

DRIVE DOWN HEAT AND NOISE.

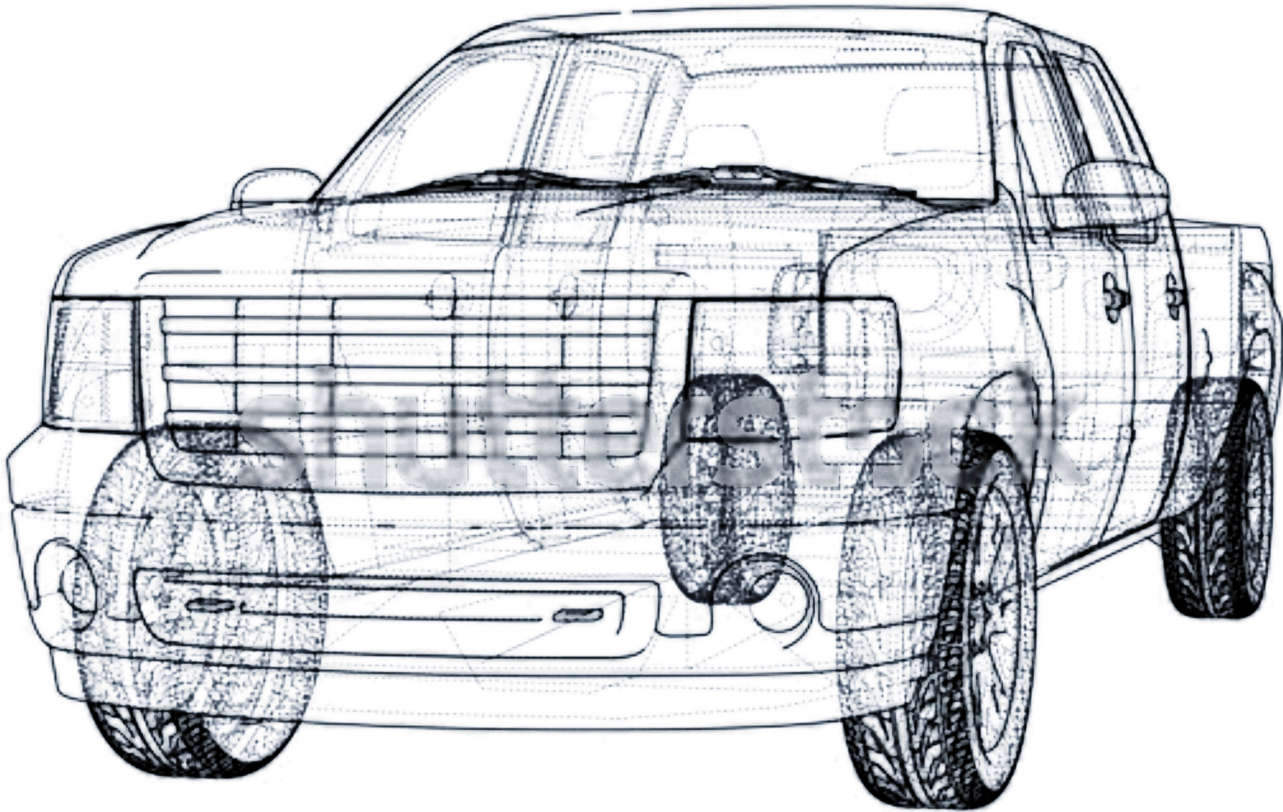
Medium duty work vehicles are always on the move, meaning operators are frequently in and out to get the job done. Excess noise and vibration in the vehicle can add to the toll of an already demanding workload – both for the driver and the vehicle itself.

The ideal light-duty work truck is durable, dependable – and comfortable. While the exterior is built to withstand tough conditions, the interior needs to be a quiet space with controlled temperatures. Aearo Technologies helps you engineer for greater comfort, with thermal and acoustic solutions designed for your vehicle. How? By preventing heat from transferring from the engine compartment to the cab, and by keeping the noise outside the cab. Plus, decreasing thermal transfer also helps conserve energy, thereby extending battery life

Our thermal acoustic packages not only improve the driving experience for workers: they also help protect the service life of the vehicle – and ultimately your bottom line.

LIGHTWEIGHT SOLUTIONS FOR A COMFORTABLE RIDE





Taking a system approach

The first step is to understand the potential decibel levels and noise sources. Our Acoustic Technology Center uses a simple methodology to identify thermal and acoustic problems – and intricate modeling and validation to develop an efficient solution package. Data is generated by testing in our hemi-anechoic dynamometer room, or one of our reverberant chambers. These rooms allow for measurement of either entire systems or components within the system.

We then use the data together with CAD models to design a package that either treats overall decibel levels or strategically targets noise sources. Combined with on-site testing, this helps avoid the time and expense of trial-and-error testing – and validates that the package meets your goals.

