



AvCarb® Gas Diffusion Systems for Fuel Cells



Moving Energy with Carbon

AvCarb Material Solution's series of AvCarb Gas Diffusion Systems combine BMP's proprietary carbon fiber paper, a PTFE treatment, and micro-porous layer coating, each designed for the rigorous demands of specific fuel cell applications such as PEMFC, DMFC, and PAFC.

AvCarb Gas Diffusion Systems are based upon carbon fiber paper. AvCarb carbon fabrics and AvCarb Molded Graphite Laminates treated with PTFE and micro-porous layers for fuel cell applications are also available.

Please consult our GDL product selection guide for help in identifying the optimal GDL design for your application.

Product Benefits

- ▶ Optimized fuel cell performance by application
- ▶ Gas permeability
- ▶ Conductivity
- ▶ Physical property uniformity
- ▶ Cost effective, high volume manufacturing methods

Product Availability

- ▶ Rolls:
 - 400 mm or 800 mm width
 - 10 - 800 m length
 - Cores 6" / 152 mm ID
- ▶ Cut sheets, samples available upon request



*** Contact Us to Co-Engineer Your Next Innovative Friction Material**

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AvCarb Gas Diffusion Systems are fuel cell gas diffusion layers combining a carbon fiber paper substrate, a PTFE coating, and a surface microporous layer of PTFE and carbon particles. The table below lists nominal properties of commercially available AvCarb Gas Diffusion Systems, which have been engineered for optimal performance for selected fuel cell applications.

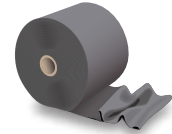
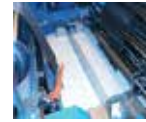
For assistance in selecting the right GDS product for your application, please refer to the AvCarb Gas Diffusion Layer Selection Guide, or contact us.

TYPICAL PROPERTY	UNITS	AvCarb GDS3215	AvCarb GDS3250	AvCarb GDS3260	AvCarb GDS2230	AvCarb GDS2240	AvCarb GDS22100	AvCarb GDS2120	AvCarb GDS1120
Base Material		AvCarb EP40	AvCarb EP40	AvCarb EP40	AvCarb P75	AvCarb P75	AvCarb P75	AvCarb P75	AvCarb P50
Nominal Thickness (@ 5.00 N/cm ²)	microns	200	225	210	275	275	330	248	184
Nominal Basis Weight	g/m ²	60	75	80	98	110	185	101	79
Break Strength									
Machine direction	MPa	12.0	12.0	14.0	6.5	8.5	8.0	25.0	18.0
Cross machine direction	MPa	5.0	7.0	8.5	4.0	5.5	5.0	15.0	10.0
Stiffness									
Machine direction	Taber	12.0	10.0	10.0	22.0	22.0		21.0	10.0
Cross machine direction	Taber	5.0	8.0	8.0	20.0	20.0	18.0	14.0	6.0
Bulk Density (@ 0.69 N/cm ² /1 psi)	g/cm ³	.30	.33	.38	.35	.40	.53	.40	.40
Compressibility (22N - 113N)/22 x 100%	%	10.0	16.0	15.0	17.0	15.0	7.0	11.0	14.0
Through-Plane Resistivity	mOhm*cm ²	<14.0	<14.0	<14.0	<14.0	<14.0	<17.0	<14.0	<14.5
Typical Roll Width	mm	400/800	400/800	400/800	400/800	400/800	400/800	400/800	400/800



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Coated Papers and Gas Diffusion Systems



Substrate Grade	Units	AvCarb EP40T	AvCarb P50T	AvCarb P75T	AvCarb 1071HCB
Nominal Thickness					
(@ 1 psi / 0.7 N/cm ²)	microns	200	180	255	356
(@ 7.3 psi / 5.1 N/cm ²)	microns	190	160	240	319
Nominal Basis Weight	g/m ²	43	62	85	123
Break Strength					
Machine direction	MPa	6.5	15.2	20.0	<17.73lbf MD
Cross machine direction	MPa	4.0	7.6	12.6	
Stiffness					
Machine direction	Taber	22.0	8.5	12.0	<1
Cross machine direction	Taber	4.5	3.1	14.6	<1
Bulk Density					
(@ 0.69 N/cm ² /1psi)	g/cm ³	.22	.34	.33	.35
Air Permeability (Gurley)					
Through-pane permeability	sec/100cc	7.5	50	25	1.3
In-plane permeability	sec/100cc	75	596	26	8.7
Compressibility					
(22N - 113N)/22 x 100%	%	10.5	12.5	11.0	weave count 49/inch warp, 47/inch fill
Through-Plane Resistivity	mOhm*cm ²	13.0	11.7	13.4	<8.0
Typical Roll Width	mm	400/800	400/800	400/800	500/1170

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