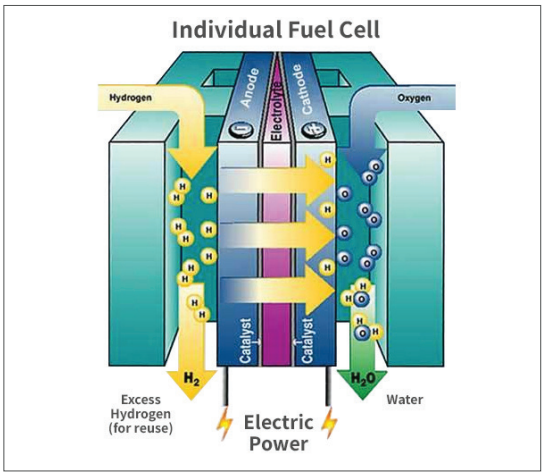
Wire Mesh / Wire Cloth Applications

Fuel Cells and Electrolyzers

We provide mesh solutions for different types of fuel cells and electrolyzers to a range of 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 Layer
- 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 (most common)	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, precious metals, others.

Micron Rating of the Mesh /Cloth

We can provide mesh and cloth down to a rating of 15µm in different types of mesh counts. The application will depend on the right mesh weave and mesh count specified. 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 Fuel Cell, typically a much fine mesh is used. We can match your micron opening requirement with the proper mesh count, wire diameter and correct weave.
- Different wire diameters can alter the micron ratings without changing the mesh count.

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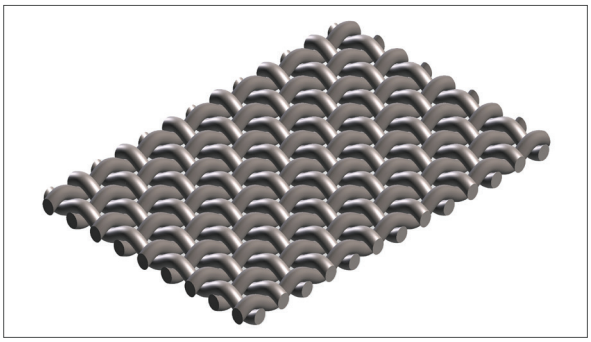
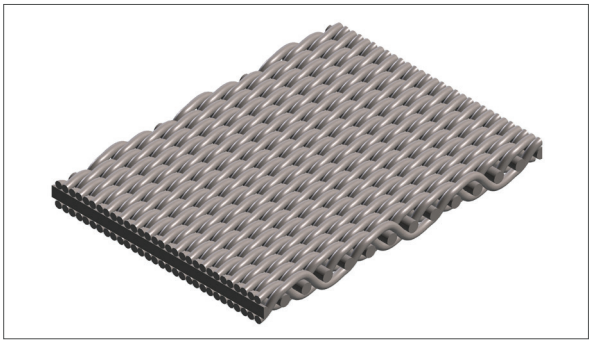
Suitability for deposition of coatings and ability to exchange ions

The porosity, conductivity and shape of wire mesh / cloth makes it a suitable media for maximizing conductivity. This is further enhanced by an annealing and calendering process Gerard Daniel pioneered more than 20 years ago. Often referred to as 'Cold Bonding', this provides a mechanical bonding process which gives a consistent depth of material, leading to a very controllable and repeatable 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 used as part of the electrolyte in the fuel stack, these 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.