The zeta flux™ product in the Lydall flux™ product family is a multi-layer composite shield designed for application environments marked by aggressive vibration and noise generation. The composite material is designed to damp the vibration response across a broad band of frequencies which reduces mechanical stress resulting from inertial forces and essentially eliminates parasitic noise generation.

**Viscoelastic Layer**

**Low Temperature (LT)**
- $T_{\text{shield}} < 140 \, ^\circ C$
- Laminated Polyethylene

**Mid Temperature (MT)**
- $T_{\text{shield}} < 220 \, ^\circ C$
- Co-Laminated Acrylic

**High Temperature (HT)**
- $T_{\text{shield}} < 350 \, ^\circ C$
- Co-Laminated Silicon

**Metallic Layers**
- Aluminum 1050-O or 1100-O depending on the market
- Gauges from 0.1 mm to 1.0 mm are possible
- 2 x 0.3 mm is a common composite and consistently provides desired results

**Thermal Performance**
- Low emissivity surfaces for high infrared radiation environments
- High lateral thermal conductivity to spread heat

**Acoustical Performance**
- High transmission loss for better acoustic isolation
- Marked vibration damping
- Essentially acoustically transparent - no contribution to noise levels
  - No cooling ping / No impact ring

**Mechanical Performance**
- Improved damping reduces the vibration response and transmissibility of the heat shield resulting in a decreased stress

**General Performance Characteristics**
- Resistance to all common automotive fluids
- Non-inflammable composite per FMVSS 302
- Long-Term high temperature resistance
- No delamination
Design Considerations

- To optimize damping performance, the metallic layers should have identical thickness to ensure the neutral axis of the composite is centered in the VE layer.
- The common design goal of achieving a minimum first resonant frequency is not applicable to this composite. Optimizing the metallic layer thickness to achieve durability testing requirements is the primary motivation for altering the metal gauge.
- Metal gauge will not impact thermal performance and should only be considered for mechanical purposes.
- Embossing facilitates the metal forming process and rigidifies the parent materials, but does not affect thermal performance.
- Distance plays a fair role in determining thermal responses, but marked swings in temperature only occur across large incremental changes in distance.
- The mechanical integrity of the shield is highly coupled to the location of lower order vibration modes and their amplification relative to the vibration input levels and frequencies.
- Contact us for applications support; we are quietly keeping it cool.