

**Ultradur® B 4520**  
**PBT**

BASF

Standard injection molding grade for the production of various functional parts.

The products can also be offered as BMBcert™ and/or Ccycled™. Due to the Massbalance approach the product properties do not change

Abbreviated designation according to ISO 1043-1: PBT

| Rheological properties      | Value | Unit      | Test Standard   |
|-----------------------------|-------|-----------|-----------------|
| <b>ISO Data</b>             |       |           |                 |
| Melt volume-flow rate, MVR  | 20    | cm³/10min | ISO 1133        |
| Temperature                 | 250   | °C        | -               |
| Load                        | 2.16  | kg        | -               |
| Molding shrinkage, parallel | 1.7   | %         | ISO 294-4, 2577 |
| Molding shrinkage, normal   | 1.7   | %         | ISO 294-4, 2577 |

| Mechanical Properties                   | Value    | Unit  | Test Standard |
|-----------------------------------------|----------|-------|---------------|
| <b>ISO Data</b>                         |          |       |               |
| Tensile Modulus                         | 2400     | MPa   | ISO 527       |
| Yield stress                            | 55       | MPa   | ISO 527       |
| Yield strain                            | 3.7      | %     | ISO 527       |
| Nominal strain at break                 | >50      | %     | ISO 527       |
| Tensile Creep Modulus, 1h               | 1800     | MPa   | ISO 899-1     |
| Tensile Creep Modulus, 1000h            | 1200     | MPa   | ISO 899-1     |
| Impact Strength (Charpy), +23°C         | no break | kJ/m² | ISO 179/1eU   |
| Impact Strength (Charpy), -30°C         | 180      | kJ/m² | ISO 179/1eU   |
| Notched Impact Strength (Charpy), +23°C | 5        | kJ/m² | ISO 179/1eA   |
| Notched Impact Strength (Charpy), -30°C | 3        | kJ/m² | ISO 179/1eA   |
| Flexural Modulus (23°C)                 | 2400     | MPa   | ISO 178       |
| Flexural strength                       | 85       | MPa   | ISO 178       |
| Ball Indentation Hardness               | 130      | MPa   | ISO 2039-1    |
| <b>ASTM Data</b>                        |          |       |               |
| Notched Impact Strength (Izod), 1/8 in  | 50       | J/m   | ASTM D 256    |

| Thermal Properties                          | Value | Unit     | Test Standard  |
|---------------------------------------------|-------|----------|----------------|
| <b>ISO Data</b>                             |       |          |                |
| Melting Temperature (10°C/min)              | 223   | °C       | ISO 11357-1/-3 |
| Temp. of deflection under load (1.80 MPa)   | 55    | °C       | ISO 75-1/-2    |
| Temp. of deflection under load (0.45 MPa)   | 165   | °C       | ISO 75-1/-2    |
| Coeff. of Linear Therm. Expansion, parallel | 115   | E-6/K    | ISO 11359-1/-2 |
| Coeff. of Linear Therm. Expansion, normal   | 115   | E-6/K    | ISO 11359-1/-2 |
| Burning Behav. at 1.5 mm Nom. Thickn.       | HB    | class    | UL 94          |
| Thickness tested                            | 1.5   | mm       | -              |
| UL recognition                              | yes   | -        | -              |
| Burning Behav. at thickness h               | HB    | class    | UL 94          |
| Thickness tested                            | 0.8   | mm       | -              |
| UL recognition                              | yes   | -        | -              |
| Oxygen index                                | 20    | %        | ISO 4589-1/-2  |
| Glow Wire (GWFI, Flammability Index)        | 850   | °C       | IEC 60695-2-12 |
| GWFI - thickness tested (1)                 | 1.5   | mm       | -              |
| Glow Wire Ignition Temperature              | 775   | °C       | IEC 60695-2-13 |
| GWIT - thickness tested (1)                 | 1.5   | mm       | -              |
| <b>ASTM Data</b>                            |       |          |                |
| Thermal Conductivity, solid state           | 0.27  | W/(m K)  | DIN 52612-1    |
| Specific Heat                               | 1250  | J/(kg K) |                |

| Electrical Properties        | Value | Unit  | Test Standard |
|------------------------------|-------|-------|---------------|
| <b>ISO Data</b>              |       |       |               |
| Relative permittivity, 100Hz | 3.4   | -     | IEC 62631-2-1 |
| Relative permittivity, 1MHz  | 3.3   | -     | IEC 62631-2-1 |
| Dissipation Factor, 100Hz    | 20    | E-4   | IEC 62631-2-1 |
| Dissipation Factor, 1MHz     | 200   | E-4   | IEC 62631-2-1 |
| Volume Resistivity           | >1E13 | Ohm*m | IEC 62631-3-1 |
| Surface Resistivity          | 1E13  | Ohm   | IEC 62631-3-2 |

