BOYD
TRUSTED INNOVATION

TECHNICAL DATA SHEET

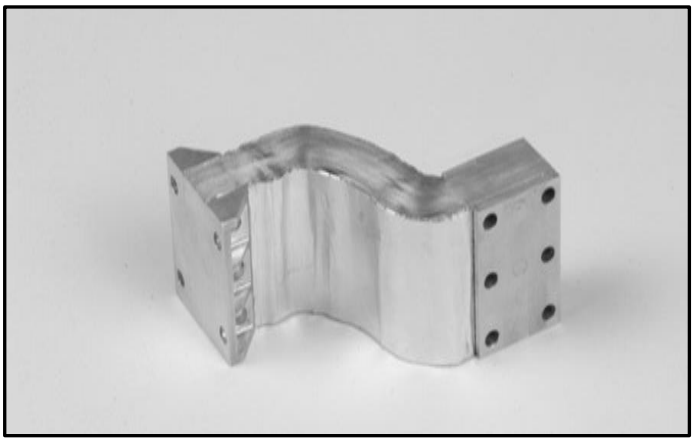
Flexible Thermal Conductors -- Thermal Straps & Strap Assemblies

Boyd has developed a family of flexible thermal conductors. Metal and highly conductive Annealed Pyrolytic Graphite (APG) designs are available as “simple point-to-point” conductors or in complex strap assemblies. These products are used worldwide on many advanced platforms.

Custom Metal Foil Thermal Strap

Key Features and Benefits

- Metal foil thermal strap assemblies are layered metal foils with consolidated end flanges. k Technology’s design and consolidation methods ensure high conductance and high flexibility.
- Metal foil strap assemblies are fabricated from a variety of metals including aluminum and copper. Designs using 0.0005 to 0.0100 inch thick foils have been produced.
- Strap assemblies are designed, built and tested to comply with customer requirements such as conductance, stiffness (flexibility) and mass.

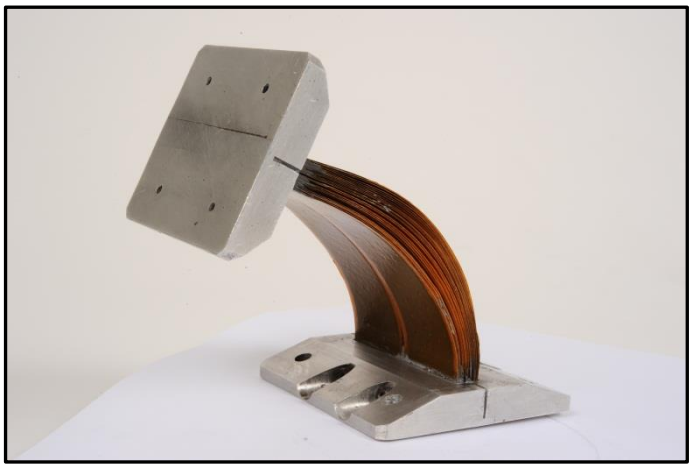


Metal Foil Thermal Strap Assembly

Custom Encapsulated APG Thermal Strap Assemblies

Key Features and Benefits

- k Technology has developed thin encapsulated Annealed Pyrolytic Graphite (APG) thermal straps. These Polyimide APG straps typically are 3 to 5 times more conductive per mass than aluminum foil designs and 9 to 15 times per mass of copper foil designs.
- APG is highly conductive graphite (4X the conductivity of copper) which is flexible in thin sections (< 0.01 inch).
- Encapsulation materials include polyimide, aluminum foil, or copper foil.

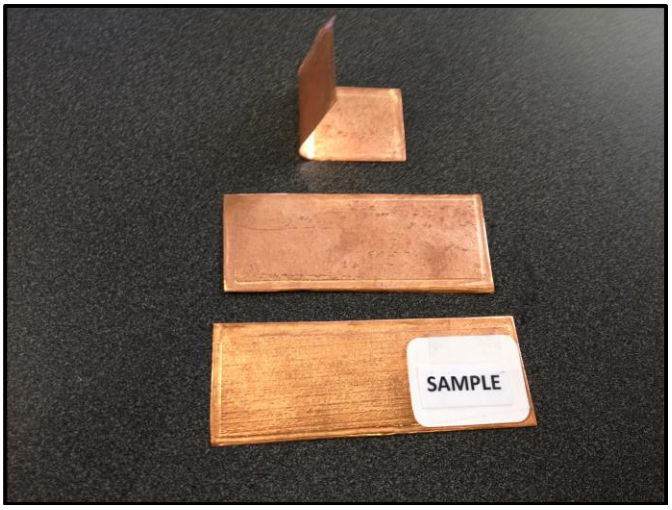


Polyimide APG Thermal Strap Assembly

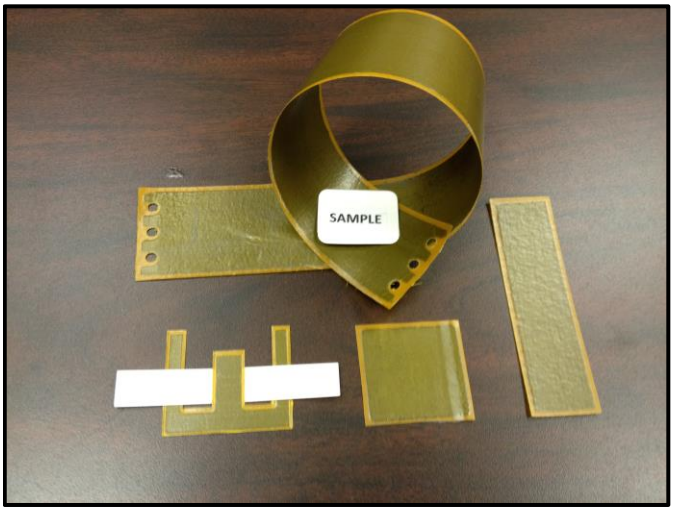
Highly Conductive k-Core® Thermal Straps

Thin "Point-to-Point" Thermal Straps

k-Core® based Thermal Straps are highly conductive formable or semi-dynamic heat transfer components. These straps are macro-composite components containing the same highly conductive APG (Annealed Pyrolytic Graphite) heat transport material found in our rigid product line. k-Core® straps effectively move heat away from sensitive components.



k-Core® Copper Metal Foil Straps

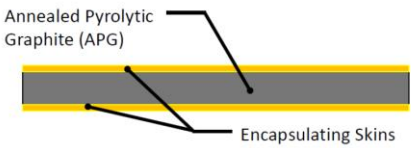


k-Core® Polyimide APG

k-Core® Thermal Straps

Key Features

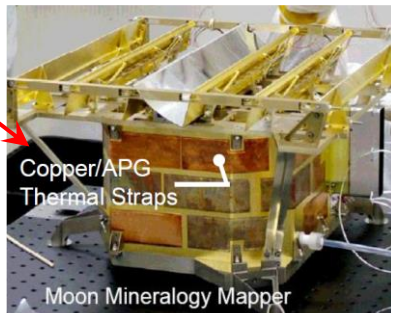
- Encapsulated APG Material System - provides high k path
- High Conductance - Effective Conductivity Value up to 1200 W/m·K
- Encapsulating skins seal the APG and enhance the structural integrity
- Encapsulation material selected to satisfy requirements



Key Benefits

- Dynamic Flexibility or Bend to Shape
- Light Weight
- Qualified in Space (TRL 9)
- Ease of Implementation

Copper Foil APG thermal straps were used on the Moon Mineralogy Mapper to provide a high conduction path to the k-Core radiators



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