

Toray Carbon Fiber Paper "TGP-H"

Gas Diffusion Layer

Toray TGP-H is a Carbon-Carbon Composite Paper which has been used for PAFC and PEFC for decades and has proven durability. Its high mechanical strength, conductivity and gas permeability are suitable for use as a Gas Diffusion Layer (GDL) in fuel cell applications.

Characteristics

- High strength
- Excellent gas permeability and low electrical resistivity
- Good handling
- Minimal electrochemical corrosion

Structure

- TGP-H is made of PAN Carbon Fiber "TORAYCA" featuring high tensile strength and high modulus. Fibers are firmly connected by carbon.
- SEM (Scanning Electron Micrography) images on the right.



Surface 100µm



Cross section 10µm

Standard Sizes

- Thickness: TGP-H-030, 0.11mm
TGP-H-060, 0.19mm
TGP-H-090, 0.28mm
TGP-H-120, 0.37mm
Thicker materials available on request.
- Dimensions: 15"x15", 400mm x 400mm, 500mm x 500mm and 800mm x 800mm.
800mm x 800mm board for TGP-H-030 is not available.

Basic Data

Properties	Unit	TGP-H-030	TGP-H-060	TGP-H-090	TGP-H-120
Thickness	mm	0.11	0.19	0.28	0.37
Bulk density	g/cm ³	0.40	0.44	0.44	0.45
Porosity	%	80	78	78	78
Surface roughness Ra	μm	8	8	8	8
Gas permeability	ml·mm/(cm ² ·hr·mmAq)	2500	1900	1700	1500
Electrical resistivity					
through plane	mΩcm	80	80	80	80
in plane	mΩcm	–	5.8	5.6	4.7
Thermal conductivity					
through plane (room temp.)	W/ (m·k)	–	(1.7)	(1.7)	(1.7)
inplane (room temp.)	W/ (m·k)	–	21	21	21
inplane (100°C)	W/ (m·k)	–	23	23	23
Coefficient of thermal expansion					
in plane (25~100°C)	×10 ⁻⁶ /°C	-0.8	-0.8	-0.8	-0.8
Flexural strength	MPa	40	40	40	40
Flexural modulus	GPa	8	10	10	10
Tensile strength	N/cm	–	50	70	90

•The above data are experimental values and are not guaranteed.