

# Zytel® HTNFR52G35NHF BK337 (PRELIMINARY)

## HIGH PERFORMANCE POLYAMIDE RESIN

Zytel® HTNFR52G35NHF BK337 is a 35% Glass Reinforced, Flame Retardant, Non-Halogenated, PPA, High Performance Polyamide with Improved Flow

### Product information

|                      |                                              |           |
|----------------------|----------------------------------------------|-----------|
| Resin Identification | PA(6T/66)-GF35FR(40)                         | ISO 1043  |
| Part Marking Code    | >PA(6T/66)-GF35FR(40)<                       | ISO 11469 |
| Part Marking Code    | >PPA-GF35FR<                                 | SAE J1344 |
| ISO designation      | ISO 16396-PA6T/66,GF35 FR(40),M1CF1G,S10-120 |           |

### Rheological properties

|                              | dry/cond. |   |                 |
|------------------------------|-----------|---|-----------------|
| Moulding shrinkage, parallel | 0.3 / -   | % | ISO 294-4, 2577 |
| Moulding shrinkage, normal   | 0.9 / -   | % | ISO 294-4, 2577 |

### Typical mechanical properties

|                                       | dry/cond. |                   |              |
|---------------------------------------|-----------|-------------------|--------------|
| Tensile Modulus                       | 13000 / - | MPa               | ISO 527-1/-2 |
| Stress at break, 5mm/min              | 140 / -   | MPa               | ISO 527-1/-2 |
| Strain at break, 5mm/min              | 1.4 / -   | %                 | ISO 527-1/-2 |
| Flexural Modulus                      | 11000 / - | MPa               | ISO 178      |
| Flexural Strength                     | 200 / -   | MPa               | ISO 178      |
| Charpy notched impact strength, 23°C  | 8 / -     | kJ/m <sup>2</sup> | ISO 179/1eA  |
| Charpy notched impact strength, -30°C | 8 / -     | kJ/m <sup>2</sup> | ISO 179/1eA  |
| Poisson's ratio                       | 0.33 / -  |                   |              |

### Thermal properties

|                                         | dry/cond. |    |                |
|-----------------------------------------|-----------|----|----------------|
| Melting temperature, 10°C/min           | 310 / *   | °C | ISO 11357-1/-3 |
| Melting temperature, first heat         | 310 / *   | °C | ISO 11357-1/-3 |
| Glass transition temperature, 10°C/min  | 90 / 45   | °C | ISO 11357-1/-3 |
| Temp. of deflection under load, 1.8 MPa | 280 / *   | °C | ISO 75-1/-2    |
| RTI, electrical, 0.75mm                 | 140       | °C | UL 746B        |
| RTI, electrical, 1.5mm                  | 140       | °C | UL 746B        |
| RTI, electrical, 3mm                    | 140       | °C | UL 746B        |
| RTI, impact, 0.75mm                     | 115       | °C | UL 746B        |
| RTI, impact, 1.5mm                      | 115       | °C | UL 746B        |
| RTI, impact, 3mm                        | 120       | °C | UL 746B        |
| RTI, strength, 0.75mm                   | 125       | °C | UL 746B        |
| RTI, strength, 1.5mm                    | 125 / *   | °C | UL 746B        |
| RTI, strength, 3mm                      | 130       | °C | UL 746B        |
| TGA curve                               | available |    | ISO 11359-1/-2 |



