General Description
FXI acoustical materials are designed to perform a number of specific and seemingly opposite acoustical functions...either reducing sound levels or passing sound undistorted and undiminished. Certain non-reticulated foams are ideal for sound absorption and attenuation. Reticulated foams can absorb sound very effectively or can be completely acoustically transparent.

Acoustical foam absorbs the airborne or fluid-borne noise, causing a loss in energy by weakening reflected vibrations. Acoustical foam for sound absorption provides high efficiencies, consistentency, and predictablity from installation to installation.

Noise Absorption Applications
- Commercial aircraft ventilation ducts
- Headliners and back panels for tractor cabs and off-road vehicles
- Data-processing equipment
- Portable air compressors and power units, appliances, snowmobiles
- Headliners and panels for automobiles
- Anechoic test chambers

Sound fidelity applications
- Stereo speaker grilles
- Earphones
- Microphone covers

Benefits
- Predictable sound absorption in broad (low, mid, high) frequency range
- Nearly “total perfection” in sound transparency applications
- Fabrication design flexibility
- Functional/decorative laminate capabilities
- Installation ease
- Excellent shape retention, and resistance to wear and abrasion.
### Acoustical Functions

<table>
<thead>
<tr>
<th>Product</th>
<th>Function</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIF® Foam</td>
<td>Acoustically Transparent</td>
<td>Microphone wind screens, headphone covers</td>
</tr>
<tr>
<td></td>
<td>Air Diffuser</td>
<td>Power brakes units, mufflers</td>
</tr>
<tr>
<td>SIF® Felt Foam¹</td>
<td>Sound Absorber</td>
<td>General use for mid and high frequencies</td>
</tr>
<tr>
<td>AEROFONIC® Foam¹</td>
<td>Sound Absorber</td>
<td>Specialty use where FAR 25.853 rating is required</td>
</tr>
<tr>
<td>ARESTO™ Foam¹</td>
<td>Sound Absorber</td>
<td>General use where UL 94 HF-1 rating is required</td>
</tr>
<tr>
<td>PYRELL® Foam¹</td>
<td>Sound Absorber</td>
<td>Specialty use where UL 94 HF-1 rating and halogen-free are required</td>
</tr>
<tr>
<td>HYFONIC™ Foam</td>
<td>Sound Absorber</td>
<td>General use where UL 94 HF-1 rating and hydrolytic stability are required</td>
</tr>
<tr>
<td>Natural Acoustic Foam</td>
<td>Sound Absorber</td>
<td>General use where UL 94 HF-1 rating and renewable content are required</td>
</tr>
<tr>
<td>Custom Laminates¹</td>
<td>Sound Absorber</td>
<td>Specialty use for unique substrate combinations</td>
</tr>
</tbody>
</table>

¹ Available in a range of densities

### Typical Physical Properties

<table>
<thead>
<tr>
<th></th>
<th>SIF® Foam</th>
<th>SIF® Felt Foam</th>
<th>Aerofonic® Felt</th>
<th>ARESTO™ Foam</th>
<th>Pyrell® Foam</th>
<th>HYFONIC™ Foam</th>
<th>Natural Acoustic Foam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade</td>
<td>90 ppi</td>
<td>3-900</td>
<td>3-700</td>
<td>70 ppi</td>
<td>70 ppi</td>
<td>65 ppi</td>
<td>70 ppi</td>
</tr>
<tr>
<td>Foam Type</td>
<td>Polyester</td>
<td>Polyester</td>
<td>Polyether</td>
<td>Polyester</td>
<td>Polyester</td>
<td>Polyether</td>
<td>Polyether</td>
</tr>
<tr>
<td>Density (pcf)</td>
<td>1.9</td>
<td>5.4</td>
<td>5.4</td>
<td>1.9</td>
<td>2.0</td>
<td>1.9</td>
<td>1.9</td>
</tr>
<tr>
<td>Tensile Strength (psi)</td>
<td>35</td>
<td>100</td>
<td>75</td>
<td>24</td>
<td>22</td>
<td>17</td>
<td>14</td>
</tr>
<tr>
<td>Elongation (%)</td>
<td>415</td>
<td>450</td>
<td>315</td>
<td>260</td>
<td>220</td>
<td>190</td>
<td>160</td>
</tr>
<tr>
<td>Noise Reduction Coefficient @ 1.0”</td>
<td>1.0*</td>
<td>0.83**</td>
<td>0.49</td>
<td>0.35</td>
<td>0.34</td>
<td>0.35</td>
<td>0.34</td>
</tr>
</tbody>
</table>

¹ Tested in accordance to ASTM D 3574; not to be used as a specification
* @ 6”
** @ 2”

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Vibration Isolation

Noise transmission sound barriers are used to reduce the noise level being transmitted through a housing when the housing itself does not satisfactorily perform that function. When noise levels are severe, an additional high mass transmission reduction wall or septum is often required. Acoustical foam is applied as a decoupler between the housing and the inner septum, and as an absorber on the outer septum wall, to effectively absorb and reduce noise energy.

Applications
- Acoustical panels
- Aircraft
- Turbine engines
- Broadcast studios’ data processing equipment
- Power generators housings
- Automotive headliner

Vibration Damping

Acoustical foams are used to reduce vibrations of physical structures that, in turn, produce noise due to that vibration. In some cases, for maximum vibration reduction, acoustical foams are used in conjunction with a damping layer, such as a viscoelastic material.

Applications
- Air conditioning equipment
- Dishwashers
- Aircraft compartments
- High-speed rail cars
- Data processing machines
- Enclosed power units
- Engine housing

Sound Fidelity

Reticulated acoustical foams have been proven virtually acoustically transparent; effectively invisible to sound waves in audible frequencies. This is true even of foam two inches thick. A leading California stereo speaker manufacturer made this fact well-known by introducing a line of speakers that offered nearly perfect sound transparency through high performance foam grilles in a variety of colors.

Applications Include
- Stereo speaker grilles
- Earphones
- Microphone windscreen covers
- Smoke alarm grilles
FXI – Committed to Innovation, Service and Quality

For over 50 years FXI’s technology has been leading the way to new and innovative applications for polyurethane foam solutions. We have one of the largest R&D centers and hold more patents than most companies in our industry. Across an increasing range of markets and applications, our team is ready to help you solve your most complex problems. With manufacturing facilities across the country, FXI is there when you need us – ready to deliver the highest quality products to help your business grow.