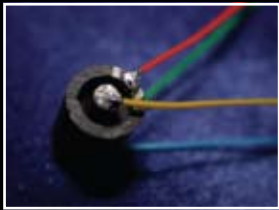


Sputtering Targets



Sensor Housing
Sapphire-Titanium



Graphite Conductivity
Sensor Electrodes

S-Bond® Joining...

- Lead Free
- Fluxless
- No Plating
- Excellent thermal and electrical conductivity
- Hermetic seals
- Suitable for a broad array of metals and ceramics
- Fewer process steps
- Can replace brazing of aluminum
- Lower temperature joining maintains structural properties of metals
- Reworkable joints

**Active solder joining of metals,
ceramics & composites**

Contact us for

- S-Bond Materials
- Joining Services
- Prototypes
- Production

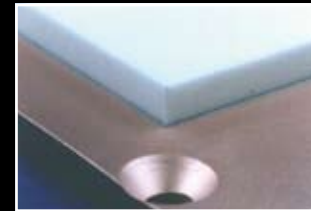
S-Bond®

Technologies, LLC

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Fax: 215-631-7115
E-mail: info@s-bond.com
www.s-bond.com

S-Bond® Technologies, LLC

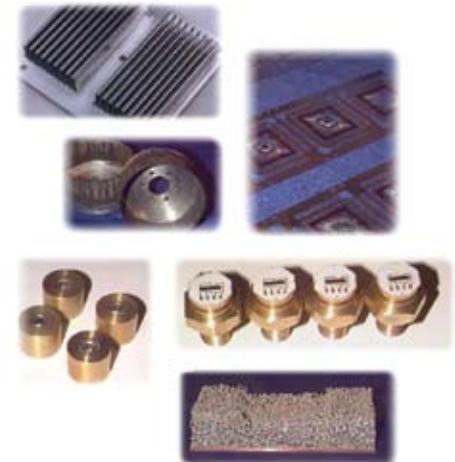


Ceramic Sputter Target



Al-Graphite Core
Heat Spreader

**Economical one-step joining of
metals, ceramics & composites**



S-Bond® Active Solders

Why use S-Bond®?

S-Bond® active solders enable the joining of dissimilar metals and ceramics to each other and to other metals. S-Bond's patented alloys have active elements added to Sn-Ag, Sn-In-Ag, and Sn-Bi compositions to create a solder that can be reacted directly with the metallic and/or ceramic surfaces prior to bonding. S-Bond filler metal alloys produce reliable joints with a broad array of metals, refractory metals and ceramics, addressing difficult joining challenges. In many applications, S-Bond can replace brazing with significant benefits.

S-Bond joins...

- Without Flux
- Without pre-plating
- Below 400°C, preventing distortion and softening of metals and ceramic fracture.

The joints produced by S-Bond active solders are:

- Strong (> 5,000 psi shear)
- Ductile, based on metallic alloys
- Capable of service temperatures up to 350°C, depending on alloy
- Capable of hermetic seals
- Free of residual flux contamination



Al-Cu Tube



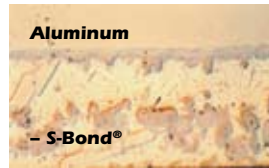
CPU Heat Sink



Graphite FIN /
Al Heat Exchanger

S-Bond® Solutions

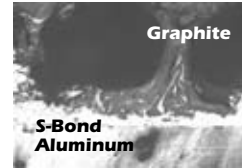
- Eliminate the need for flux & plating
- Joins all metals...
Al, Cu Ni, Ta, Mo, Ti, Steel, etc...
- Produces dissimilar metal joints
- Joins ceramics to metals
reduces the number of steps, produces hermetic joints and the joint is reworkable
- Lowers Joining temperatures
preventing softening of Al, ceramic fracture and CTE distortion



Aluminum

- S-Bond®

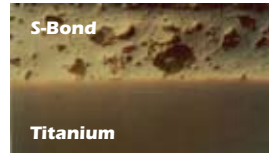
Aluminum - S-Bond®



Graphite

S-Bond
Aluminum

Graphite - S-Bond®



S-Bond

Titanium

Titanium - S-Bond®

S-Bond® joint structures

- metallurgical (Al & Cu)
- adhesive (Ti and other metals)
- diffusion treatments (ceramics)

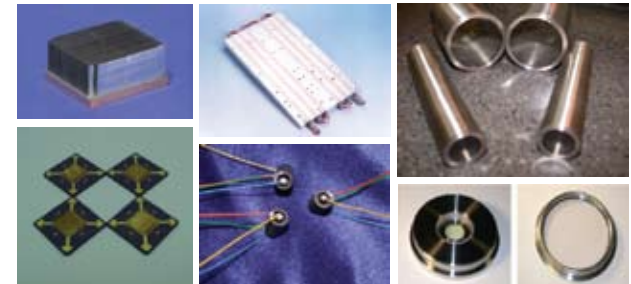
S-Bond® Alloys	Joining Temp
S-Bond 115 (In-Sn) Low temperature for sensitive materials	125-130°C
S-Bond 130 (Sn-In) Low temperature for electronics	140-150°C
S-Bond 140 (Sn-Bi) Low temperature for ceramics-metals	150-160°C
S-Bond 190 (Pb-Sn) For hierarchical joining	200-210°C
S-Bond 220 (Sn-Ag) Most versatile Pb free joining	240-260°C
S-Bond 220-50 (Sn-Ag) For joining Al and copper	240-260°C
S-Bond 220M (Sn-Ag) For joining glass, ceramics	240-260°C
S-Bond 400 (Zn-Al-Ag) Highest temperature active solder	420-430°C

S-Bond® Markets



- Aerospace
- Defense
- Medical
- Electric
- Automotive
- Defense
- Energy
- Telecom
- Oil/Mining

Applications



- Sensors
- Electronic Pkg.
- Electrical
- Heat sinks
- Avionics/Radar
- Solar/Batteries
- Power Supplies
- Sputter targets
- HVAC
- Al components
- Surgical Inst.
- Cold Plates
- Vapor Chambers
- Elec. Contacts
- Feedthrus