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### Flammability

|                                        | dry/cond. |        |                      |
|----------------------------------------|-----------|--------|----------------------|
| Burning Behav. at 1.5mm nom. thickn.   | V-0/*     | class  | UL 94                |
| Thickness tested                       | 1.5/*     | mm     | UL 94                |
| UL recognition                         | yes/*     |        | UL 94                |
| Burning Behav. at thickness h          | V-0/*     | class  | UL 94                |
| Thickness tested                       | 0.75/*    | mm     | UL 94                |
| UL recognition                         | yes/*     |        | UL 94                |
| Oxygen index                           | 33/*      | %      | ISO 4589-1/-2        |
| Glow Wire Flammability Index, 0.75mm   | 960/-     | °C     | IEC 60695-2-12       |
| Glow Wire Flammability Index, 1.5mm    | 960/-     | °C     | IEC 60695-2-12       |
| Glow Wire Flammability Index, 3mm      | 960/-     | °C     | IEC 60695-2-12       |
| Glow Wire Ignition Temperature, 0.75mm | 775/-     | °C     | IEC 60695-2-13       |
| Glow Wire Ignition Temperature, 1.5mm  | 775/-     | °C     | IEC 60695-2-13       |
| Glow Wire Ignition Temperature, 3mm    | 850/-     | °C     | IEC 60695-2-13       |
| FMVSS Class                            | B         |        | ISO 3795 (FMVSS 302) |
| Burning rate, Thickness 1 mm           | <80       | mm/min | ISO 3795 (FMVSS 302) |

### Electrical properties

|                                   | dry/cond. |       |                            |
|-----------------------------------|-----------|-------|----------------------------|
| Relative permittivity, 100Hz      | 4.3/-     |       | IEC 62631-2-1              |
| Relative permittivity, 1MHz       | 3.9/-     |       | IEC 62631-2-1              |
| Dissipation factor, 100Hz         | 50/-      | E-4   | IEC 62631-2-1              |
| Dissipation factor, 1MHz          | 110/-     | E-4   | IEC 62631-2-1              |
| Electric strength                 | 31/-      | kV/mm | IEC 60243-1                |
| Comparative tracking index        | 600/-     |       | IEC 60112                  |
| Comparative tracking index, 3.0mm | 0/-       | PLC   | UL 746A                    |
| Dielectric Constant, 1 GHz        | 3.9/-     |       | ASTM D 2520 B              |
| Dielectric Constant, 10 GHz       | 3.9/-     |       | ASTM D 2520 B / IPC-TM-650 |
| Dissipation Factor, 1 GHz         | 110/-     | E-4   | ASTM D 2520 B              |
| Dissipation Factor, 10 GHz        | 104/-     | E-4   | ASTM D 2520 B / IPC-TM-650 |

### Other properties

|         | dry/cond. |       |          |
|---------|-----------|-------|----------|
| Density | 1490/-    | kg/m³ | ISO 1183 |

### Injection

|                                 |         |
|---------------------------------|---------|
| Drying Recommended              | yes     |
| Drying Temperature              | 100 °C  |
| Drying Time, Dehumidified Dryer | 6 - 8 h |
| Processing Moisture Content     | ≤0.1 %  |
| Min. melt temperature           | 320 °C  |
| Max. melt temperature           | 325 °C  |
| Min. mould temperature          | 90 °C   |



