

Noise and vibration solutions on the road – and on the job.

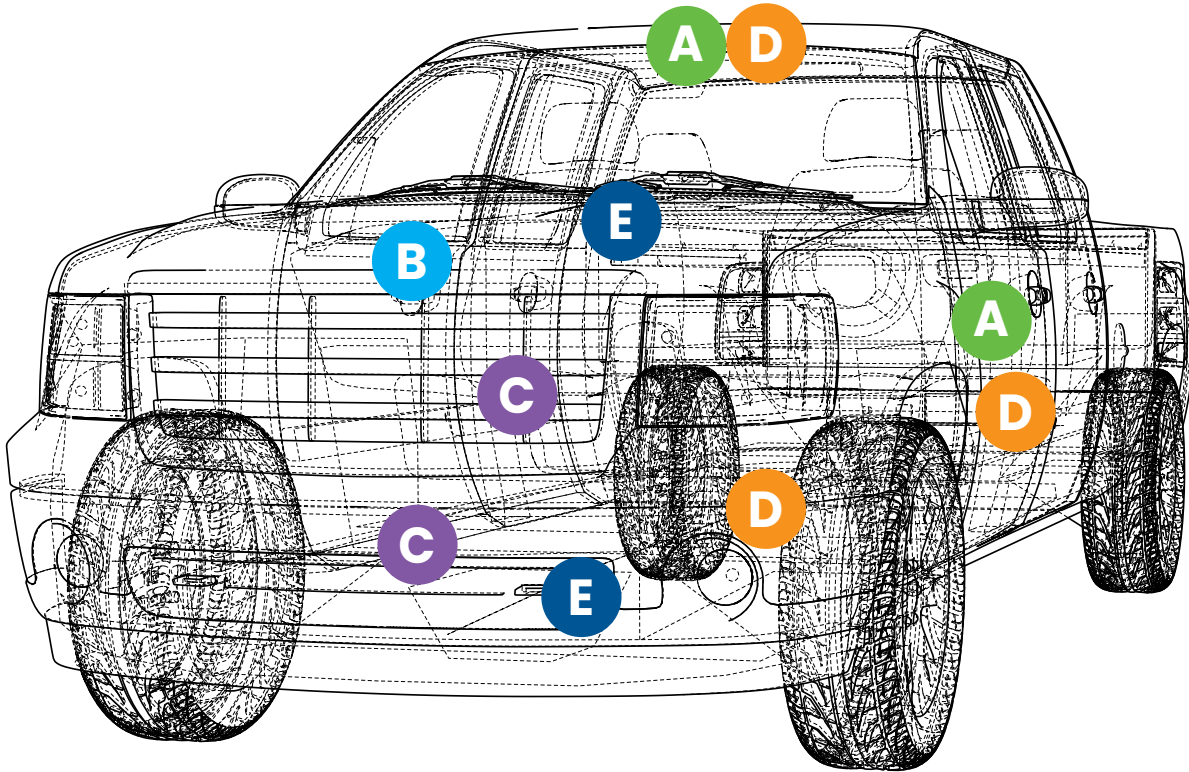


Product Description

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 medium duty work truck is both tough and luxurious. While the exterior is built to withstand rough conditions, the interior needs to be a quiet and comfortable space. How does Aearo

help make that possible? By keeping heat from transferring from the engine compartment to the cab and the noise outside of the cab. Besides helping with passenger comfort, decreasing the thermal transfer also helps conserve energy and therefore extend 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.



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.

A Thermal Acoustic Fibers: **3M™ Thinsulate™ TK Material Insulation**

Application Areas

Walls Dashboard
Ceilings

B Thermal Acoustic Foam: **Acoustic Absorbing Foams**

Application Areas

Engine compartment

C Thermal Management: **TUFshield™ Barrier**

Application Areas

Exhaust Engine Compartment
Underbody

D Structural Damping: **ISODAMP™ Materials**

Application Areas

Walls Engine Tunnel
Ceilings Front wall
Floor

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

Application Areas

Infotainment Sensors
Mirrors Camera

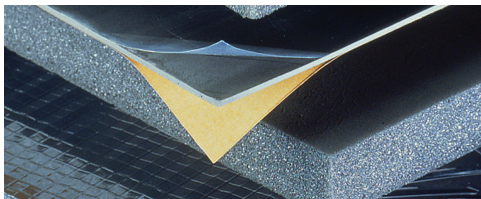
Thermal Acoustic Fiber Insulation

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.



