The structure of Lumira® aerogel inhibits sound and vibration transmission not just by blocking, but by absorbing sound energy, creating significant sound control by reducing external and internal noise transfer.

The unique mechanical properties of Lumira particles enable it to absorb sound across a broad frequency band. Lumira aerogel-filled daylighting systems transmit much less sound than traditional systems, leading not only to better energy efficiency, but also quieter interior spaces. Lumira fabrics used in roofing systems can dramatically improve interior acoustics by significantly reducing reverberation and transmission of exterior noise. This means greater comfort for occupants, as well as freedom in design for mixed use facilities.

Energy is a key part of the sustainability concept. It is widely acknowledged that the construction, occupation and running of buildings accounts for close to half of all energy consumption in the USA and Europe. Not only can Lumira aerogel save energy and reduce CO2 emissions, it is also reusable when the building is decommissioned. Lumira aerogel is safe for human and ecological systems, and is manufactured with little to no impact on the environment. This means including daylighting systems with Lumira insulation in building designs can help create healthier living, recreational and work spaces, and can assist in securing LEED™ certification and meet or exceed stringent building codes such as Part L in the UK, Energieinsparverordnung in Germany, and Reglementation Technique in France. Lumira aerogel holds Silver Cradle to Cradle® certification from McDonough Braungart Design Chemistry. Cabot Aerogel is also a member of the American Architectural Manufacturers Association and the US Green Building Council.

About Lumira® Aerogel

Aerogel is among the lightest and most effective insulating materials in the world. Cabot’s Lumira™ brand aerogel, is a solid which consists of air (90%) contained in a structure with pore sizes less than the mean free path of molecular diffusion, which severely inhibits heat transfer through the material, enabling wideband performance. Cabot produces Lumira aerogel at one of the world’s manufacturing facilities located near Frankfurt, Germany where it began commercial production in 2003.

Hear the difference

Reduce your carbon footprint

Cabot Aerogel is a business of Cabot Corporation, a global specialty chemicals and performance materials company, founded in 1882 and headquartered in Boston, Massachusetts, USA.
Studies show that comfort, productivity, learning, and customer consumption/retention are significantly improved by the tactical use of natural light at the primary source of illumination in classrooms, schools, hospitals, homes, and retail environments. Traditionally, this has resulted in a compromise, as the conventional materials used to transmit natural light have demonstrated an inability to insulate, while highly insulative materials have been unable to transmit meaningful quantities of daylight. Current transparent daylighting systems, while allowing maximum daylight, also bring problems such as glare, solar overheating, drafts, hot spots, and high contrast zones. Harnessing the exclusive properties of Lumira® aerogel for use in daylighting systems has changed all that, with:

- Unparalleled thermal insulation – R-value of 8 per inch / U-value of 0.75 W/m²K per 25 mm
- Increased natural light transmission – > 90% per 3/8 inch or 10mm
- Superior light diffusion – elimination of glare
- Improved acoustic performance
- Reduced solar heat gain/loss
- Decreased energy consumption – heat, air conditioning, lighting, ventilation, carbon emissions
- Unmatched moisture resistance – 100% hydrophobic
- Exceptional color stability and insulation performance

Lumira® aerogel maintains and enhances energy efficiency while enabling a wide range of commercial and residential building design choices, allowing architects and building owners to proactively reduce the carbon footprint of their buildings. The inclusion of Lumira aerogel in daylighting systems virtually eliminates the historical trade-off of insulation vs. natural light by providing 3 to 6 times the thermal performance of traditional, poorly insulated fenestration products, while maintaining optimal light transmission. As a result, even large daylight surface areas can maintain high energy efficiency by reducing thermal loads.

### Insulation Values of Existing Building Insulation Products

<table>
<thead>
<tr>
<th>Insulation Type</th>
<th>R-Value</th>
<th>U-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiber Glass Insulation</td>
<td>3.5</td>
<td>0.45</td>
</tr>
<tr>
<td>Mineral Wool Insulation</td>
<td>4.5</td>
<td>0.38</td>
</tr>
<tr>
<td>Fiberglass</td>
<td>4.0</td>
<td>0.40</td>
</tr>
<tr>
<td>Cellulose</td>
<td>3.0</td>
<td>0.40</td>
</tr>
<tr>
<td>Rockwool</td>
<td>3.7</td>
<td>0.39</td>
</tr>
</tbody>
</table>

### Why Lumira® aerogel?

Cabot partners with architects and building owners to understand their evolving needs, providing solutions that optimize aesthetics and daylighting design while addressing increasingly stringent building and energy code requirements. As a global leader in infrastructure solutions, Cabot’s products are developed with transparency in mind. Translucent Lumira® aerogel maintains and enhances energy efficiency while enabling a wide range of commercial and residential building design choices, allowing architects and building owners to proactively reduce the carbon footprint of their buildings. The inclusion of Lumira aerogel in daylighting systems virtually eliminates the historical trade-off of insulation vs. natural light by providing 3 to 6 times the thermal performance of traditional, poorly insulated fenestration products, while maintaining optimal light transmission. As a result, even large daylight surface areas can maintain high energy efficiency by reducing thermal loads.

Lumira daylighting system projects have been installed all over the world. When incorporated into the following systems, in both roofs and facades, Lumira® aerogel offers architects and building owners a multitude of design benefits. Whether the installation is horizontal, vertical, or at an angle, Lumira insulation retains its properties, enabling uninterrupted thermal efficiency, while allowing exceptional daylight and optimized building aesthetics without sacrificing, but actually improving, occupant comfort and productivity. Lumira daylighting system projects have been installed all over the world. Visit our website, www.cabotaerogel.com, for project profiles and more information.

### High performance daylighting

#### Skylights and Façades

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### Structural Composite Panels for Insulated Glass Units

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### High efficiency, lower costs

Strengthening the customary weak link of the building envelope with high performance Lumira daylighting systems considerably impacts cost and energy efficiency in a variety of ways. The natural light diffusion and glare elimination provided by Lumira aerogel can replace or supplement artificial lighting, resulting in significant energy and demand savings. Heat loss and gain are controlled by the unique characteristics of Lumira particles, which inhibit heat transfer, measurably impacting HVAC loads and occupant comfort, at great energy savings to the building owner. The UV stability, durability, and moisture resistance of hydrophobic Lumira insulation result in extended product life and lower long-term operational costs. These benefits hold true even in extreme or demanding applications such as passive houses, zero-carbon or positive energy buildings.

### Insulated Glass Units

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### Structural Polycarbonate Skylight Systems

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### Smoke Vents

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### Tensile Structures / Fabric Roofing

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