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|                            |     |       |             |
|----------------------------|-----|-------|-------------|
| Electric Strength          | 36  | kV/mm | IEC 60243-1 |
| Comparative tracking index | 550 | -     | IEC 60112   |

| Other Properties    | Value | Unit  | Test Standard  |
|---------------------|-------|-------|----------------|
| <b>ISO Data</b>     |       |       |                |
| Water Absorption    | 0.5   | %     | Sim. to ISO 62 |
| Humidity absorption | 0.25  | %     | Sim. to ISO 62 |
| Density             | 1300  | kg/m³ | ISO 1183       |
| Bulk density        | 750   | kg/m³ | -              |

| Material Specific Properties | Value | Unit  | Test Standard       |
|------------------------------|-------|-------|---------------------|
| <b>ISO Data</b>              |       |       |                     |
| Viscosity number             | 130   | cm³/g | ISO 307, 1157, 1628 |

| Rheological calculation properties | Value | Unit     | Test Standard |
|------------------------------------|-------|----------|---------------|
| <b>ISO Data</b>                    |       |          |               |
| Density of melt                    | 1060  | kg/m³    | -             |
| Thermal Conductivity of Melt       | 0.185 | W/(m K)  | -             |
| Spec. heat capacity of melt        | 2130  | J/(kg K) | -             |
| Ejection temperature               | 160   | °C       | -             |

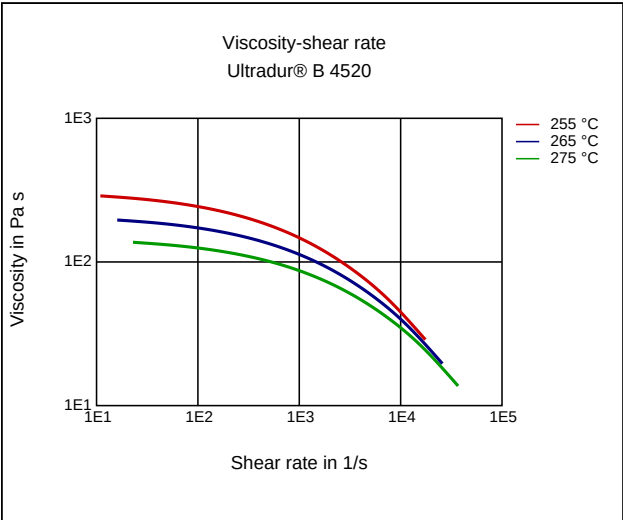
| Test specimen production              | Value | Unit | Test Standard |
|---------------------------------------|-------|------|---------------|
| <b>ISO Data</b>                       |       |      |               |
| Injection Molding, melt temperature   | 260   | °C   | ISO 294       |
| Injection Molding, mold temperature   | 60    | °C   | ISO 294       |
| Injection Molding, injection velocity | 200   | mm/s | ISO 294       |

| Processing Recommendation Injection Molding | Value     | Unit | Test Standard |
|---------------------------------------------|-----------|------|---------------|
| Processing humidity                         | ≤0.04     | %    | -             |
| Melt temperature                            | 250 - 275 | °C   | -             |
| Mold temperature                            | 40 - 70   | °C   | -             |

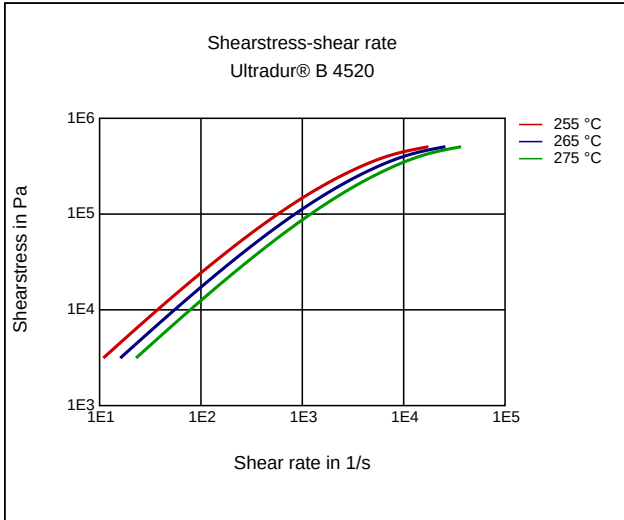
| Processing Recommendation Extrusion | Value     | Unit | Test Standard |
|-------------------------------------|-----------|------|---------------|
| Processing humidity                 | ≤0.04     | %    | -             |
| Melt temperature                    | 250 - 275 | °C   | -             |