● Thermal Acoustic Fibers: 3M™ Thinsulate™ TK Material Insulation

Application Areas

- Walls
- Ceilings
- Dashboard

● Thermal Acoustic Foam: Acoustic Absorbing Foams

Application Areas

- Engine compartment

● Thermal Management: TUFshield™ Barrier

Application Areas

- Exhaust
- Underbody
- Engine Compartment

● Structural Damping: ISODAMP™ Materials

Application Areas

- Walls
- Ceilings
- Floor
- Engine Tunnel
- Front wall

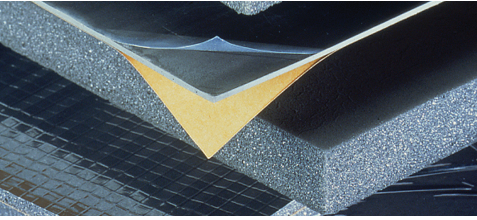
● Display/Sensor Protection Material: CONFOR™ SC Foam and ISODAMP™ Isolators

Application Areas

- Infotainment
- Mirrors
- Sensors
- Camera

Thermal Acoustic Foam

Acoustical absorbing foams are widely used to reduce noise levels within the engine compartment and cabin areas of the truck.



Thermal Acoustic Fiber Insulation

3M™ Thinsulate™ TK Insulation is a high performance, low density material whose acoustic and thermal properties make it ideal for the cab walls and floor.



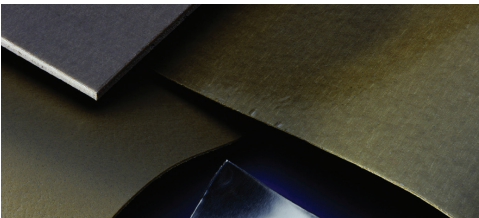
Heat Management

TUFshield™ thermal barriers provide protection from high temperature environments to protect components and systems from unwanted thermal intrusion.



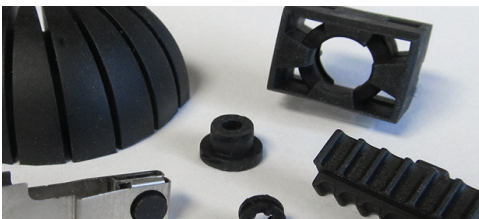
Structural Damping

ISODAMP™ damping materials offer practical, effective solutions for impact noise and structureborne noise.



Display/Sensor Protection

CONFOR™ SC foam can be used as a shock pad or gasket to help protect LCD and LED screens. ISODAMP™ molding elastomers are used as a component isolator to help reduce errors and buzzes, squeaks, and rattles (BSR) throughout the cabin.



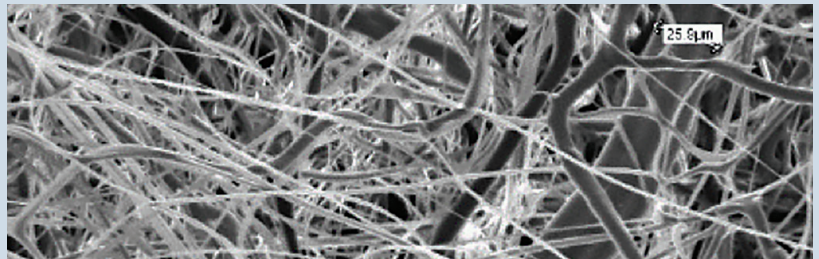
SHAPING THE FUTURE

For the first time, high-temperature 3M™ Thinsulate™ Insulation can be molded to form custom 3D shapes. Aearo Technologies LLC pioneered this breakthrough process with commercial vehicles in mind. Now, multi-part thermal and acoustic insulation can be streamlined to a single, self-supporting 3D molded part that is faster and easier to install. But the benefits go far beyond shape: 3D molded 3M Thinsulate insulation offers 2–3 dB better acoustic performance at 60% less weight compared to shoddy.

- **Increased acoustic performance:** better absorption and transmission loss with lower weight than shoddy
- **High temperature survivability:** 150°C (302°F) long-term operating temperature
- **Custom one-part design:** can be molded to variable thicknesses within the same part
- **High stiffness and loftiness:** molded structure can fill cavity and maintain its complex shape with structural rigidity
- **Quicker installation:** one-piece design speeds installation and simplifies attachment
- **Faster design cycle:** vertically integrated process from design and prototyping through testing, validation and production
- Additional weights and facings are under development



Thin and lightweight 3M™ Thinsulate™ insulation material is made of fine microfibers that trap air and block heat loss. Custom designed parts can be molded in a single piece for faster, easier installation – and to reduce leakage from gaps. The three-dimensional parts are stiff enough to be self-supporting while filling the application cavity.



