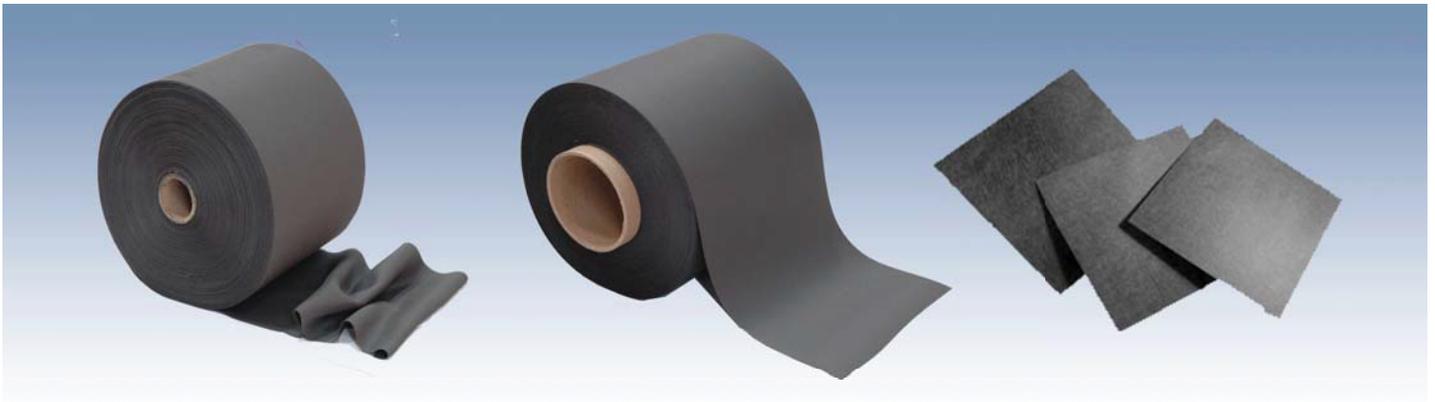


AvCarb Gas Diffusion Substrates

Substrates are critical components of fuel cell membrane electrode assemblies (MEAs). AvCarb Gas Diffusion substrates are unparalleled in their ability to meet the rigorous demands of the fuel cell, including platinum catalyst and functional layer support, effective transport of gases and liquids, and conduction of heat and electricity. Moreover AvCarb substrates are highly durable, both chemically and mechanically.

Product Selection



Increasing degree of rigidity

AvCarb® Carbon Fabrics

- Flexible
- Open structure

AvCarb® Carbon Fiber Papers

- Rollable
- Scaleable, cost effective

AvCarb® Molded Graphite Laminates

- High rigidity
- Highly graphitized

PTFE Treatments

- AvCarb material Solutions offers carbon fiber papers with standard PTFE treatments for water repellency
- Custom PTFE treatments are available for all AvCarb Gas Diffusion Substrates at levels 5% - 35% PTFE by weight
- Custom MPLs are also available, please contact us for details



AvCarb® Carbon Fiber Papers (e.g. EP40), Carbon Fabrics (e.g. 1071HCB) and Molded Graphite Laminates (*please refer to AvCarb® MGL Carbon Papers specification sheet*) are classified as gas diffusion substrates, used as electrode backings for fuel cell applications. 'T' grade products (e.g. EP40T) are water repellent, PTFE treated versions of AvCarb Carbon Fiber Papers.

The table below lists nominal properties of commercially available AvCarb Substates for fuel cells. Please contact us for assistance in selecting the right product for your application or for more information.



SUBSTRATE GRADE	UNITS	AvCarb EP40	AvCarb P50	AvCarb P75	AvCarb EP40T	AvCarb P50T	AvCarb P75T	AvCarb 1071 HCB	
Nominal Thickness (@ 1 psi / 0.7 N/cm ²)	microns	200	170	245	200	180	255	356	
	microns (@ 7.3 psi / 5.1 N/cm ²)	190	150	205	190	160	240	319	
Nominal Basis Weight	g/m ²	36	50	75	43	62	85	123	
Break Strength	machine direction	MPa	5.0	5.0	6.5	6.5	15.2	20.0	<17.73lbf MD
	cross machine direction	MPa	3.5	3.0	3.9	4.0	7.6	12.6	
Stiffness	machine direction	Taber	9.5	7.5	20.0	22.0	8.5	21.0	<1
	cross machine direction	Taber	3.5	3.0	3.5	4.5	3.1	14.6	<1
Bulk Density (@ 0.69 N/cm ² / 1psi)	g/cm ³	0.20	0.31	0.29	0.22	0.34	0.33	0.35	
Air Permeability (Gurley)	through-pane permeability	sec/100cc	4.5	35	15	7.5	50	25	1.3
	in-plane permeability	sec/100cc	50.9	295	83	75	596	26	8.7
Compressibility (22N - 113N)/22 x 100%	%	14.0	11.5	10.7	10.5	12.5	11.0	weave count 49/inch warp, 47/inch fill	
Through-Plane Resistivity	mOhm*cm ²	8.0	6.7	7.8	13.0	11.7	13.4	<8.0	
Typical Roll Width	mm	400/800	400/800	400/800	400/800	400/800	400/800	500/1170	

Specifications and descriptions in this document were in effect at the time of publication. AvCarb Material Solutions reserves the right to change specifications, product appearance or to discontinue products at any time. (02/2013)

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