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Max. mould temperature

130 °C

### Characteristics

Additives

Flame retardant

### Additional information

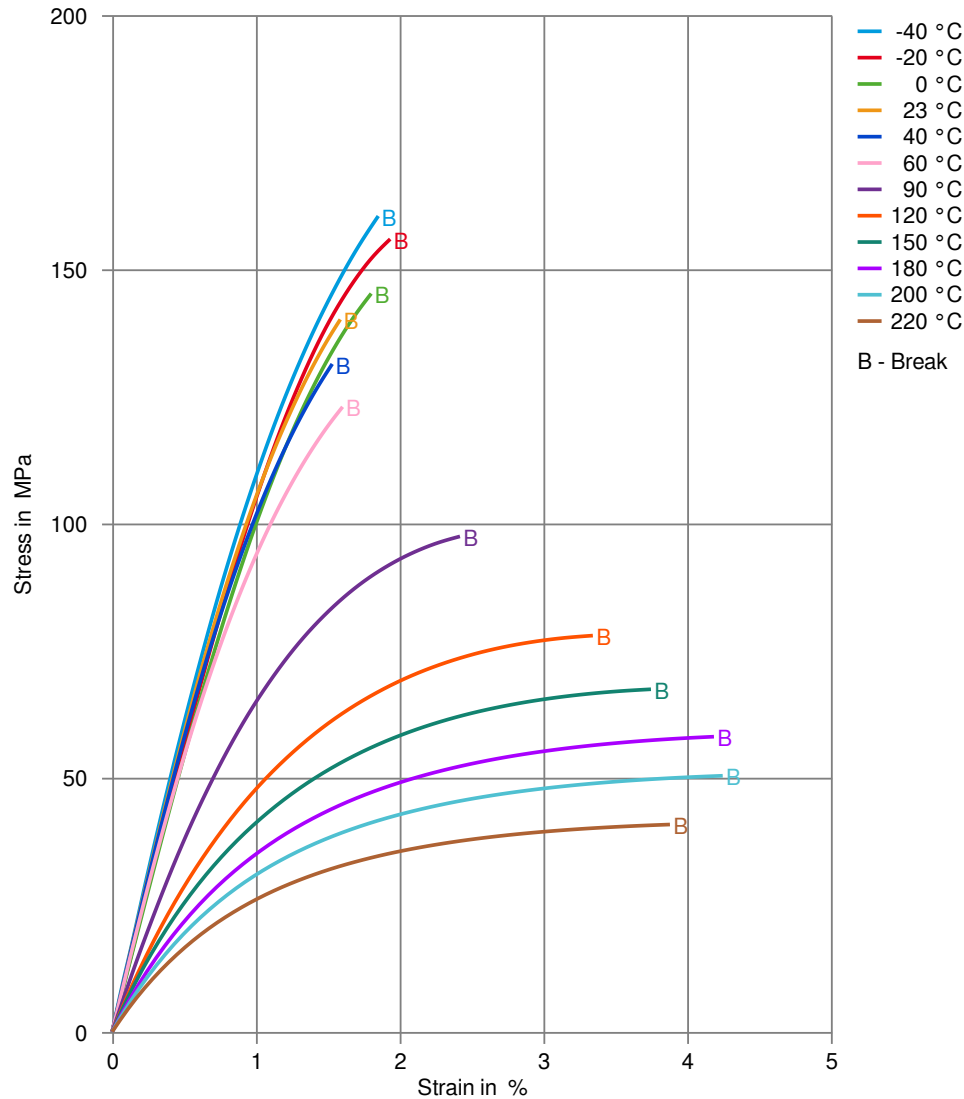
Injection molding

For molding machine components, use corrosion resistant and wear resistant steel. For details please contact our representative. Limit the residence time of the resin in the machine. Use proper protective equipment and adequate ventilation.



