Durafoil™ & Dieselfoil™
Catalytic Converter Materials

From the Company that Developed Cold Roll Bonding

Durafoil™ and Dieselfoil™ are high aluminum, high chromium ferritic stainless steel developed specifically for metallic catalyst substrates and DPF (Diesel Particulate Filters), both produced using our cold roll bonding process.

First, aluminum is bonded to both sides of a stainless steel core. This three layer material is then rolled to a "near foil" gauge and put through a diffusion annealing process, during which, the aluminum diffuses into the steel core, turning the three layer clad system into a monolithic alloyed material. The alloyed material is then rolled to the final gauge and prepared for your specific requirements. It is offered in both annealed and as-rolled tempers.

We designed this innovative material to meet all technical requirements of exhaust aftertreatment devices at a cost that can make metallic substrates price competitive with ceramic honeycombs.

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

Advantages

- Quicker light-off
- Lower back pressure
- 15-30% less pressure drop than ceramic with 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

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Physical and Mechanical Properties of Catalyst Foils

Density: ~7.0 g/cm3 (0.25 lb/in3)
Representative Nominal Mechanical Properties:

	Annealed	Hard
Temper	Annealed	Cold-rolled
0.2% offset Yield Strength (ksi/MPa)	68/469	136/935
Tensile Strength (ksi/MPa)	91/628	140-968
Elongation (%) (in2")	10-20%	~2%
Hardness (HV)	220	320

Features

Durafoil™ contains 5.5-6.0% aluminum, 19-22% chromium and 0.05-0.15% rare earths, giving it excellent high temperature stability, up to 1100°C. The oxidation behavior of this alloy is governed by the formation in sequence of the aluminum and chromium oxides. Rare earth elements are used to reduce the rate of oxide formation and improve the adhesion of the oxide film.

DieselFoil™ is designed specifically for metallic catalyst substrates used in diesel engines and other applications with similar temperature requirements. The material was designed to meet all technical requirements for diesel exhaust after treatment devices at a cost that can make metallic substrates price competitive with ceramic honeycombs.

Available Conditions

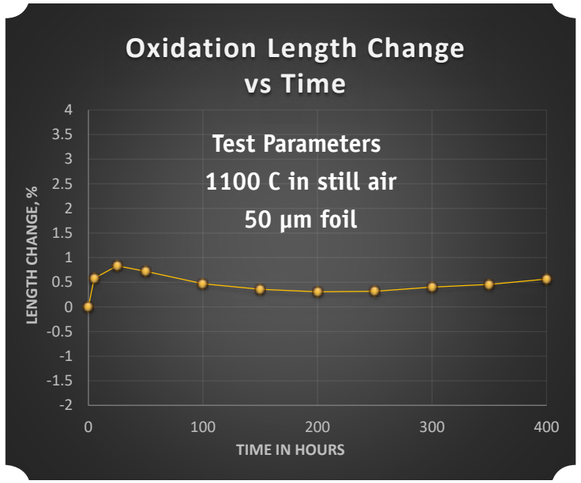
Annealed: This is the most ductile form of the material and is used in applications with extreme corrugation patterns where formability is critical.

Hard: The Hard version of the material is provided in the cold rolled condition. Because of its mechanical properties, it is used in applications where strength is critical. It is also a more economical version of the foil and should be considered for applications where the corrugation pattern will allow.

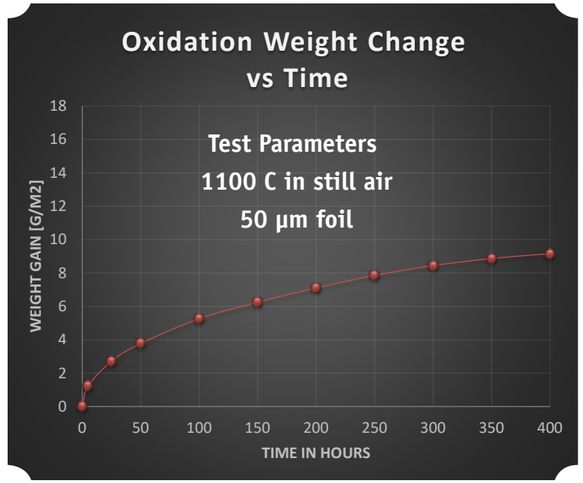
Chemistry Comparison of Catalyst Foils

Description	Chromium	Aluminum	Carbon	Manganese	Silicone	Sulfer	La+Ce
Dieselfoil™	14.5 - 16.5	5.0 - 6.0	< 0.08	< 0.8	< 0.8	< 0.01	0
Durafoil™	19.0 - 22.0	5.5 - 6.0	< 0.03	< 0.35	< 0.5	< 0.01	0.02 - 0.15

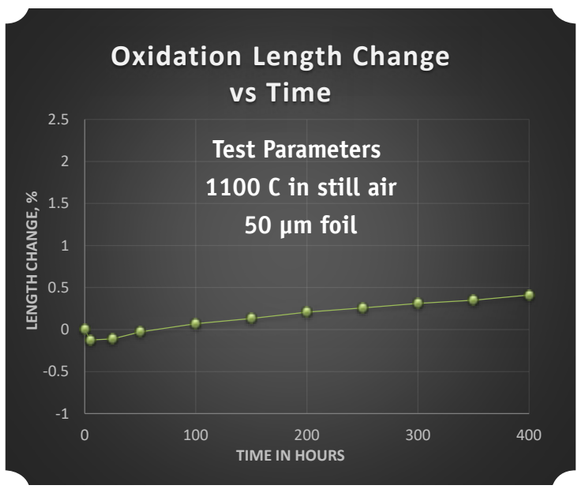
Shape Stability Durafoil™



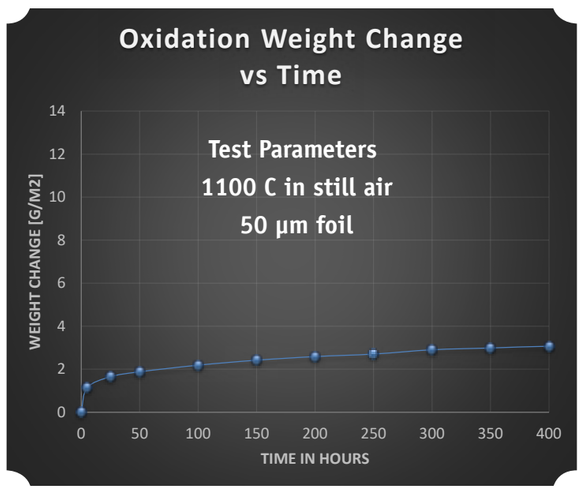
Weight Gain Durafoil™



Shape Stability Dieselfoil™



Weight Gain Dieselfoil™



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