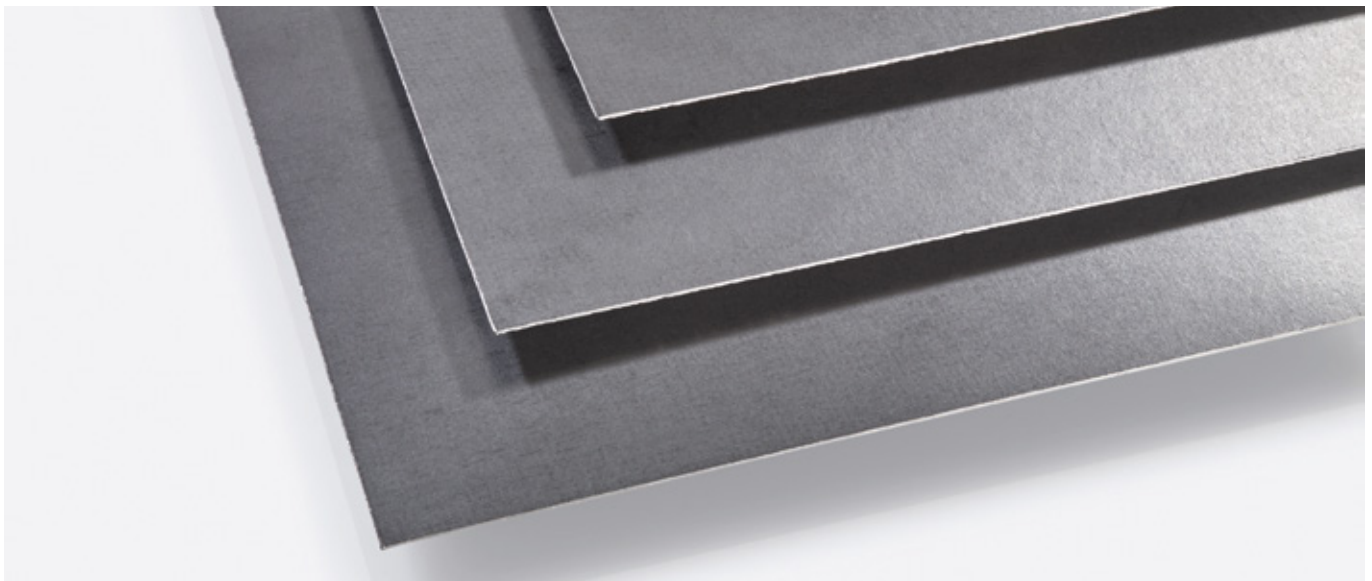


SIGRACELL® bipolar plate

Graphite composite materials for bipolar plates



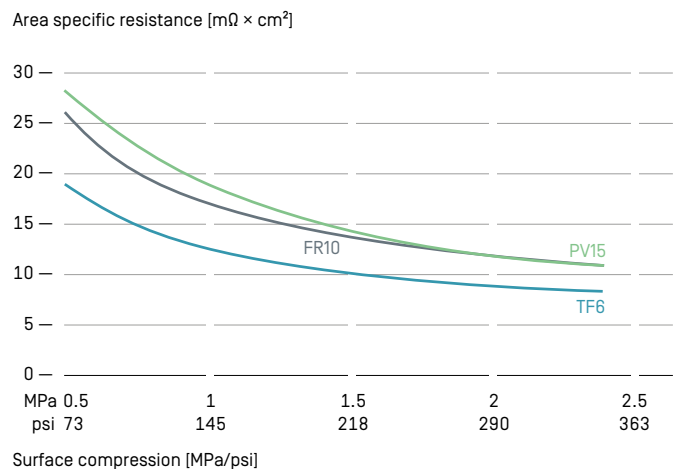
↑ SIGRACELL bipolar plates made of graphite composite material

SIGRACELL bipolar plates, which are mainly produced from expanded natural graphite, are used in flow batteries and fuel cells. Furthermore, SIGRACELL suits for other electrochemical applications. SIGRACELL is the best material for ambitious cell chemistry.

Properties

- Good electrical conductivity
- High chemical resistance
- Light weight
- Available in large dimensions

Typical area specific electrical resistance perpendicular to surface



Material data of SIGRACELL® bipolar plates

Typical properties	Units	TF6	PV15	FR10
Polymer type		Fluoropolymer	Fluoropolymer	Thermoset resin
Polymer content	%	6	15	10
Density	g/cm ³ (lb/ft ³)	1.75 [110]	1.75 [110]	1.75 [110]
Thickness	mm [in]	0.6 [0.024]	0.6 [0.024]	1.6 [0.063]
Tensile strength (ASTM F152D)	MPa [psi]	20 [2900]	25 [3600]	15 [2200]
Compressive strength (ASTM F1574)	MPa [psi]	150 [22000]	150 [22000]	220 [32000]
Electrical resistivity parallel to surface	Ωμm	7	7	7
Electrical resistivity perpendicular to surface at 1 MPa compression load ¹⁾	Ωμm	2000	3000	1000
Thermal conductivity parallel to surface	W/(Km)	350	300	400
Permeability of helium at 1 barg [14.5 psig]	mg/(s × m ²)	< 1 × 10 ⁻³	< 1 × 10 ⁻³	< 1 × 10 ⁻¹
Permeability of helium at 1 barg [14.5 psig]	mbar × l/s	< 1 × 10 ⁻⁵	< 1 × 10 ⁻⁵	< 1 × 10 ⁻³
Total impurities	ppm	< 150	< 150	< 150

¹⁾ The electrical resistivity perpendicular to surface at 1 MPa compression load is calculated from the through-plane area specific electrical resistance at 1 MPa compression load, determined according internal SGL Carbon standard based on DIN 51911. For through-plane area specific electrical resistance as a function of compression load please see graph.

Die cut parts available on request. For any engineering/design purposes please always contact our technical sales team.

Unless stated otherwise, all values are valid at room temperature, typical, non-binding and subject to change.



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