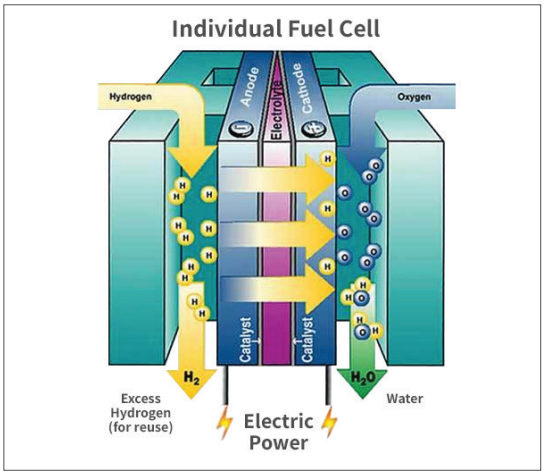
Wire Mesh / Wire Cloth Applications

Fuel Cells and Electrolyzers

We provide mesh solutions for different types of fuel cells and electrolyzers to a range of MEA, Stack and OEM manufacturers. The porosity, conductivity and shape of wire mesh and cloth lends itself to being used in a variety of different applications within the fuel cell. We have developed specific mesh solutions to meet and enhance performance in the following areas:

- Gas Diffusion / Porous Transport Layers
- Electrode current collector
- Catalyst / Electrolyte substrate



Wire mesh can be used in many applications in a Fuel Cell

Metal Mesh Alloys – Suitable for a Corrosive Environment

Alloy	Composition Examples
Nickel and Nickel based alloys	Crofer 22 H – UNS S44535 (DIN 1.4760), Ni 99.6% – S44535 (DIN 2.4060) and Duranickel.
Other alloys are available based on the specific chemistry requirements.	Stainless steel, Copper, Aluminum, Titanium and other precious metals.

Micron / Porosity Rating of the Mesh / Cloth

We can provide wire mesh down to a micron retention of 20µm and 30% porosity. Choosing the right mesh weave and mesh count specifications will depend on the application. For example;

- A typical mesh count of the mesh in the Gas Diffusion Layers of a PEM Fuel Cell is #80 (80 wires per inch horizontally and vertically).
- With a Solid Oxide Cell, typically a much fine mesh is used. We can match your micron opening requirement with the calculated mesh count, wire diameter and correct weave.
- Different wire diameters can alter the micron ratings without changing the mesh count.
- We can also supply lower porosity ratings by sintering wire mesh layers together.

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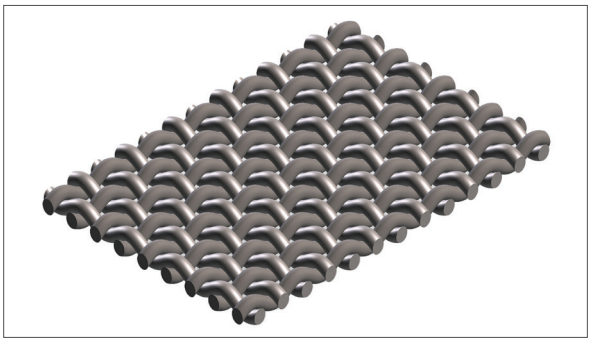
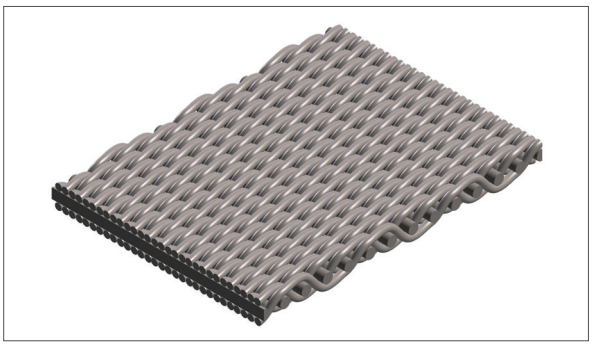
Suitability for deposition of coatings and ability to exchange ions

The porosity, conductivity and shape of wire mesh / cloth makes it a suitable media for maximizing conductivity. This is further enhanced by the Cold Bond™ process – a technique pioneered by Gerard Daniel more than 20 years ago. This is an annealing and calendaring process which provides a consistent depth of material along with partially mechanically bonding the mesh. The process produces a very controllable and repeatable woven mesh product.

The 'peaks' in the mesh provide depth that can penetrate more into the application and can withstand a considerable amount of flex without losing contact with active materials. If the mesh is used to adhere coatings to, the peaks and valleys maximize the surface area to adhere to.



The peaks and valleys of wire mesh maximize contact area



Better conductivity with a smaller open area are provided with this weave mesh

Engineered Customer Solutions

When customers come to us, our application engineers work collaboratively together with them to develop the best product for their application. We can provide a range of solutions from multi-layer sintered products – to single layer weaves that offer similar characteristics to multi-layer laminates or foil-based products. Getting involved at the start of the project allows us to provide the lowest cost solution and maximize performance.