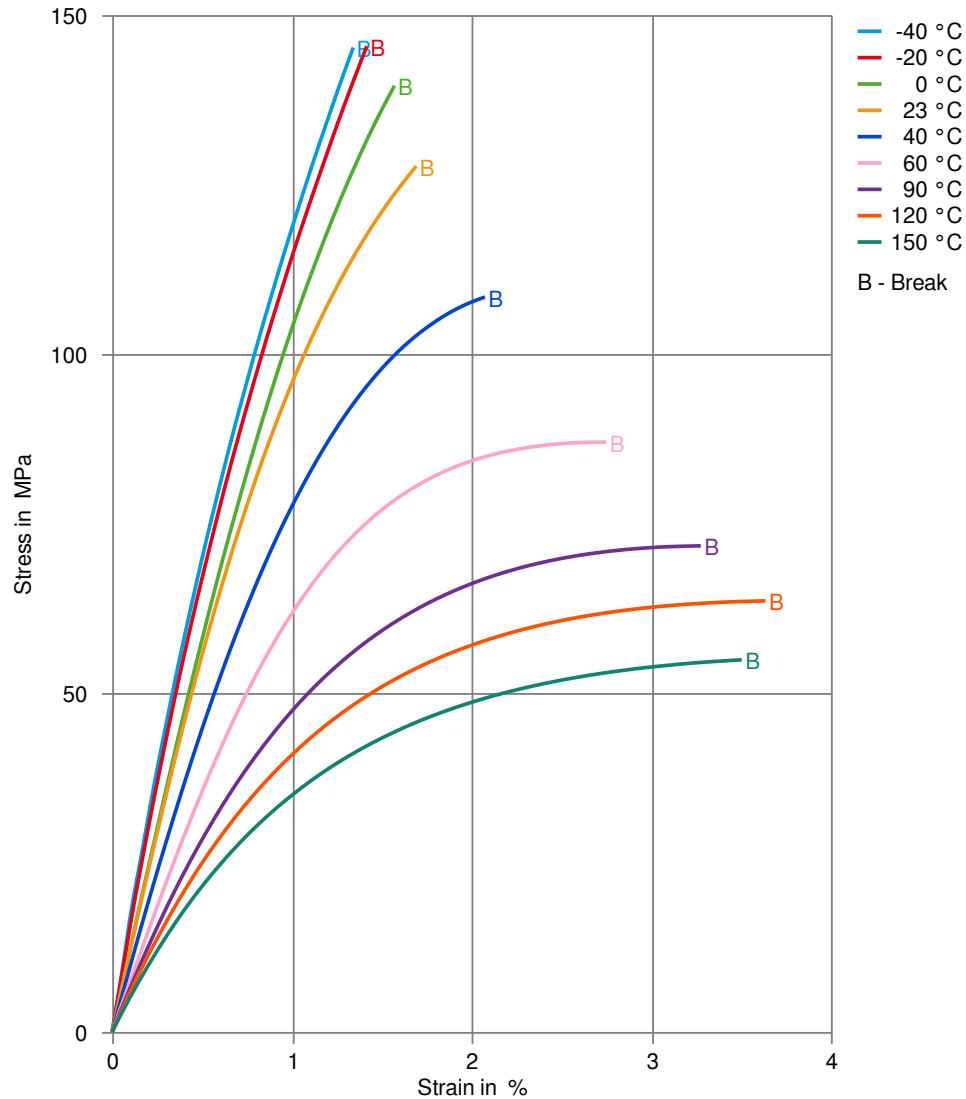
# Zytel® HTNFR52G35NHF BK337 (PRELIMINARY) HIGH PERFORMANCE POLYAMIDE RESIN