Diagrams

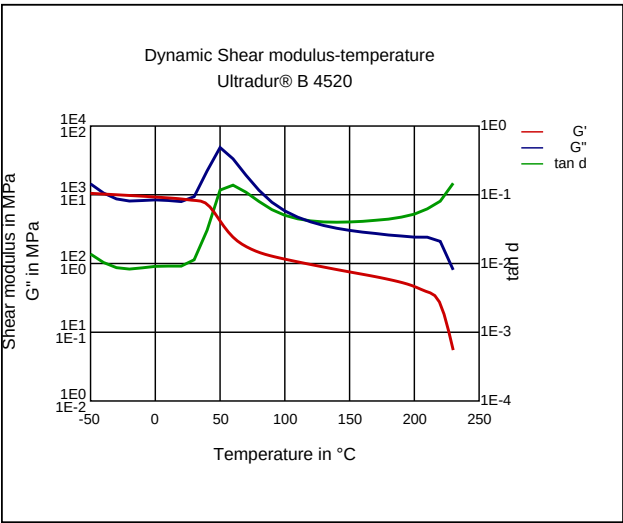
Viscosity-shear rate



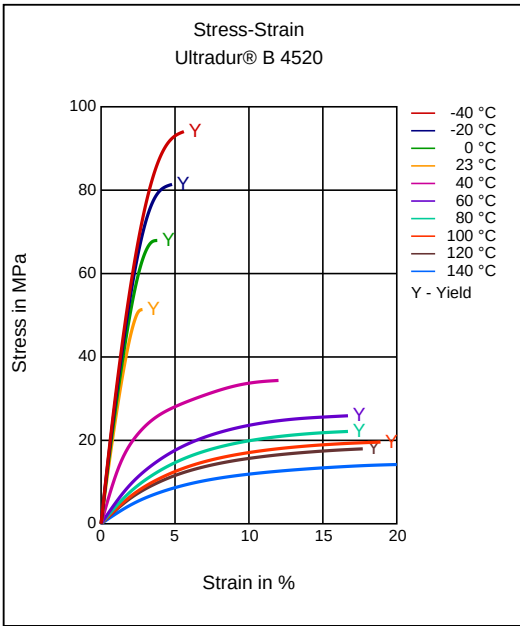
Shearstress-shear rate



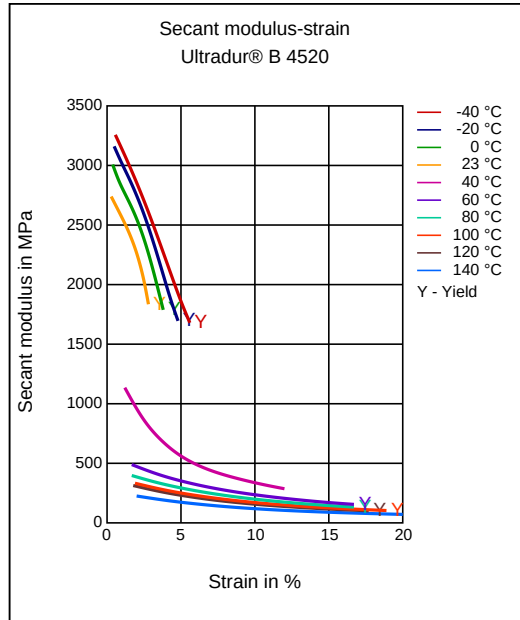
Dynamic Shear modulus-temperature



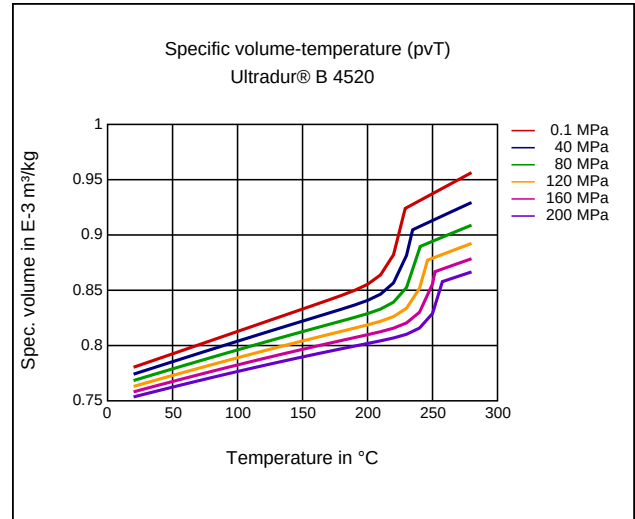
Stress-strain



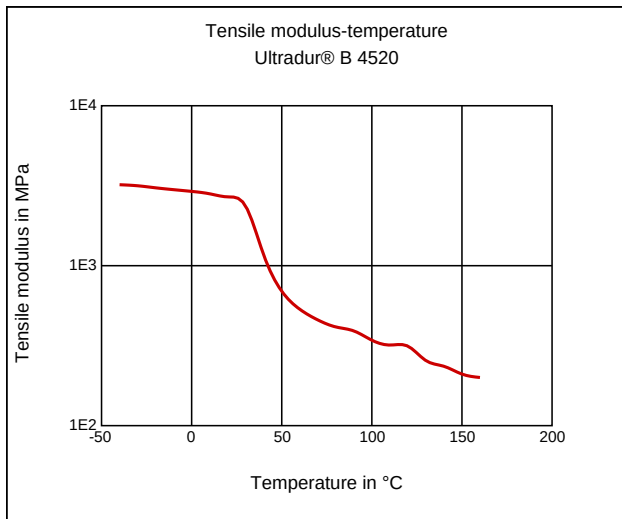
#### Secant modulus-strain



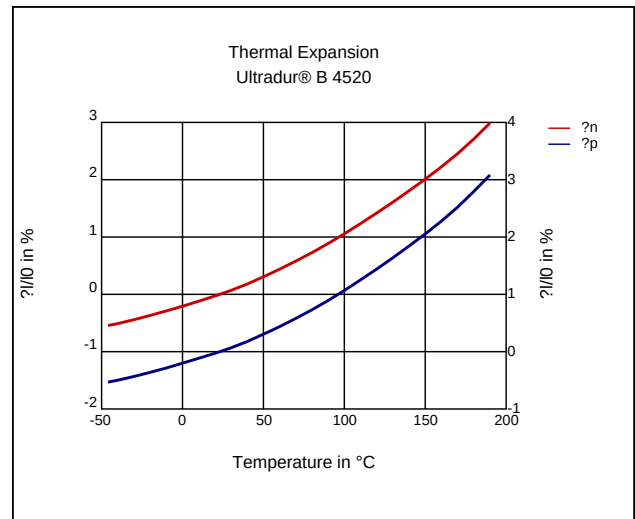
#### Specific volume-temperature (pvT)



#### Tensile Modulus-Temperature



#### Coeff. of linear thermal expansion, normal



### Characteristics

#### Processing

Injection Molding, Other Extrusion

#### Delivery form

Pellets, Black, Natural Color

#### Additives

Lubricants

#### Special Characteristics

Light stabilized or stable to light, UV stabilized, Heat aging stabilized

#### Applications

Automotive

#### Injection Molding

##### PREPROCESSING

Pre/Post-processing, max. allowed water content: .04 %

Pre/Post-processing, Pre-drying, Temperature: 80 - 120 °C

Pre/Post-processing, Pre-drying, Time: 4 h

#### PROCESSING

injection molding, Melt temperature, range: 250 - 275 °C

injection molding, Melt temperature, recommended: 260 °C

injection molding, Mold temperature, range: 40 - 70 °C

injection molding, Mold temperature, recommended: 60 °C

#### Chemical Media Resistance

##### Acids

- ✓ Acetic Acid (5% by mass) (23°C)

#### Disclaimer

##### Liability Exclusion

These guide values are measured and provided by the product manufacturer and have been determined on standardised test specimens and can be affected by pigmentation, mould design and processing conditions. M-Base has taken the guide values from the producer's original Technical Data Sheet. **ALBIS AND M-BASE ARE THEREFORE NOT RESPONSIBLE FOR THE ACCURACY OF THE GUIDE VALUES AND CANNOT GIVE ANY WARRANTY WITH REGARD TO THEIR CORRECTNESS.**

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