# CAMPUS® Automotive OEM Datasheet

**POLYFORT® FPP 20 GFC - PP-GF20**
**LyondellBasell**

lyondellbasell
*Advancing Possible*

| Physical properties | I | M | E[1] | Value | Unit | Test Standard |
|---|---|---|---|---|---|---|
| Melt volume-flow rate, MVR | X | X | X | **5** | cm³/10min | ISO 1133 |
| Temperature | X | X | X | **230** | °C | ISO 1133 |
| Load | X | X | X | **2.16** | kg | ISO 1133 |
| Viscosity number | X | X | X | **-** | cm³/g | ISO 307, 1157, 1628 |
| Molding shrinkage, parallel | X | X | X | **-** | % | ISO 294-4, 2577 |
| Molding shrinkage, normal | X | X | X | **-** | % | ISO 294-4, 2577 |
| Humidity absorption | X | X | X | **-** | % | Sim. to ISO 62 |
| Water absorption | X | X | X | **-** | % | Sim. to ISO 62 |
| Density | X | X | X | **1050** | kg/m³ | ISO 1183 |
| Type and amount of reinforcement | | | | **-** | - | ISO 3451-1 |

| Mechanical properties | I | M | E[1] | Value | Unit | Test Standard |
|---|---|---|---|---|---|---|
| Tensile modulus | X | X | X | **4600** | MPa | ISO 527-1/-2 |
| Yield stress | X | X | X | ***** | MPa | ISO 527-1/-2 |
| Stress at break | X | X | X | **68** | MPa | ISO 527-1/-2 |
| Yield strain | X | X | X | ***** | % | ISO 527-1/-2 |
| Strain at break | X | X | X | **3** | % | ISO 527-1/-2 |
| Charpy impact strength, +23°C | X | X | X | **30** | kJ/m² | ISO 179/1eU |
| Charpy notched impact strength, +23°C | X | X | X | **8** | kJ/m² | ISO 179/1eA |
| Charpy impact strength, -30°C | X | X | X | **25** | kJ/m² | ISO 179/1eU |
| Charpy notched impact strength, -30°C | X | X | X | **7** | kJ/m² | ISO 179/1eA |
| Puncture test - ductile/brittle transition temperature | X | | X | **-** | °C | ISO 6603-2 |

| Thermal properties | I | M | E[1] | Value | Unit | Test Standard |
|---|---|---|---|---|---|---|
| Melting temperature, 10°C/min | X | X | X | **-** | °C | ISO 11357-1/-3 |
| Glass transition temperature, 10°C/min | X | X | X | **-** | °C | ISO 11357-1/-2 |
| Temp. of deflection under load, 1.80 MPa | X | X | X | **136** | °C | ISO 75-1/-2 |
| Temp. of deflection under load, 0.45 MPa | X | X | X | **153** | °C | ISO 75-1/-2 |
| Temp. of deflection under load, 8.00 MPa | X | X | X | **-** | °C | ISO 75-1/-2 |
| Vicat softening temperature, 50°C/h 50N | X | X | X | **115** | °C | ISO 306 |
| Coeff. of linear therm. expansion -40°C to +100°C, parallel | X | X | X | **-** | E-6/K | ISO 11359-1/-2 |
| Coeff. of linear therm. expansion -40°C to +100°C, normal | X | X | X | **-** | E-6/K | ISO 11359-1/-2 |
| FMVSS | X | | | **-** | - | ISO 3795 (FMVSS 302) |
| Burning rate, FMVSS, Thickness 1 mm | X | | | **-** | mm/min | ISO 3795 (FMVSS 302) |
| Burning Behav. at 1.5 mm nom. thickn. | | X | X | **HB** | class | IEC 60695-11-10 |

| Emission / Odor | I | M | E[1] | Value | Unit | Test Standard |
|---|---|---|---|---|---|---|
| Emission of organic compounds | X | | | **-** | µgC/g | VDA 277 |
| Thermal desorption analysis of organic emissions | X | | | **-** | µg/g | VDA 278 |
| Odor test | X | X[2] | | **-** | class | VDA 270 |

| Long term / Aging | I | M | E[1] | Value | Unit | Test Standard |
|---|---|---|---|---|---|---|
| Thermal stability in air (Charpy at 50% decrease, 3000h) | X | X | X | **-** | °C | DIN/IEC 60216-1 |
| Test specimen | | | | **-** | - | - |

**LTHA-Charpy impact strength (23°C)**
**No data available**

[1]I=Interior parts, M=Parts in motor compartment, E=Exterior parts
[2]air-ducting parts with contact to interior

Datasheet according to an agreement between VDA (Association of the Automotive Industry), PFA (French Automotive Industry) and CAMPUS®.
All properties of VDA 232-201 are entirely included in this datasheet.
All data is subject to the producer's disclaimer.
https://www.campusplastics.com - LyondellBasell - 2020-08-17

**LTHA-Stress at break**
**No data available**

| Weather stability, ISO 4892-2, Method A | I | M | E[1] | Value | Unit | Test Standard |
|---|---|---|---|---|---|---|
| Weather stability delta l | | | X | - | - | DIN 53236 |
| Weather stability delta a | | | X | - | - | DIN 53236 |
| Weather stability delta b | | | X | - | - | DIN 53236 |
| Weather stability delta E | | | X | - | - | DIN 53236 |
| Weather stability grey scale | | | X | - | - | ISO 105-A02 |

| Light stability, ISO 4892-2, Method B | I | M | E[1] | Value | Unit | Test Standard |
|---|---|---|---|---|---|---|
| Light stability delta l | X | | X | - | - | DIN 53236 |
| Light stability delta a | X | | X | - | - | DIN 53236 |
| Light stability delta b | X | | X | - | - | DIN 53236 |
| Light stability delta E | X | | X | - | - | DIN 53236 |
| Light stability grey scale | X | | X | - | - | ISO 105-A02 |

**Aging in media**

| | LTHA-Charpy impact strength (23°C) | | | |
|---|---|---|---|---|
| **Aging Time** | **0 h** | **168 h** | **480 h** | **1000 h** |
| **ISO 1817 Liquid 2, 60°C** | - | - | - | - |
| **Diesel EN 590, 100°C** | - | - | - | - |
| **Coolant Glysantin G48, 1:1 in water, 125°C** | - | - | - | - |
| **DOT No. 4 Brake fluid, 120°C** | - | - | - | - |
| **Motor oil OS206 304 Ref.Eng.Oil, ISP, 135°C** | - | - | - | - |
| **Automatic hypoid-gear oil Shell Donax TX, 135°C** | - | - | - | - |
| **Hydraulic oil Pentosin CHF 202, 125°C** | - | - | - | - |

**Dynamic mechanical analysis**

**Dynamic shear modulus-temperature**
**No data available**

**Dynamic tensile modulus-temperature**
**No data available**

**CLTE**

**Thermal expansion**
**No data available**

[1]I=Interior parts, M=Parts in motor compartment, E=Exterior parts