## Stress-strain (dry)



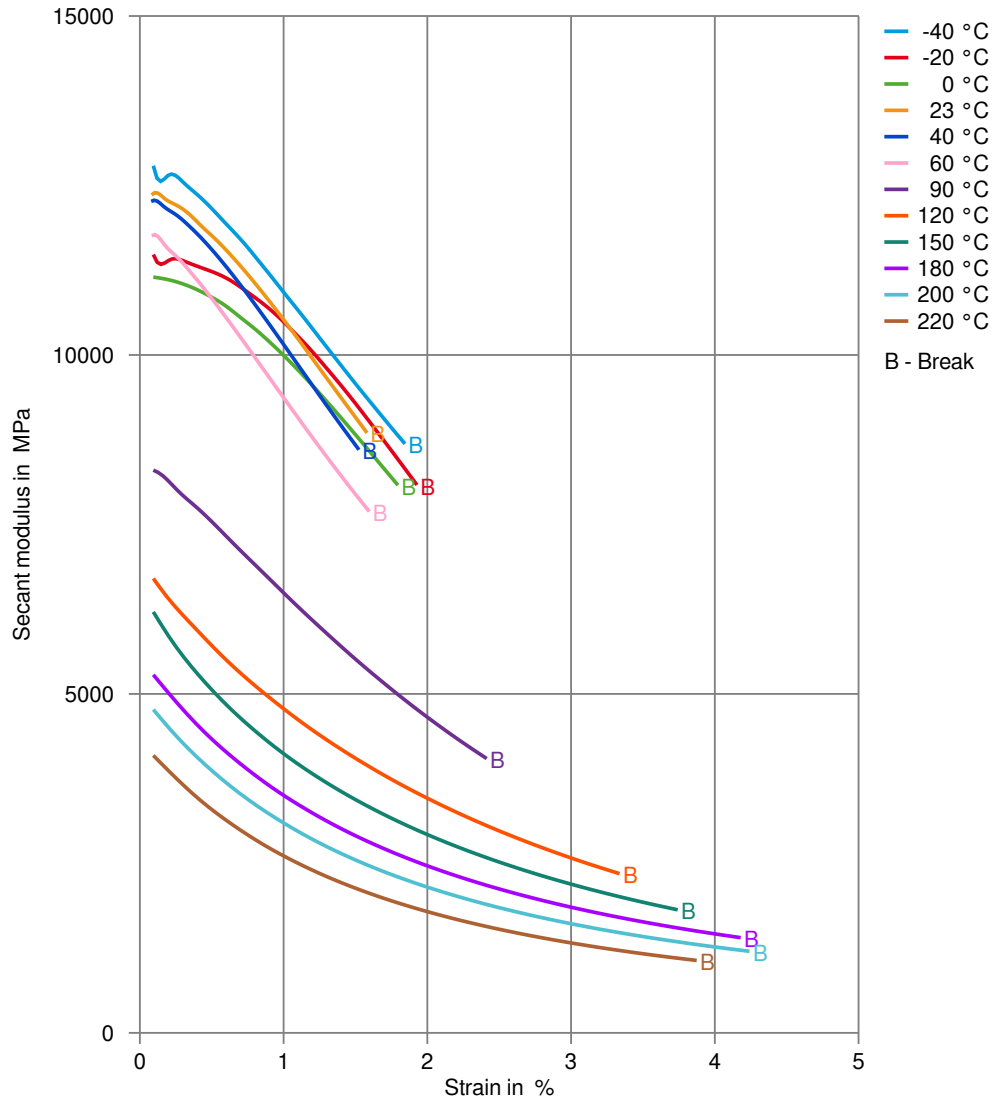
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## Stress-strain (cond.)



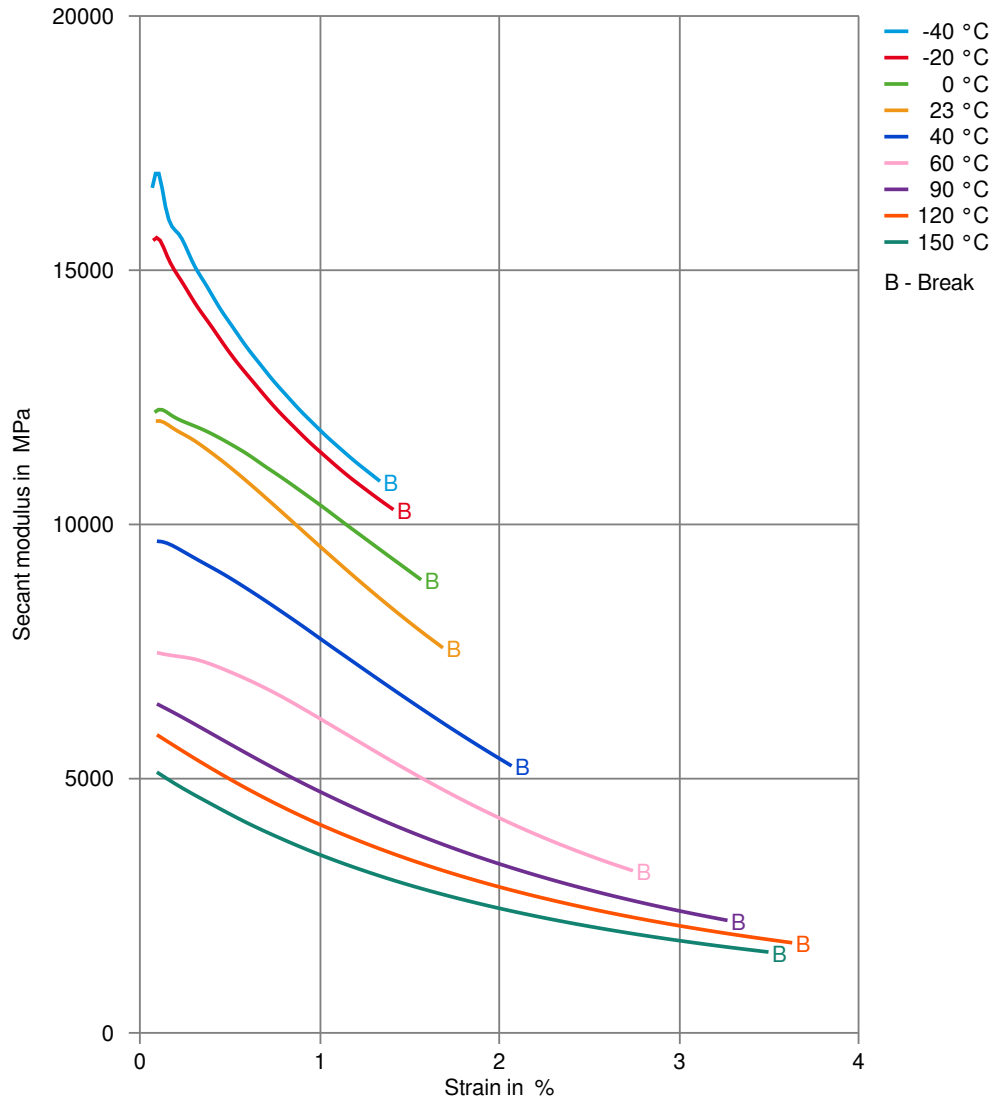
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## Secant modulus-strain (dry)



