Clad Materials
Clad Materials , with their unique ability to match virtually any need of a specific product design, offer design engineers some highly desirable benefits. “Clad” not only can allow you to expand your design possibilities, but can provide significant improvements in product performance and manufacturability. It may even yield meaningful reductions in product costs as well.

At EMS, we’ve bonded well over a thousand different combinations of metals and alloys, in all shapes and sizes; some with fifteen different metal layers in a single strip. The bonding technique we’ve developed is so effective that intermediate brazing alloys or adhesives aren’t necessary. That’s the genius of Clad - it’s simple, it’s clean, and it’s permanent.

For centuries, cladding remained virtually unchanged until EMS revolutionized the process in the mid-1960’s. Today, with our modern cladding machinery and highly sophisticated heat-treating, rolling, and finishing techniques, we can produce materials that provide singular performance characteristics for hundreds of products.

Advantages

› Wide variety of composite combinations are available
› Development of new products with enhanced properties tailored to your specific needs
› Combination of seemingly incompatible materials are possible
› Economical solutions for achieving composites that address your obstacles

Get Started with Clad

A clad material combines two or more metal strips by bonding them together. By bonding different combinations of metals, the advantages of the individual metals are combined into a composite that is tailored to your specific product needs and requirements.
Open the Doors of Design to an Exciting New World of Possibilities

Do what you thought you couldn’t. There are a myriad of ways that Clad can help you increase performance, as well as improve your bottom line.

EMS Clad Materials is used in a number of sectors including, Appliance, Automotive, Cookware, Electrical Distribution, Energy Storage, Exhaust Catalyst, and Heat Transfer.

How can Clad Materials be a cost effective solution in your own products?

We can help you determine your needs and offer Clad solutions to enhance the performance of your existing products or offer the exciting opportunity to create new ones. No matter what design limitations you’ve faced in the past, it is absolutely possible that one of the hundreds of Clad combinations are already available to fit your requirements, exactly. Additionally, we at EMS will work together with you in the event you require a tailored system. Tailored Clad Metal solutions, created through close working relationships, can give you a competitive edge - and in most cases, allow you to trim manufacturing costs.
The beauty and durability of metallic surfaces is more appealing than ever. Our shimmering, scratch resistant and stainless soleplates with their thermal spreading aluminium layer outlast traditional ceramic type coatings and ensure a perfect surface for traditional steam irons.

Stainless Clad Aluminum Soleplate

The increasing use of aluminum in vehicles has lead to problems in the use of traditional materials like steel. Crevice corrosion or difficult welding techniques in particular have lead to the development of innovative joining and welding solutions. Our steel clad aluminium solves these problems.

Transition Material

Clads are the ideal alternative to using thin braze foils or paste. As decades of design experience have shown they even offer lower assembly costs and higher manufacturing yields and can be used in off-road equipment, HDD trucks or passenger cars.

Oil Cooler

Bearing rings made from Brass or Bronze Clad Steel guarantee a smooth and safe operation and thus provide a combination of good wear resistance and high strength.

Bumper Material

Stainless Clad Aluminum is a highly reflective, corrosion resistant and polished material which combines S301 austenitic stainless with a A3003 aluminum. It is 50% lighter than chrome or painted steel due to stainless thickness ratios of about 25 to 32 %, dimensions up to 0.200” and widths up to 26”. It has been used in the class 8 truck industry for over 30 years as a superior bumper material and is produced both in coil and in sheet.

EMS DuraFoil and DieselFoil are a great alternative to FeCrAlloy materials in catalytic converter applications. They are high temperature oxidation and creep resistant alloys and are manufactured using our patented cold bonding / diffusion annealing process. Their aluminium surface and strength make them very receptive to wash coating and well suited to very large stationary applications or engine applications where durability is essential.

EMS CoreLok is an edge bonded Copper-Aluminum product used to join pouch cell terminals made from Copper and Aluminum. It can also be used to simplify bussing by replacing cathode or anode tabs.

EMS can cater to any custom substrate geometries your application requires. Whether you need brazed or oxidized, round or rectangle, or other custom substrate geometry, in cell density ranging from 50-600 CPSI, we have the capability to manufacture any specification you may have.
Whether it is for cooking or for baking: EMS offers the perfect solution for your individual needs. Our combinations of copper or aluminium and stainless steel are available in many shapes, widths and thicknesses and guarantee food compatibility and stainless quality.

**Copper Clad Aluminum**

Whether it is for cooking or for baking: EMS offers the perfect solution for your individual needs. Our combinations of copper or aluminium and stainless steel are available in many shapes, widths and thicknesses and guarantee food compatibility and stainless quality.

**Stainless / Aluminium / Stainless**

Factors like even heat conduction, light weight and easy clean up make our Stainless Steel Clad Aluminium cookware the favorites of many chefs. Our cookware is produced in a precise and cost effective roll-to-roll cladding process which holds tolerances as tight as 0.001" . It guarantees an overall cladding - not just at the bottom- and thus makes the material ideal for induction cookware.

**Handheld Device Heat Sink**

Heat sink technology is facing new challenges as cell phones and other hand held devices encounter increasing heat concerns. Copper or aluminium clad stainless can provide a solution to these concerns as they offer better thermal performance with a good weldability and aesthetic looks.

**Printed Circuit Boards**

Cladding copper to an Invar (36 Ni, balance Fe) core produces a constraining metal layer which is used by demanding industries such as electronics packaging, heat sink and printed wiring boards. The material is mil certified and a solution for many demanding electronic applications.

**We support you**

It’s simple. We want you to have precisely the combination of metallurgical properties you require for your application. We will work closely with you to achieve it, until we reach the best solution for you.

- **Variety of Clad designs:**
  - Overlay Clad Materials
  - Inlay Clad Materials
  - CoreLok Clad Materials
  - Edgelay Clad Materials

- **Variety of Bimetal designs:**
  - Disgrade
  - Electrical Grade
  - Stamped Parts, Coils, & Assemblies

- **Variety of production service:**
  - Cladding
  - Rolling
  - Annealing
  - Strip Cleaning
  - Slitting
  - Brazing
  - Parts Fabrication
## Clad Materials

Nearly any combination of metals is possible

<table>
<thead>
<tr>
<th>Width (in)</th>
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<th>Outer layer ratio %</th>
<th>Core material</th>
<th>Outer Layer material</th>
<th>Layer material</th>
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<tbody>
<tr>
<td>0.125 – 25.00</td>
<td>0.005 – 0.120</td>
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### Copper Clad Aluminum

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<td>5% – 30%</td>
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<td>10% – 50%</td>
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### Copper Clad Stainless Steel

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Typical materials:
- Copper: C11000, C10200
- Aluminum: A91100, A95052
- Stainless Steel: S30100, S30400, S43000
- Steel: G10080, G10650, G41300

Best of metal.

The metal specialists of Wickeder Group combine their expertise to offer you the best of metal. On three continents (Europe, America, and Asia), there is a wide range of standard and customized solutions. We can guarantee highest quality standards, flexibility, and fast response times by our product- and service- oriented business model. Ultra-modern production lines, extensive knowledge, and innovative solutions have always been the success of Wickeder Group.