

SILENT INERT COMPOSITE

Over 30 years ago, Avalon Acoustics pioneered the first inert cabinet structures, inventing the constrained layer damping system and thick non-resonant baffle designs. These heavy low-resonance structures evolved to harmoniously utilize the energy field which all loudspeaker enclosures generate.

Our quest for the ultimate presentation of sonic holography has led us to a seminal innovation in enclosure design and fabrication, our proprietary Silent Inert Composite (SIC) structural system.

SILENT

The goal of a high-end dynamic loudspeaker structure is to disappear. The less the cabinet contributes non-corelated vibration, the better. The shape of the cabinet, internal baffling compartments, structural damping, as well as the material itself, each add to the success of the disappearing act.

Materials themselves each have distinctive eigenmode (sympathetic vibration) characteristics. Our philosophy is to eliminate sympathetic high-energy resonance spikes from the cabinet structure, regardless of the frequency at which they occur. Spikes in the odd-ordered harmonic spectrum are the most detrimental, adding a hard and smeared quality to the soundfiled even when occurring above 50K Hz. Generally, materials follow a continuum in this regard, with metals being the worst offenders and natural amorphous materials being the best. Our goal was to achieve exceptional stiffness, coupled with high viscoelastic damping qualities.

INERT

Beyond the sonic benefits of improved damping and stiffness, when SIC material is used as a building block in our three-dimensional jig-saw puzzle cabinet construction, it is impervious to influence from ambient conditions. High humidity, above average temperatures, and acidic air quality will not cause deterioration or distortion of the physical cabinet structure. No fasteners have ever been used in our constrained-layer cabinets. Our extensive research into permanent adhesives with strengths matching the SIC, bond the multiple structural elements of each cabinet into an inert whole.

COMPOSITE

Silent Inert Composite is 5 times stronger than our previous ligneous construction material and yet significantly lighter in weight. This proprietary cross-linked/closed-celled structure is a combination of inorganic compounds. We have taken the low-mass/high-stiffness concepts utilized in aircraft and automotive racing composites to create a proprietary material specifically tailored for our audio enclosure needs. Unlike brittle carbon fiber components which shatter under extreme stress, SIC cabinet structures will not sheer or fracture. By retaining a higher mass to strength ratio than dictated by an application where weight is the primary concern, we avoid this downside. Still each loudspeaker will weigh between 20% and 30% less than previous models.

THE SYSTEM

No single material, regardless of its density or intrinsic resonance will produce a uniformly damped structure. Multiple materials must be utilized, combining the stiffness and elasticity of each into a synergistically intertwined system.

All engineering and design innovation should be in service to the music. Lowering the noise floor and reducing the sonic fingerprint of the cabinet produces clearly audible results. Backgrounds are blacker, micro-dynamic contrasts higher, and tonal colors more vivid. Thoughtful dedication to each engineering detail of our SIC system brings you closer to the original musical event, the quest for true fidelity.