Metallic Catalyst Substrates
A History of Solutions

Engineered Materials Solutions, headquartered in Attleboro, MA (USA) with production sites in Hamburg, PA (USA) and Baoying (China) traces its origins back to 1916. We have been manufacturing Clad Materials since our founding company, General Plate Company, was established 100 years ago.

Today we are experts in metallurgically bonding dissimilar metals. At EMS, we produce a variety of “laminated” materials that can offer distinctive properties, where one material alone could not. As part of our product portfolio, EMS produces Metallic Catalyst Substrates.

Clad metals have been used to make metal catalytic converter substrate for more than 15 years, and the cold roll bonding process that made this possible was developed by EMS.

These materials were designed to meet all technical requirements of exhaust after-treatment devices including oxidation resistance, shape stability, formability, and compatibility with typical substrate processing technologies, such as brazing and wash coating.
Metallic Substrates of EMS...  
...Configurations Abound!

Get started with Metallic Substrates

Our broad portfolio of metal catalyst substrates offers solutions for the emissions control industry with thin metallic foils as well as finished catalyst panels and rounds.

In its simplest form, the requirements for a catalytic converter substrate (foil material) are dictated by four major factors: oxidation resistance; shape stability; formability (applicable ductility); and compatibility with typical substrate processing technologies, such as brazing and washcoating.

To meet these requirements, we developed a new process, which involves solid-state bonding of steel and aluminum strip layers. This clad material is then rolled to an intermediate gauge, and subjected to a thermal in situ reaction to form a new sold-solution material. The resulting monolithic material is subsequently thermo-mechanically processed to foil gauges.

The combination of roll bonding, followed by the thermo-mechanical processing to produce ferritic stainless steel foil for metallic catalytic converter substrates, offers many metallurgical and economic advantages over conventional ingot metallurgy practices.

// Advantages

› Quicker light-off
› Lower back pressure
› 15-30% less pressure drop than ceramic of same size cell density
› Thinner wall allows smaller catalyst
› Improved durability over ceramic
› No matting required
› High Thermal shock resistance
› More cost effective than ceramic in larger diameters
› Flexible designs
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 Metallic Catalyst Substrates are used in various applications such as Power Generation, Natural Gas Pipelines, Mobile Diesel/Gas Engines, Stationary ICE, Industrial VOC, Turbines, Industrial Boilers and in Emission Controls for Small Engines, Stationary Engines, and Mobile Engines.

We are fully vertically integrated and our materials are produced by a diffusion clad process, which allows flexibility on slit widths that can range anywhere between 1” to 6.5” wide. Substrate configurations, primarily round or rectangle, are offered both oxidized and brazed. We can make rectangles up to 36”, square and rounds with Ø ranging from 1.75” to 47” OD with maximum widths up to 6.5”.

We can also provide custom cell densities and are capable of fabricating a wide range of custom substrate geometries to suit customer specifications.

Whether you need round, rectangle, or other custom substrate geometry, brazed or oxidized, in cell density ranging from 45-600 CPSI, we have the capability to produce the substrate to your application requirements.

No matter what design limitations you’ve faced in the past, it is possible to gain a competitive edge with clad.
**Exhaust Catalyst**

**Catalyst Foil**

EMS DuraFoil and DielselFoil 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 aluminum rich 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.

**Catalyst Substrates**

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 45-600 CPSI, we have the capability to manufacture any specification you may have.

**Materials & Capabilities**

- Framed rectangle panels up to 36” long
- Small rounds 1.75” - 6.5” - diameters with or without mantles
- Large rounds up to 47” diameter with or without mantles
- Foil widths 1 - 6.5”
- Corrugations 45 - 600 CPSI
- Oxidized, brazed substrates
- Low and high temperature applications
- Mantles or frames using:
  - S304
  - S430
  - S409

Custom cell densities are also available.

EMS is ISO Certified - ISO 9001:2008
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.

Portfolio EMS
- Clad Materials
- Thermostatic Bimetals
- Nickel strip

Product Groups of Wickeder Group
- Clad Materials
- Thermostatic bimetal strip
- Metal strip & foil
- Nickel alloy bars and wire
- Precision-etched metal components

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