

Clad Materials



**Engineered
Materials Solutions**

Wickeder Group

Nearly any combination
of metals is possible

Copper Clad Aluminum

Aluminum	Copper	Copper	Aluminum
Copper	Aluminum	Aluminum	Copper
Aluminum		Copper	

Width (in)	0.125 – 25.000	0.125 – 25.000	0.125 – 25.000	0.125 – 25.000
Thickness (in)	0.005 – 0.120	0.005 – 0.280	0.005 – 0.120	0.005 – 0.280
Outer layer ratio %	5% – 30%	5% – 50%	5% – 30%	5% – 50%
Core material	Copper alloy	Alum alloy	Alum alloy	Alum alloy
Layer material	Alum alloy	Copper alloy	Copper alloy	Copper alloy

Typical materials:
Copper: C11000, C10200
Aluminum: A91100, A95052

Copper Clad Steel

Copper	Copper	Steel
Steel	Steel	Copper
Copper		Steel

Width (in)	0.125 – 25.000	0.125 – 25.000	0.125 – 25.000
Thickness (in)	0.003 – 0.187	0.005 – 0.187	0.005 – 0.187
Outer layer ratio %	5% – 30%	5% – 50%	
Core material	Carbon steel	Carbon steel	Copper alloy
Outer Layer material	Copper alloy	Copper alloy	Carbon steel

Typical materials:
Copper: C11000, C10200, C12200
Steel: G10080, G10650, G41300

Nickel Clad

Copper	Nickel	Nickel	Nickel	Nickel	Nickel
Stainless steel	Stainless steel	Stainless steel	Copper	Copper	Stainless steel
Nickel	Nickel	Stainless steel	Nickel		Nickel

Width (in)	0.125 – 25.000	0.125 – 13.000	0.125 – 13.000	0.125 – 13.000	0.125 – 13.000	0.125 – 13.000
Thickness (in)	0.004 – 0.060	0.004 – 0.060	0.004 – 0.060	0.004 – 0.060	0.004 – 0.060	0.004 – 0.060
Outer layer 1 ratio	3% – 15%	3% – 20%	3% – 20%	10% – 50%	3% – 20%	3%
Outer Layer 1 material	C10100	N02201	N02201	N02201	N02201	N02201
Layer 2 ratio	3% – 15%					27%
Outer Layer 2 material	N02201				C10200	S30400, S43000
Core material	S30400	S30400, S43000	S30400, S43000	C10200	S30400, S43000	C10200

Stainless Clad Aluminum

Stainless steel	Stainless steel	Steel
Aluminum	Aluminum	Aluminum
Stainless steel		

Width (in)	4 – 24.000	4 – 25.000	0.125 – 24.000
Thickness (in)	0.070 – 0.160	0.010 – 0.160	0.010 – 0.160
Outer layer ratio %	10% – 20%	10% – 50%	Carbon steel
Core material	Aluminum alloy	Aluminum alloy	Aluminum alloy
Outer Layer material	stainless	stainless	10% – 20%

Stainless: S30100, S30400, S43000
Aluminum: A91100, A93003, A95052
Carbon: G10080

Copper Clad Stainless Steel

Copper	Copper	Stainless steel
Stainless steel	Stainless steel	Copper
Copper		Stainless steel

Width (in)	0.125 – 25.000	0.125 – 25.000	0.125 – 25.000
Thickness (in)	0.003 – 0.187	0.003 – 0.187	0.003 – 0.120
Outer layer ratio %	10% – 30%	10% – 50%	20% – 40%
Core material	Stainless	Stainless	Copper alloy
Outer Layer material	Copper alloy	Copper alloy	Stainless steel

*Other materials and combinations possible including but not limited to titanium, magnesium, Ni-Fe alloys



The perfect Partner for Clad Materials

Expanding Your Design Possibilities

Clad metals, or multi-layered metal composites, have long been used to solve engineering challenges which require blended metal properties. These unique materials give design engineers endless possibilities to produce metals with targeted engineering properties - mechanical, electrical, corrosion, thermal expansion, and surface finish to name a few.

Well known examples of clad metals include multi-layered cookware with improved thermal performance, corrosion resistant bumpers for class 8 trucks, anode lids and cathode caps for hearing aide batteries, catalyst foil metals for emission control and materials for replacing expensive nickel and copper alloys. Recent emphasis has been on "transition clad metals" for joining light weight metals such as aluminum in automotive applications and innovative layered metals for hand held electronic devices, and US coinage.

Pick up a U.S. quarter you'll be holding a shining example of clad metal economy and performance. From its side, you'll see a cost-effective 3-layer sandwich of cupronickel / copper / cupronickel that replaced a more costly silver coinage material while matching its look and feel and offering exceptional durability and a density required by automatic coin discrimination systems.

EMS clad metal can save your business money in base metal costs, assembly, warranty claims and also improve performance. Solve your design issues and find the next unique application of clad metal by contacting EMS for further information and assistance.

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