aesthetically pleasing, and effects acoustical transparency. The appearance can be subjective due to lighting conditions, finish type, and the diversity in panel surfaces. Mockups should be done when using painted panels because of the subjective nature of their appearance. They are also known to pick up colors from adjoining finishes, causing them to look a lot different than intended.

There are four basic methods of mounting acoustical panels, adhesive, hook and loop, Z-Clip, and magnetic mount. No one mounting type or system is suitable and best for all installations. Important factors involved are architectural design, appearance considerations, weight of the panels, location in which the panels will be installed, N.R.C. tolerances, etc. It is obvious the most important consideration is the secure and safe installation. Once the security question has been resolved, the other factors can be considered in order to achieve the most aesthetically pleasing appearance of the installation.

In general, most pre-manufactured panel installations can be done easily and inexpensively. The most common of all installations is adhesive mounting. The second most popular method is the Z-Clip mount, followed by the hook and loop, and finally magnetic mounting. What one must consider is the direct or sheer force being greater than the bonding power of the glass fibers to each other. Using our powerful impaler clips in addition to adhesive adds powerful mechanical backup and effectively blocks any negative sheer forces. Always question using Z-clips. Z-clips make the panels a slave to the substrates. Substrates can be uneven causing the panels to be uneven, making it impossible to have nice butt joints with adjacent panels or maintain normal tolerances with adjoining work. This method is best used when panels are independent or in designs using reveals. It should be noted that under certain seismic conditions Z-clip panels can unload and need to be locked in or backed up with adhesive, which negates what many people think is their advantage.

A variety of installation methods are available once the acoustical panel system is chosen. The method of applying the panel system to the substrate is equally as important as the materials you choose. **Signature Craft** can recommend a mounting method based on the type of acoustical panel system, the environment, substrate, and other design criteria.

Mock-ups under environmental and lighting conditions that approximate those of occupancy are highly suggested. The designer or owner should clearly communicate this requirement in the specifications.

An approved mock-up can be used as a standard of quality for the remaining work and allows everyone to see what the finished panel system will look like. This process allows the evaluation of the effects of actual space lighting. It is our experience that mock-ups have caught potential problems early enough to prevent disastrous situations and expensive fixes. Because the process must occur very close to the end of the project, the use of stretched fabric wall systems are most advantageous.

Please contact Signature Craft to help you evaluate core materials, panel fabrics, and mounting methods. Testing of fabrics on various types of acoustical panel systems can be provided. **Signature Craft** manufactures and installs acoustical **Truetone**<sup>®</sup>, **Tacwall**<sup>®</sup>, and **Snap-Tex**<sup>®</sup> acoustical wall panel systems.

