

Industrial Applications

Gas Sensors

Porex develops an acid-resistant membrane as a carrier for a precious metal catalyst used in the manufacture of electrodes. Called the Mupor PTFE membrane, it greatly improves the adherence of the costly catalyst, plus complements mass production assembly processes – thereby reducing costs for the manufacturer.



Design Challenge

Porex was approached to develop an acid-resistant membrane as a carrier for a precious metal catalyst in the manufacture of electrodes for electrochemical cells. Functioning within a gas sensor, the membrane was required to be sufficiently thin to avoid any degradation of the device's response time, with a surface morphology that enabled a catalytic ink to be applied reproducibly and held securely. In addition, the design was required to complement mass production assembly processes.

Solution

Porex engineers chose Mupor PTFE because it provides a significant amount of control over the end product in each step of the membrane manufacturing process. In this application, for example, final heat treatment and veneering of the membrane from the sintered block were critical in meeting the design requirements. Porex engineers developed a heating/cooling cycle that controlled the amorphous nature of the finished membrane, resulting in a material that was robust and resistant to dimensional change when used in the commercial manufacture of electrodes. Further process advantages were achieved providing exceptional control over material thickness to an accuracy of +0.0005 inches.

Results

Porex's Mupor PTFE membrane, with its unique surface morphology, greatly improved adherence of the costly catalyst, thereby reducing costs for the customer.

By combining ideas, know-how and proven results with the highest standard of innovation and excellence, POREX Porous Media provides unique solutions for various applications.

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