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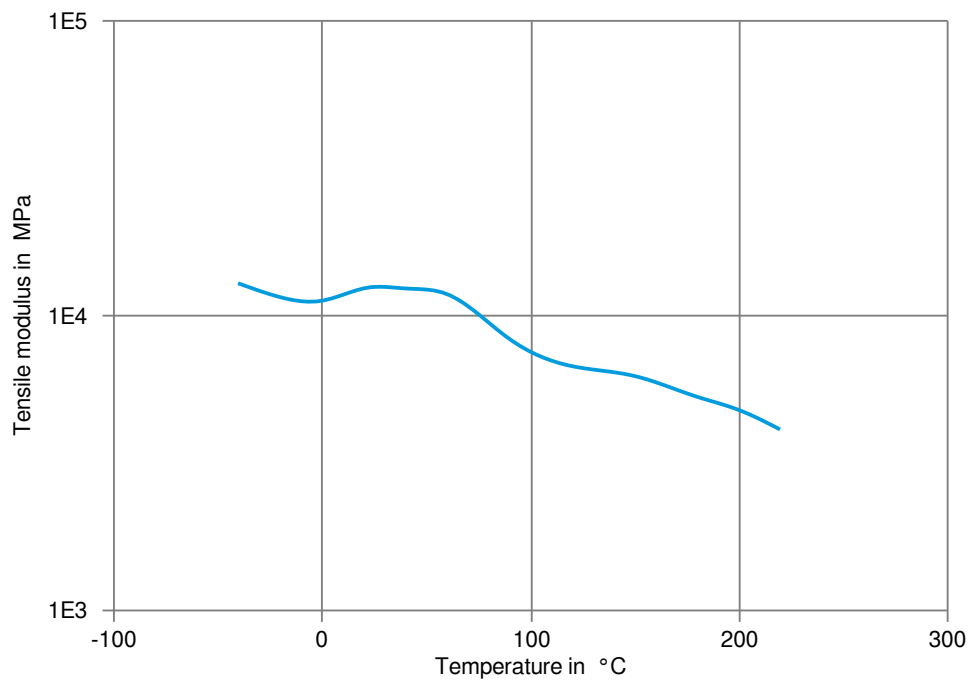
## Secant modulus-strain (cond.)



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### Tensile modulus-temperature (dry)



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## HIGH PERFORMANCE POLYAMIDE RESIN

### Tensile modulus-temperature (cond.)

