

# EP1106 for HTPEM Bipolar Plates

ElectroPhen<sup>®</sup>

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<sup>®</sup>, a family of conductive composites based on its patented electrically conductive binder that has been optimised for bipolar plates used in HTPEM Fuel Cells. The key benefits of ElectroPhen<sup>®</sup> 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<sup>®</sup> bipolar plates the best choice for any new stack development.

Property	Value	Units
Density	1.81	g/cm <sup>3</sup>
Flexural strength	30	MPa
Shore "D" Hardness	67	
In-plane electrical conductivity	114	S/cm
Through-plane conductivity	41*	S/cm
Surface resistance	0.240	mΩ
Thermal Conductivity	43	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

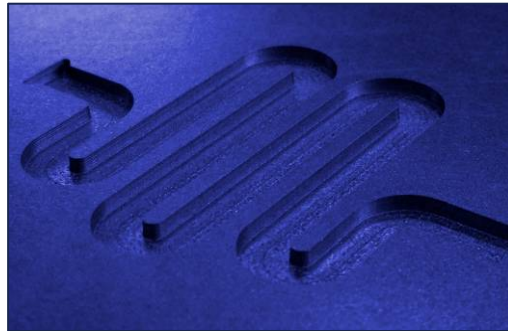
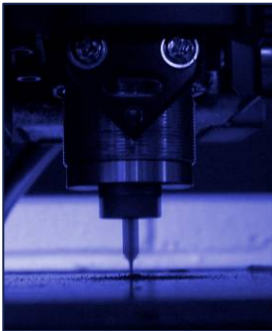


**Evaluation:**

Bac2 offers blank plates of varying dimensions to enable customers to evaluate the material in their own test facilities. Plates currently available in EP1106 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)

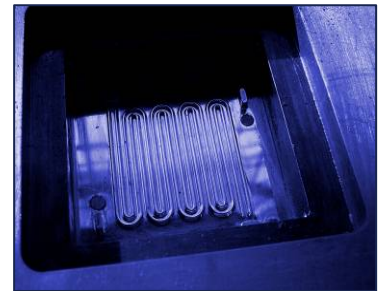


**Prototyping:**

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 3<sup>rd</sup> party military and automotive approved moulding partners that have been audited for their quality systems and approved for mass production of ElectroPhen<sup>®</sup> 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<sup>®</sup> 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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