The iso flux™ product in the Lydall flux™ product family is a thermal encapsulation that serves to protect sensitive components from heat radiated by the exhaust line and maintains thermal calories in the exhaust line to facilitate catalyzation and filtration processes. A low thermal conductivity fiber is placed in direct contact with the exhaust line component and is covered with thin metal layer.

**Metallic Layers**

(i) Stainless Steel
- Austenitic and Ferritic grades based on temperature, environmental and economic constraints.
- Flat or embossed
- Shield $T_{\text{max}} < 1000 ^\circ C$

(s) Aluminized Steel
- Various aluminized coating weights as a function of environmental/corrosion resistance requirements
- Flat or embossed
- Shield $T_{\text{max}} < 500 ^\circ C$

(a) Aluminum
- Flat or embossed
- Shield $T_{\text{max}} < 300 ^\circ C$

**Insulation Layer**

(n) Fiber
- Thickness can be varied based on packaging space through the use of a 3D formed fiber
- 2D mat thickness ranges from 1 mm to 25 mm
- Low thermal conductivity
- Low shot content - excellent mechanical durability
- High Operating temperature ~1100 $^\circ C$

**Thermal Performance**
- Low emissivity surfaces for high IR environments + low thermal conductivity
- Combined functions: thermal shielding and isolation
- Homogenous temperature distribution in exhaust component

**Acoustical Performance**
- Decoupling of exhaust component with the engine compartment
- Marked noise absorption on fiber side
- Option to pierce/perforate the metallic layer to increase noise absorption

**Assembly**
- In-house: hemming, spot welding or mechanical fasteners
- Delivered ready to assemble – through similar or customer specific methods

**Applications**
- Turbochargers – Improved operation through homogenized temperatures
- Catalytic Converters – Improved oxidation at start-up
- Manifolds for improved scavenging
- $\text{No}_x$ Filters – More efficient regeneration cycles
Heat shield skin temperature of an isolation shield with varied fiber thickness

Design Considerations

- Metal gauge will not impact thermal performance and should only be considered for durability and assembly.
- Embossing facilitates the metal forming process and rigidifies the parent materials, but does not affect thermal performance.
- The shell assembly can be completed through hemming, spot welding or through the use of mechanical fasteners.
- Ambient air temperature and convection effects play a large role in component and shield temperatures.
- Consider the application area and distinguish between Underbody and Underhood applications.
- Distance plays a fair role in determining thermal responses, but influences temperatures only across large incremental changes.
- The mechanical integrity of the single layer shield is highly coupled to the location of lower order vibration modes and their amplification relative to vibration input levels and frequencies.
- Contact us for applications support; we are quietly keeping it cool.

All data and statements concerning these products may be considered as being indicative of representative properties and characteristics obtainable. We make no warranty, express or implied, concerning actual use or results because of industry specific influences.

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