

GrafTech GRAFCELL[®] GDB Graphite Gas Diffusion Barrier

Category : Carbon , Graphite

Material Notes:

GRAFCELL[®] Gas Diffusion Barrier (GDB) material is a thin, perforated structure made from a continuous matrix of expanded natural graphite with excellent electrical conductivity, thermal conductivity, and corrosion resistance. GDB material can be engineered to provide the liquid and vapor permeability characteristics that are required to achieve an optimum balance of oxidant and product. It can be used as a standalone component or in conjunction with a gas diffusion layer to passively regulate the balance of incoming air and product water. It enables a method of operation that reduces or eliminates the need for an actively controlled external balance of plant systems. It also enables simplified flow field plate designs. GrafTech manufactures diffusion barrier material as a continuous roll good with open areas of 3%-15%. GDB material is used in applications such as self humidified PEM fuel cell stacks and air cooled PEM fuel cell stacks. In self humidified PEM fuel cell stacks, GDB passively regulates the diffusion of product water from the cathode, keeping the polymer electrolyte membrane hydrated and maximizing proton conductivity without the need for an external humidification system. In air cooled PEM fuel cell stacks, GDB's directional permeability and water retention characteristics enable the stack to be operated with air flow rates that are sufficient to cool the stack, eliminating the need for liquid coolant pumps and external radiators.

Order this product through the following link:

http://www.lookpolymers.com/polymer_GrafTech-GRAFCELL-GDB-Graphite-Gas-Diffusion-Barrier.php

Physical Properties	Metric	English	Comments
Bulk Density	0.300 - 1.60 g/cc	0.0108 - 0.0578 lb/in ³	
Permeability	1.5 - 15	1.5 - 15	sec/100cc; Gurley 4118 (100cc volume, 0.1 in ² orifice); Air; Through-Plane
	10 - 100	10 - 100	cm ³ /(cm ² *s); Gurley 4118 (100cc volume, 0.1 in ² orifice); Air; Through-Plane
Thickness	130 - 160 microns	5.12 - 6.30 mil	ASTM-D645

Mechanical Properties	Metric	English	Comments
Tensile Strength at Break	0.500 - 1.00 MPa	72.5 - 145 psi	ASTM-D828

Thermal Properties	Metric	English	Comments
Thermal Conductivity	<= 214 W/m-K	<= 1490 BTU-in/hr-ft ² -°F	In-Plane; Angstrom's Method

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.00000200 - 0.00000400 ohm-cm	0.00000200 - 0.00000400 ohm-cm	In-Plane; ASTM-C611

Descriptive Properties	Value	Comments
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Descriptive Properties	Value	Comments
Area-Specific Electrical Resistance (mOhm·cm ²)	3 to 7	ASTM-G611; Through-Plane
Basis Weight (g/m ²)	90	ASTM-D646
Stiffness (Taber units)	0.5-1.2	Taber Model 150-E
Surface Contact Angle (degrees)	90-130	optical (Tantec Half-Angle, ç Technique)

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