

# Ultradur® B 4520

Polybutylene Terephthalate

BASF Corporation

## Message:

Ultradur B 4520 is a medium viscosity, rapidly freezing injection molding grade.

### Applications

Typical applications include chassis and housings for home appliances, office and sewing machines, and coil formers.

| General Information                         |                                              |                        |                      |
|---------------------------------------------|----------------------------------------------|------------------------|----------------------|
| UL YellowCard                               | E36632-531673                                | E41871-233795          |                      |
| Features                                    | Medium Viscosity                             |                        |                      |
| Uses                                        | Appliance Components                         |                        |                      |
|                                             | Business Equipment                           |                        |                      |
|                                             | Housings                                     |                        |                      |
| Agency Ratings                              | EC 1907/2006 (REACH)                         |                        |                      |
| RoHS Compliance                             | RoHS Compliant                               |                        |                      |
| Forms                                       | Pellets                                      |                        |                      |
| Processing Method                           | Injection Molding                            |                        |                      |
| Multi-Point Data                            | Isothermal Stress vs. Strain (ISO 11403-1)   |                        |                      |
|                                             | Secant Modulus vs. Strain (ISO 11403-1)      |                        |                      |
|                                             | Shear Modulus vs. Temperature (ISO 11403-1)  |                        |                      |
|                                             | Specific Volume vs Temperature (ISO 11403-2) |                        |                      |
|                                             | Viscosity vs. Shear Rate (ISO 11403-2)       |                        |                      |
| Physical                                    | Nominal Value                                | Unit                   | Test Method          |
| Specific Gravity                            | 1.30                                         | g/cm <sup>3</sup>      | ASTM D792, ISO 1183  |
| Melt Volume-Flow Rate (MVR) (250°C/2.16 kg) | 19.0                                         | cm <sup>3</sup> /10min | ISO 1133             |
| Molding Shrinkage - Flow (3.18 mm)          | 1.5                                          | %                      |                      |
| Water Absorption                            |                                              |                        |                      |
| Saturation                                  | 0.50                                         | %                      | ASTM D570            |
| Saturation, 23°C                            | 0.50                                         | %                      | ISO 62               |
| Equilibrium, 50% RH                         | 0.25                                         | %                      | ASTM D570            |
| Equilibrium, 23°C, 50% RH                   | 0.25                                         | %                      | ISO 62               |
| Viscosity Number (Reduced Viscosity)        | 130.0                                        | ml/g                   | ISO 1628             |
| Mechanical                                  | Nominal Value                                | Unit                   | Test Method          |
| Tensile Modulus (23°C)                      | 2500                                         | MPa                    | ISO 527-2            |
| Tensile Strength                            |                                              |                        |                      |
| Yield, 23°C                                 | 60.0                                         | MPa                    | ASTM D638, ISO 527-2 |
| Yield, -40°C                                | 94.0                                         | MPa                    | ISO 527-2            |

|                                         |               |                   |                       |
|-----------------------------------------|---------------|-------------------|-----------------------|
| Yield, 80°C                             | 22.0          | MPa               | ISO 527-2             |
| Yield, 121°C                            | 18.0          | MPa               | ISO 527-2             |
| Tensile Elongation (Yield, 23°C)        | 3.7           | %                 | ASTM D638, ISO 527-2  |
| Nominal Tensile Strain at Break (23°C)  | > 50          | %                 | ISO 527-2             |
| Tensile Creep Modulus                   |               |                   | ISO 899-1             |
| 1 hr                                    | 1800          | MPa               |                       |
| 1000 hr                                 | 1200          | MPa               |                       |
| Flexural Modulus                        |               |                   |                       |
| 23°C                                    | 2300          | MPa               | ASTM D790             |
| 23°C                                    | 2400          | MPa               | ISO 178               |
| Impact                                  | Nominal Value | Unit              | Test Method           |
| Charpy Notched Impact Strength          |               |                   | ISO 179               |
| -30°C                                   | 3.0           | kJ/m <sup>2</sup> |                       |
| 23°C                                    | 6.0           | kJ/m <sup>2</sup> |                       |
| Charpy Unnotched Impact Strength (23°C) | No Break      |                   | ISO 179               |
| Notched Izod Impact                     |               |                   | ASTM D256             |
| -40°C                                   | 37            | J/m               |                       |
| 23°C                                    | 43            | J/m               |                       |
| Thermal                                 | Nominal Value | Unit              | Test Method           |
| Deflection Temperature Under Load       |               |                   |                       |
| 0.45 MPa, Unannealed                    | 163           | °C                | ASTM D648             |
| 1.8 MPa, Unannealed                     | 60.0          | °C                | ASTM D648, ISO 75-2/A |
| Peak Melting Temperature                | 223           | °C                | ASTM D3418, ISO 3146  |
| CLTE - Flow                             | 1.5E-4        | cm/cm/°C          |                       |
| RTI Elec                                |               |                   | UL 746                |
| 0.750 mm                                | 130           | °C                |                       |
| 1.50 mm                                 | 130           | °C                |                       |
| 2.80 mm                                 | 130           | °C                |                       |
| RTI Imp                                 |               |                   | UL 746                |
| 0.750 mm                                | 130           | °C                |                       |
| 1.50 mm                                 | 130           | °C                |                       |
| 2.80 mm                                 | 130           | °C                |                       |
| RTI Str                                 |               |                   | UL 746                |
| 0.750 mm                                | 140           | °C                |                       |
| 1.50 mm                                 | 140           | °C                |                       |
| 2.80 mm                                 | 140           | °C                |                       |
| Electrical                              | Nominal Value | Unit              | Test Method           |
| Surface Resistivity <sup>1</sup>        | 1.0E+13       | ohms              | ASTM D257, IEC 60093  |
| Volume Resistivity                      |               |                   |                       |
| 1.50 mm                                 | > 1.0E+13     | ohms · cm         | ASTM D257             |
| --                                      | > 1.0E+13     | ohms · cm         | IEC 60093             |
| Dielectric Constant                     |               |                   | IEC 60250             |

|                            |               |      |             |
|----------------------------|---------------|------|-------------|
| 100 Hz                     | 3.40          |      |             |
| 1 MHz                      | 3.30          |      |             |
| Dissipation Factor         |               |      | IEC 60250   |
| 100 Hz                     | 2.0E-3        |      |             |
| 1 MHz                      | 0.020         |      |             |
| Comparative Tracking Index | 550           | V    | IEC 60112   |
| Flammability               | Nominal Value | Unit | Test Method |
| Flame Rating               |               |      | UL 94       |
| 0.750 mm                   | HB            |      |             |
| 1.50 mm                    | HB            |      |             |
| 2.80 mm                    | HB            |      |             |
| Injection                  | Nominal Value | Unit |             |
| Drying Temperature         | 100 to 120    | °C   |             |
| Drying Time                | 4.0           | hr   |             |
| Suggested Max Moisture     | 0.040         | %    |             |
| Processing (Melt) Temp     | 250 to 270    | °C   |             |
| Mold Temperature           | 40.0 to 80.0  | °C   |             |
| Injection Pressure         | 3.50 to 12.5  | MPa  |             |
| Injection Rate             | Fast          |      |             |
| Back Pressure              | < 1.00        | MPa  |             |
| NOTE                       |               |      |             |
| 1.                         | 1.5 mm        |      |             |

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