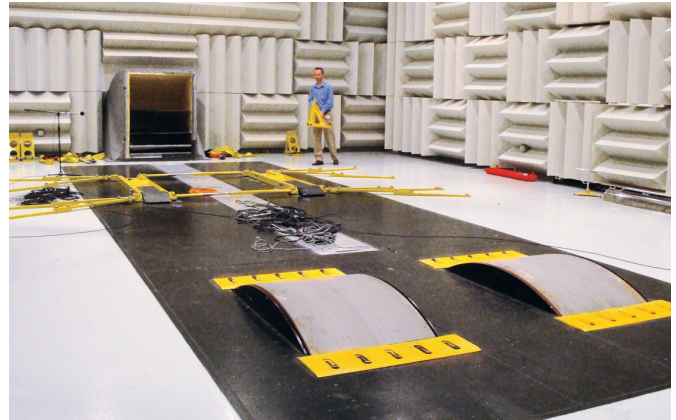
Filtering out the noise

The state-of-the-art Acoustic Technology Center and our experienced technical team are the keys to engineering the optimal thermal acoustic package for your vehicle.

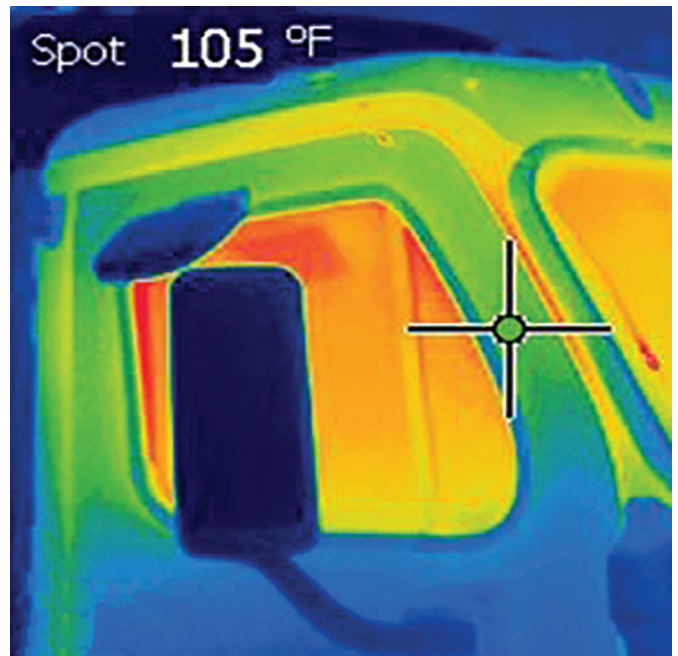
The first step to designing the optimal thermal acoustic package is understanding the unwanted acoustic and thermal sources in your vehicle. Acoustic investigation can be conducted in our hemi-anechoic room, or one of our reverberant chambers. These rooms allow for measurement of either entire systems or components within the system.

Thermal testing is conducted to establish the vehicle hot spots and the spread pathways for the unwanted heat. This allows the team to target the exact problem areas and halt the spread into sensitive areas.

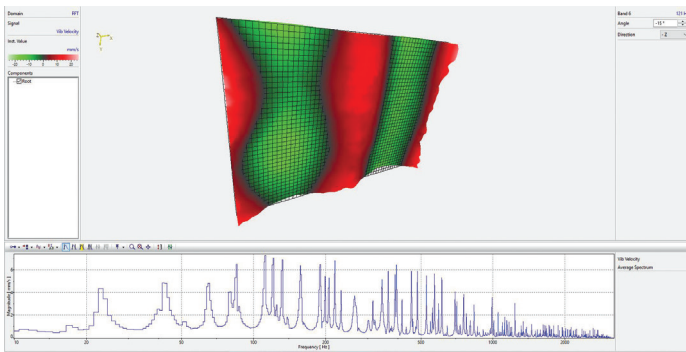
Once the noise sources and thermal areas have been determined, the team creates the optimal solution package to eliminate or disrupt noise and thermal transmission throughout the system.



Hemi-anechoic chamber with dynamometer for testing of vehicles.



Thermal testing to pinpoint the heat sources and escape pathways.



Laser Doppler Vibrometer testing determines both the frequency and the amplitude of the structural vibration from the vehicle panels. With this information Aearo can pinpoint the areas within the structure that are radiating noise. This helps Aearo engineer the optimal solution by using the right material, at the right location, in the right shape.

Technical Information

The data listed in this data sheet are typical or average values based on tests conducted by independent laboratories or by the manufacturer. They are indicative only of the results obtained in such tests and should not be considered as guaranteed maximums or minimums. Materials must be tested under actual service to determine their suitability for a particular purpose.

Warranty, Limited Remedy, and Disclaimer

Unless an additional warranty is specifically stated on the applicable Aearo Technologies product packaging or product literature, Aearo Technologies warrants that each Aearo Technologies product meets the applicable Aearo Technologies product specification at the time Aearo Technologies ships the product. Aearo Technologies MAKES NO OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY OR CONDITION ARISING OUT OF A COURSE OF DEALING, CUSTOM OR USAGE OF TRADE. If the Aearo Technologies product does not conform to this warranty, then the sole and exclusive remedy is, at Aearo Technologies's option, replacement of the Aearo Technologies product or refund of the purchase price.

Limitation of Liability

Except where prohibited by law, Aearo Technologies will not be liable for any loss or damage arising from the Aearo Technologies product, whether direct, indirect, special, incidental or consequential, regardless of the legal theory asserted, including warranty, contract, negligence or strict liability.