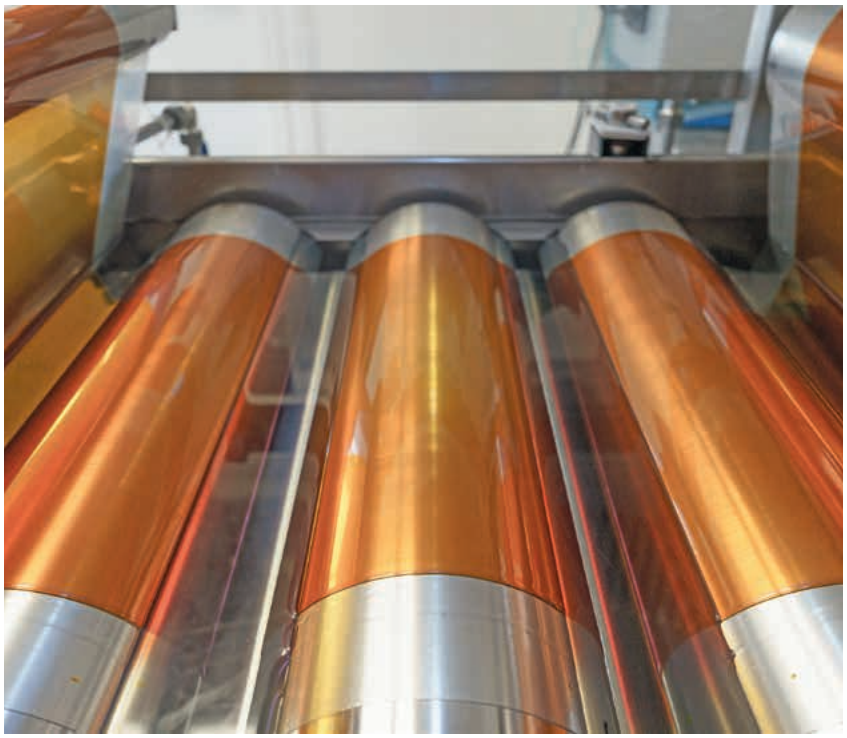
Celtec® membrane for high-temperature PEM fuel cells



The Celtec® membrane is the core of high-temperature membrane electrode assemblies (MEA) that can be used for fuel cells and electrochemical hydrogen separation. This MEA operates at temperatures between 120 and 180 °C, tolerates large concentrations of carbon monoxide and is capable of running independently of humidification. This technology enables fuel cell systems to become simpler and more cost effective.

BASF has been manufacturing the Celtec® membrane since 2005. In a global network with science and partners, BASF has continuously adapted the membrane properties to the varying requirements of hydrogen separation and fuel cells. The membrane is produced by a sol-gel process.

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We create chemistry

Applications of Celtec®

Membrane electrode assemblies based on Celtec® membrane enable an operating temperature of 120 to 180 °C, tolerance to impurities and a reduced need for humidification.

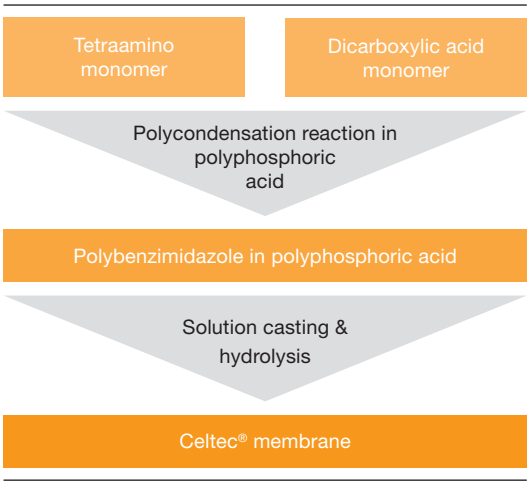
- High-temperature polymer electrolyte membrane (HT-PEM) fuel cell: system manufacturers can easily integrate stack and reformer, enabling higher efficiency, robustness and simplicity.
- Electrochemical hydrogen separation: enables the energy-efficient separation of diluted hydrogen below 20 % concentration without partial pressure difference.

BASF Environmental Catalyst and Metal Solutions will support you in testing and qualifying the membrane for your product development.

Celtec® membrane

Specification	Method/Limit
Width (mm)	TM 040: ≥ 300
Thickness (µm)	TM 040: 350 – 450
Acid concentration (wt %)	TM 031: 40 – 70
Acid content (mg/cm³)	TM 031: 700 – 900
PBI content (mg/cm³)	TM 031: 50 – 80
I.V. value (dL/g)	TM 030: ≥ 4.0

Membrane synthesis



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