

**Your Partner
for FUEL CELL Components
with Experience in
Composites of 50 years**



AMALGAMATED INDUSTRIAL COMPOSITES PVT LTD

AIC POROUS CONDUCTING CARBON PAPER - JSR SERIES

NMRL - JSR O is carbon composites paper which is used for PAFC & PEFC its high mechanical strength conductivity and gas permeability are suitable for use as a gas diffusion layer (GDL) in fuel cell applications.

STANDARD SIZES DIMENSIONS

300 X 300 MM	300 X 400 MM
200 X 300 MM	200 X 200 MM
100 X 150 MM	

- Large size we can make as per required

THICKNESS

JSR 90, 0.09MM	JSR 1500, 15MM
JSR 120, 0.12MM	JSR 2000, 2MM
JSR 360, 0.36 MM	JSR 1000, 1MM

STRUCTURE

JSR-O is made of pan carbon fibre "having high tensile strength and high modulus."

GAS CHARACTERISTIC

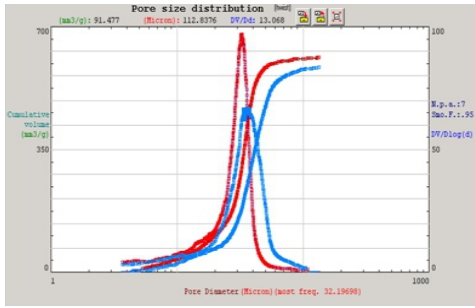
- High Strength
- Excellent Gas Permeability
- Low Electrical Resistivity
- Good Handling
- Minimal Low Electrochemical Corrosion

PROPERTIES OF AIC POROUS CONDUCTING CARBON PAPER

Type Parameters	JSRO-90	JSRO-120	JSRO-360	JSRO-1000
Thickness	0.09MM	0.12MM	0.36MM	1MM
Porsity	>70%	>70%	>70%	>70%
Poresizerange	10-60MICRON	10-60MICRON	10-60MICRON	10-60MICRON
Inplane Resistivity	≤0.005ΩCM	≤0.005ΩCM	≤0.005ΩCM	≤0.005ΩCM
Through Plane Resistivity	≤0.08ΩCM	≤0.08ΩCM	≤0.08ΩCM	≤0.08ΩCM
Flexural Strength	≥35MPA	≥35-40MPA	35-40MPA	40-45MPA
Bulk Density	0.42-0.52GM/CC	0.42-0.52GM/CC	0.42-0.52GM/CC	0.42-0.52GM/CC
Size	440 X 340MM	440 X 340MM	440 X 340MM	440 X 340MM

ANALYSIS OF POROUS CONDUCTING CARBON PAPER

Porosity / Pore size analyses :



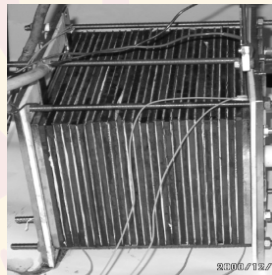
Through resistivity = 0.07cm
 In-Plane resistivity = 0.005-0.006cm
 XRD Characterization : $d_{002} = 3.387\text{\AA}$

Pore size = $32\mu\text{m}$ (Range 10-60 μm)
 Porosity = 65-80%
 Contact angle = 135° - 137°

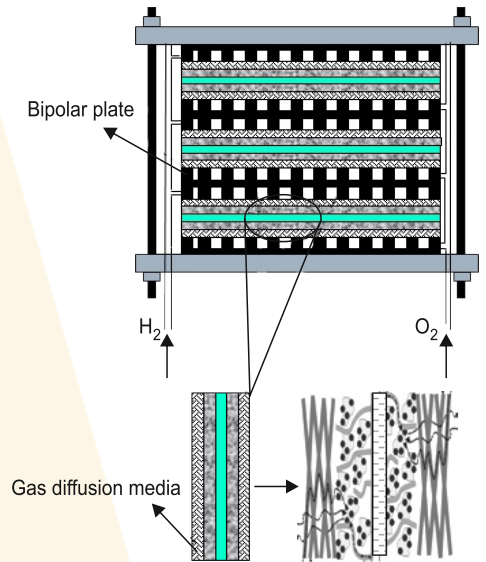
COMPONENTS OF A FUEL CELL STACK

Porous Gas diffusion Electrode Bipolar plate

Electrolyte Matrix / Membrane
 Gasket
 Current Collector Plate & End Plate



1kW PAFC Stack



MATERIAL FOR GAS DIFFUSION MEDIA

Material Characteristics

- Chemically inert
- Electrically Conducting
- High porosity
- Uniform pore size distribution
- Dimension Stability

Thickness (mm)	0.19 - 0.35
Porosity (%)	70 - 80
Through resistivity (ohm- cm)	≤ 0.08
In Plane resistivity (ohm-cm)	≤ 0.005
Flexural strength(MPa)	≥ 35



OUR PRODUCTS

HYDROGEN STORAGE TANK



NITROGEN STORAGE TANK



- CARBON FIBRE STACKS FOR FUEL CELL
- BIPOLAR PLATE
- CATALYSE
- HEAT EXCHANGER PLATE
- MEA (MEMBRANE ELECTRODE ASSEMBLY)

In House Manufacturing & Testing Facilities Technical Collaboration From GERMANY