



PYROTEK ROLL-BONDED CLADS

PYROTEK ROLL-BONDED BUS CONTACT CLADS

Roll-bonding: The Superior Option for Clad

Roll-bonding creates a material that is metallurgically bonded. Materials are permanently joined for 100 percent electrical continuity, and demonstrate the characteristics of contiguous metal at the bond interface. The bond is inter-crystalline rather than mechanical interleaving.

The uniformity of the bond produced via roll-bonding is unmatched. Explosion-bonding produces small voids in the bond line. These voids allow intermetallics to form and weaken the bond. Pyrotek's bond is perfectly uniform with no room for intermetallics to form.

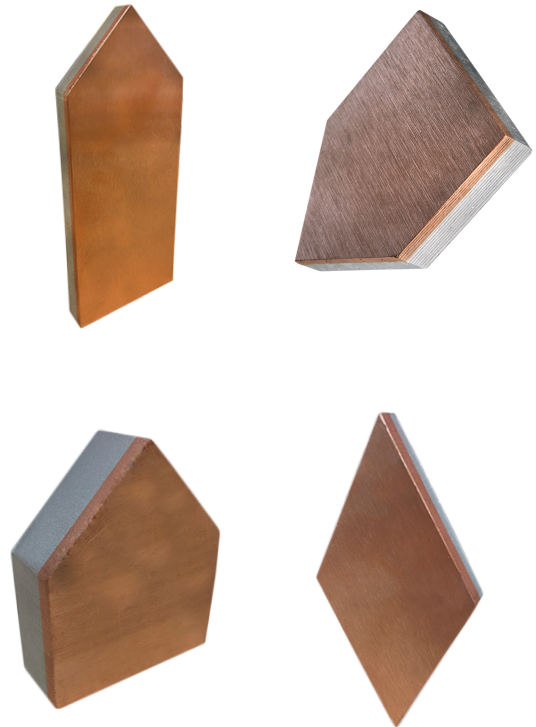
Pyrotek aluminium-copper clads are made with a thin and highly conductive chromium interlayer to facilitate metallurgical bonding. The chromium interlayer allows the clad to withstand higher temperatures with minimal thermal resistance.

Electrical

The electrical resistance of a transition insert is nominally the series resistance of the components. There is no resistance increase or electrical conductivity loss associated with the bond or bonding process.

Temperature

The technology is tensile tested at the bond to exceed the strength of the aluminium. High purity aluminium is typically 85-90 MPa in tensile strength, while the Pyrotek roll-bonded transition insert demonstrates a bond tensile strength of greater than 125 MPa as-rolled.



Strength

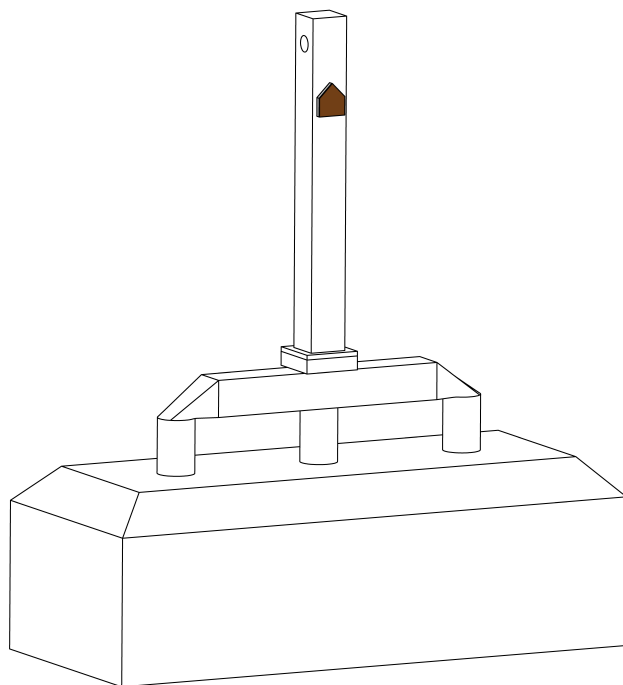
Aluminium-copper inserts can operate safely at elevated temperatures. The parts have been tested to demonstrate tensile strengths greater than 100 MPa after 24 hours at 450°C.

All parts have representative bend tests that depict the bond integrity and continuity. The bend testing consists of 3-4 mm slices of the insert cross section bent at 90 degrees at the bond interface. One hundred percent bonding will demonstrate no separations, pinholes, or tears at the interface.





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Materials

The typical standard aluminium grade is 1050 with options for numerous alloys including 1100, 6101 and 6061. The standard copper grade is OFHC 101/102 (oxygen free high conductivity). Design flexibility allows for the choice of an aluminium alloy that is tailored to fit the application's strength, welding and conductivity needs.

Fabrication

The clads are cut to customers' required dimensions, +/- 1 millimeter, unless otherwise requested. The typical thickness is 12.5 mm, with 3 mm of copper bonded to 9.5 mm of aluminium. Other custom thicknesses are available.

Parts can be fabricated in any number of geometries. Custom designs can be produced through our wide array of saws, water-jet and CNC mills.

STANDARD THICKNESS



MATERIAL OPTIONS

Material	Typical Strength (MPa)	Conductivity
OFHC C101/102 Copper	230 - 300	100 %
1050 Aluminum	60 - 95	59 %
6101 Aluminum	140 - 180	56 %
6061 Aluminum	200 - 260	43 %

