EP1109 for LTPEM & DMFC Bipolar Plates

ElectroPhen®

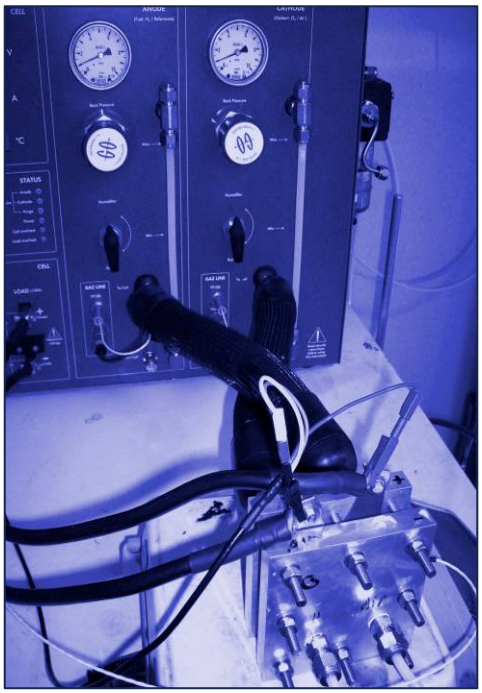
Conductive Composites for Bipolar Plates

Reduce Fuel Cell Stack Cost; Earlier Move to Moulded Plates; Optimise Stack Design; Volume Production, Faster

Bac2 has developed ElectroPhen®, a family of conductive composites based on its patented electrically conductive binder that has been optimised for bipolar plates used in LTPEM and DMFC Fuel Cells. The key benefits of ElectroPhen® are its low cost and ease of moulding, making scale-up to mass production rapid, predictable and economical. Bac2's development team can claim many years of experience in new material innovation, and fuel cell development & test, making ElectroPhen® bipolar plates the best choice for any new stack development.

Property	Value	Units
Density	1.79	g/cm^3
Flexural strength	32	MPa
Shore "D" Hardness	71	
In-plane electrical conductivity	130	S/cm
Through-plane conductivity	40*	S/cm
Surface resistance	0.254	mΩ
Thermal Conductivity	44	W/mK
Temperature stability	180	°C

The absolute performance of this material is dependent on the form factor of the component moulded. The above results were achieved using a selection of moulded test pieces.
*Based on 3mm thickness and includes surface resistance

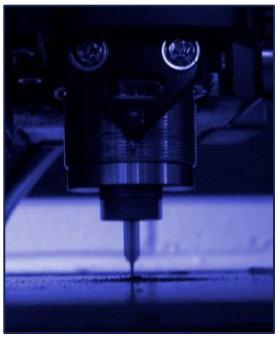


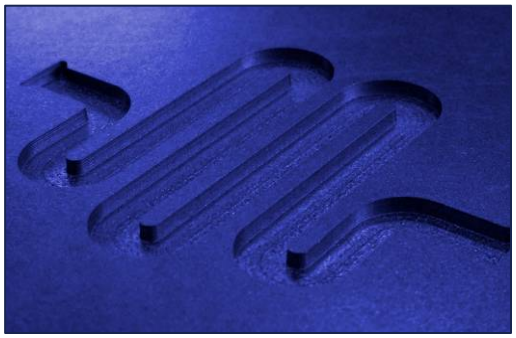
Evaluation:

Bac2 offers blank plates of varying dimensions to enable customers to evaluate the material in their own test facilities. Plates currently available in EP1109 formulation are:

BP1-3 – 300mm x 200mm x 3mm
BP2-1 – 150mm x 150mm x 1mm
BP2-2 – 150mm x 150mm x 2mm
BP2-3 – 150mm x 150mm x 3mm
BP2-4 – 150mm x 150mm x 4mm
BP2-5 – 150mm x 150mm x 5mm
BP3-1 – 60mm x 40mm x 1mm

(Other plate sizes may be available on request)



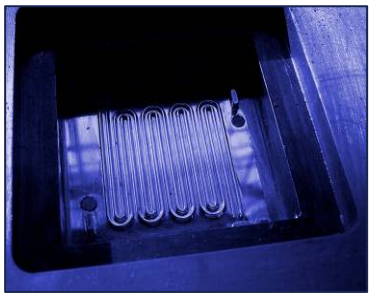


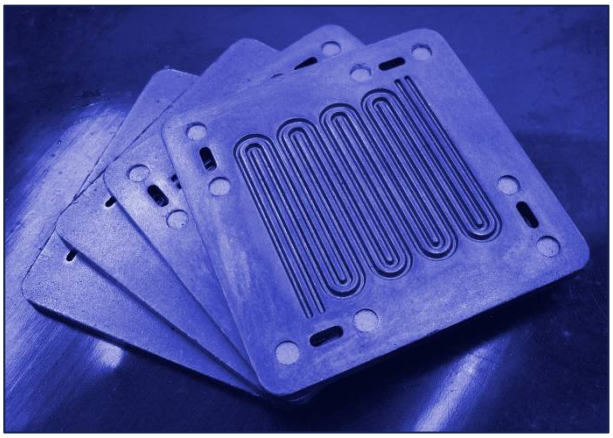
Prototyping:

Bac2 has in-house CNC machining facilities to rapidly provide customers with plates in accordance with their engineering drawings, enabling representative stacks to be assembled and tested.

Pilot Production:

Bac2 provides mould tools to its customers' specifications and moulds pilot run plates on its in-house compression mould facilities. Once these are approved and signed off by the customer, scale-up for volume production can commence.





High Volume Production:

Bac2 uses 3rd party military and automotive approved moulding partners that have been audited for their quality systems and approved for mass production of ElectroPhen® bipolar plates. Shipments are made world-wide to customers' assembly facilities.

About Bac2:

Bac2 is a UK-based global supplier of components made from its unique ElectroPhen® family of advanced electrically conductive composites. At its laboratories in Southampton the company continues to develop its patented conductive polymer systems for a growing range of applications.

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