Thermal Acoustic Foam

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



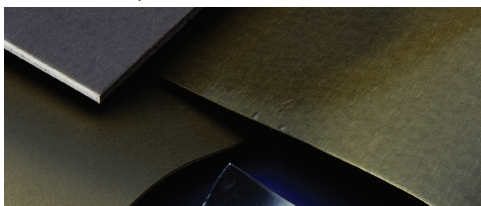
Heat Management

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.

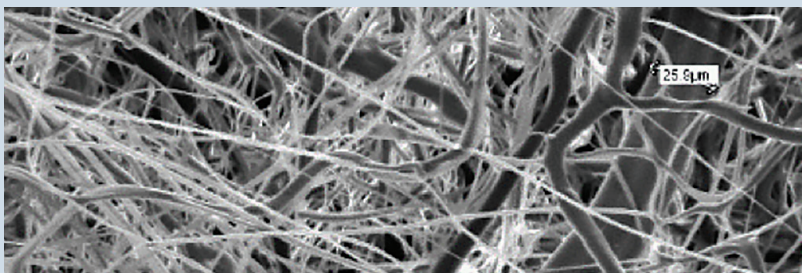


Shaping the future

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.



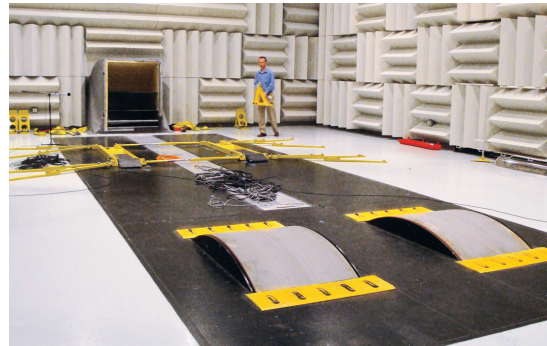
Filtering out the noise

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.

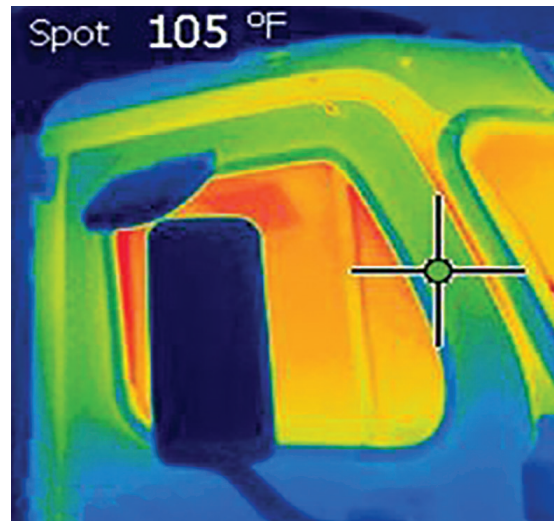
The first step to designing the optimal thermal acoustic package is understanding the unwanted acoustic and thermal sources in your vehicle. Acoustic investigation can be conducted in our hemi-anechoic room, or one of our reverberant chambers. These rooms allow for measurement of either entire systems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

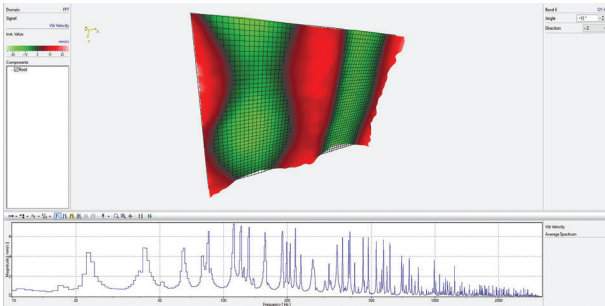
Once the noise sources and thermal areas have been determined, the team creates the optimal solution package to eliminate or disrupt noise and thermal transmission throughout the system.



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 us 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.

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