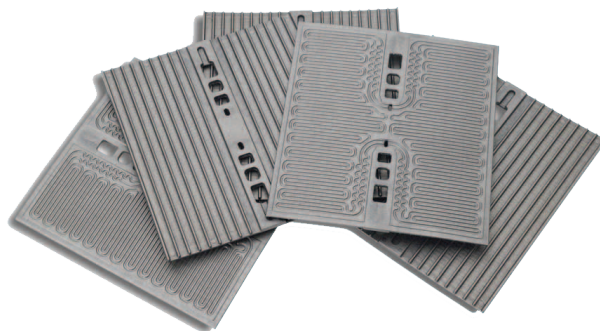


Field Flow Plate (FFP) Series

Technical Data Sheet 425

Product Overview

Manufactured from expanded natural graphite, GRAFCELL Flow Field Plate (FFP) components retain a continuous graphitic phase. This unique phase continuity, combined with an extremely low contact resistance, provides superior electrical and thermal properties in comparison to both synthetic graphite composite and metallic fuel cell components. The thermal diffusivity of GRAFCELL FFP Series products is 8-12 times higher than composite materials and 33 times higher than stainless steel.



GRAFCELL FFP Series products have played a critical role in improving fuel cell power density and performance for over 10 years. With over two million kilometers of proven road experience car and bus applications annually, GRAFCELL FFP Series continuous phase flow field plates have replaced synthetic graphite as the premier material for PEM fuel cells.

Grade, Dimension and Coating Options

Characteristic	FFP-300 Series
Fine Feature Formability	Good
Tensile Strength	Good
Minimum Web Thickness	300 μ
Thickness +/- 0.1 mm (0.004")	>3 mm (0.118")
Width +/- 1.0 mm (0.039")	Maximum Width: 254 mm (10")
Length +/- 1.0 mm (0.039")	Maximum Length: 600 mm (23.62")
Able to be Machined	Yes
Able to be Molded	Yes

Typical Properties*

Characteristic	Value
Nominal Density:	1.5 g/cc
Thermal Conductivity (x-y):	275 W/m-K
Thermal Conductivity (z):	5 W/m-K
Electrical Resistivity (x-y) :	7 $\mu\Omega\text{m}$
Electrical Resistivity (z) 2:	300 $\mu\Omega\text{m}$
Coefficient of Thermal Expansion (x-y):	1-5 $\mu\text{m}/\text{m-K}$
Coefficient of Thermal Expansion (z):	10 $\mu\text{m}/\text{m-K}$
Tensile Strength:	30-50 MPa
Flexural Strength:	50-70 MPa
Permeability (1 atm, 15 psi limit):	<1 cc/min
Tg:	125°C
Contact Resistance:	8 $\mu\Omega\text{cm}^{**}$
Thermal Diffusivity:	1.2 cm^2/sec

Notes:

* Properties listed are typical and cannot be used as accept/reject specifications.

** ASTM C611. 4-Point Resistivity Test. The resistance of thin perforated flexible graphite at 0.4 MPa between gold platens.

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