

® SIGRACET - BPP

Bipolar Plate - BBP 4 (Phenolic Resin)

Physical Properties (Typical Values)
Physikalische Eigenschaften (Typische Werte)

| Property | Unit | Value |
|--|-------------------------|--------------------------|
| Bulk Density | lbs/ft ³ | 123 |
| Rohdichte | g/cm ³ | 1,97 |
| Flexural Strength | psi | 5,800 |
| Biegefestigkeit | N/mm ² | 40 |
| Flexural Modulus | psi | 2.0 · 10 ⁶ |
| E-Modul (aus Biegeversuch) | N/mm ² | 14.000 |
| Compressive Strength | psi | 11,000 |
| Druckfestigkeit | N/mm ² | 76 |
| Thermal Conductivity I | btu/ft · h · °F | 12 |
| Wärmeleitfähigkeit | W/m · K | 20 |
| Coefficient of Thermal Expansion II | 1/°F · 10 ⁻⁶ | 1.8 |
| Wärmeausdehnungskoeffizient | 1/K · 10 ⁻⁶ | 3,2 |
| Electrical Resistivity II | μΩ m | 50 |
| Spezifischer elektrischer Widerstand | | |
| Electrical Resistivity I ■ | μΩ m | 240 |
| Spezifischer elektrischer Widerstand | | |
| Electrical Resistance I ● | mΩ cm ² | 5 |
| Elektrischer Widerstand | | |
| Permeability Coefficient (Air) I ◆ | in ² /s | 0.775 · 10 ⁻⁶ |
| Permeabilitätskoeffizient (Luft) | cm ² /s | 5 · 10 ⁻⁶ |
| Recommended Max. Operating Temperature | °F | ≤ 355 |
| Empfohlene max. Betriebstemperatur | °C | ≤ 180 |

Addendum: is suitable for both compression molding and injection molding.

- I** Through plane · Eigenschaft senkrecht zur Plattenebene
- II** In plane · Eigenschaft in der Plattenebene
- Measured at 1,000 psi compaction pressure · mit 7,0 N/mm² gemessen
- Resistance of a 80 mil standard plate at 145 psi compaction pressure between two sheets of GDL (typical compaction pressure in an FC stack)
Durchgangswiderstand einer 2,0 mm Standardplatte gemessen mit 1,0 N/mm² Flächenpressung zwischen zwei Lagen GDL (Typische Flächenpressung in einem FC Stack)
- ◆** Measured at 77°F using a vacuum experiment according to DIN 51935 and a 80 mil standard plate
Gemessen mit einer 2,0 mm Standardplatte bei 25°C und 1 bar Druckdifferenz gemäß DIN 51935

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This information is based on our present state of knowledge and is intended to provide general notes on our products and their uses. It should therefore not be construed as guaranteeing specific properties of the products described or their suitability for a particular application. Any existing industrial property rights must be observed. The quality of our products is guaranteed under our "General Conditions of Sale".

DS FC 003 - BPP BBP 4 - Rev01

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EISENHÜT

® SIGRACET - BPP

Bipolar Plate - BMA5 (PVDF)

Physical Properties (Typical Values)
Physikalische Eigenschaften (Typische Werte)

| Property | Unit | Value |
|--|---|---|
| Bulk Density Rohdichte | lbs/ft ³ g/cm ³ | 130 2,1 |
| Flexural Strength Biegefestigkeit | psi N/mm ² | 5,800 40 |
| Flexural Modulus E-Modul (aus Biegeversuch) | psi N/mm ² | 1.8 · 10 ⁶ 12.000 |
| Compressive Strength Druckfestigkeit | psi N/mm ² | 8,700 60 |
| Thermal Conductivity I Wärmeleitfähigkeit | btu/ft · h · °F W/m · K | 12 20 |
| Coefficient of Thermal Expansion II Wärmeausdehnungskoeffizient | 1/°F · 10 ⁻⁶ 1/K · 10 ⁻⁶ | 7.8 14 |
| Electrical Resistivity II Spezifischer elektrischer Widerstand | μΩ m | 100 |
| Electrical Resistivity I ■ Spezifischer elektrischer Widerstand | μΩ m | 500 |
| Electrical Resistance I ● Elektrischer Widerstand | mΩ cm ² | 11 |
| Permeability Coefficient (Air) I ◆ Permeabilitätskoeffizient (Luft) | in ² /s cm ² /s | 1.55 · 10 ⁻⁶ 10 ⁻⁵ |
| Recommended Max. Operating Temperature Empfohlene max. Betriebstemperatur | °F °C | ≤ 250 ≤ 120 |

Addendum: is suitable for compression molding but not for injection molding.

- I Through plane · Eigenschaft senkrecht zur Plattenebene
- II In plane · Eigenschaft in der Plattenebene
- Measured at 1,000 psi compaction pressure · mit 7,0 N/mm² gemessen
- Resistance of a 80 mil standard plate at 145 psi compaction pressure between two sheets of GDL (typical compaction pressure in an FC stack)
Durchgangswiderstand einer 2,0 mm Standardplatte gemessen mit 1,0 N/mm² Flächenpressung zwischen zwei Lagen GDL (Typische Flächenpressung in einem FC Stack)
- ◆ Measured at 77°F using a vacuum experiment according to DIN 51935 and a 80 mil standard plate
Gemessen mit einer 2,0 mm Standardplatte bei 25 °C und 1 bar Druckdifferenz gemäß DIN 51935

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DS FC 001 - BPP BMA 5 - Rev01

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EISENHÜT

® SIGRACET - BPP

Bipolar Plate - PPG 86 (Polypropylene)

Physical Properties (Typical Values)
Physikalische Eigenschaften (Typische Werte)

| Property | Unit | Value |
|--|-------------------------|--------------------------|
| Bulk Density | lbs/ft ³ | 115 |
| Rohdichte | g/cm ³ | 1,85 |
| Flexural Strength | psi | 5,800 |
| Biegefestigkeit | N/mm ² | 40 |
| Flexural Modulus | psi | 1.6 · 10 ⁶ |
| E-Modul (aus Biegeversuch) | N/mm ² | 11.600 |
| Compressive Strength | psi | 7,300 |
| Druckfestigkeit | N/mm ² | 50 |
| Thermal Conductivity I | btu/ft · h · °F | 8.1 |
| Wärmeleitfähigkeit | W/m · K | 14 |
| Coefficient of Thermal Expansion II | 1/°F · 10 ⁻⁶ | 15 |
| Wärmeausdehnungskoeffizient | 1/K · 10 ⁻⁶ | 27 |
| Electrical Resistivity II | μΩ m | 180 |
| Spezifischer elektrischer Widerstand | | |
| Electrical Resistivity I ■ | μΩ m | 550 |
| Spezifischer elektrischer Widerstand | | |
| Electrical Resistance I ● | mΩ cm ² | 12 |
| Elektrischer Widerstand | | |
| Permeability Coefficient (Air) I ◆ | in ² /s | 1.085 · 10 ⁻⁶ |
| Permeabilitätskoeffizient (Luft) | cm ² /s | 7 · 10 ⁻⁶ |
| Recommended Max. Operating Temperature | °F | ≤ 175 |
| Empfohlene max. Betriebstemperatur | °C | ≤ 80 |

Addendum: is suitable for both compression molding and injection molding.

- I** Through plane · Eigenschaft senkrecht zur Plattenebene
- II** In plane · Eigenschaft in der Plattenebene
- Measured at 1,000 psi compaction pressure · mit 7,0 N/mm² gemessen
- Resistance of a 80 mil standard plate at 145 psi compaction pressure between two sheets of GDL (typical compaction pressure in an FC stack)
Durchgangswiderstand einer 2,0 mm Standardplatte gemessen mit 1,0 N/mm² Flächenpressung zwischen zwei Lagen GDL (Typische Flächenpressung in einem FC Stack)
- ◆** Measured at 77°F using a vacuum experiment according to DIN 51935 and a 80 mil standard plate
Gemessen mit einer 2,0 mm Standardplatte bei 25 °C und 1 bar Druckdifferenz gemäß DIN 51935

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