

# Zytel® HTN54G15HSLR BK031

## HIGH PERFORMANCE POLYAMIDE RESIN

Zytel® HTN high performance polyamide resins feature high retention of properties upon exposure to elevated temperature, to high moisture, and to harsh chemical environments. Polymer families and grades of Zytel® HTN are tailored to optimize performance as well as processability.

Typical applications with Zytel® HTN include demanding applications in the automotive, electrical and electronics, domestic appliances, and construction industries.

Zytel® HTN54G15HSLR BK031 is a 15% glass reinforced, toughened, heat stabilised high performance polyamide resin. It is also a PPA resin.

### Product information

|                      |                                     |           |
|----------------------|-------------------------------------|-----------|
| Resin Identification | PA-IGF15                            | ISO 1043  |
| Part Marking Code    | >PA-IGF15<                          | ISO 11469 |
| Part Marking Code    | >PPA-IGF15<                         | SAE J1344 |
| ISO designation      | ISO 16396-PA-I,GF15,M1CGHRW,S10-050 |           |

### Rheological properties

|                              |           |   |                 |
|------------------------------|-----------|---|-----------------|
|                              | dry/cond. |   |                 |
| Moulding shrinkage, parallel | 0.4 / -   | % | ISO 294-4, 2577 |
| Moulding shrinkage, normal   | 0.7 / -   | % | ISO 294-4, 2577 |

### Typical mechanical properties

|                                       |             |                   |              |
|---------------------------------------|-------------|-------------------|--------------|
|                                       | dry/cond.   |                   |              |
| Tensile Modulus                       | 5500 / 6000 | MPa               | ISO 527-1/-2 |
| Stress at break, 5mm/min              | 130 / 120   | MPa               | ISO 527-1/-2 |
| Strain at break, 5mm/min              | 3.5 / 3     | %                 | ISO 527-1/-2 |
| Flexural Modulus                      | 4900 / -    | MPa               | ISO 178      |
| Flexural Strength                     | 210 / -     | MPa               | ISO 178      |
| Charpy impact strength, 23°C          | 60 / -      | kJ/m <sup>2</sup> | ISO 179/1eU  |
| Charpy notched impact strength, 23°C  | 6 / -       | kJ/m <sup>2</sup> | ISO 179/1eA  |
| Charpy notched impact strength, -40°C | 5 / -       | kJ/m <sup>2</sup> | ISO 179/1eA  |
| Poisson's ratio                       | 0.35 / 0.35 |                   |              |

### Thermal properties

|                                                       |           |       |                |
|-------------------------------------------------------|-----------|-------|----------------|
|                                                       | dry/cond. |       |                |
| Melting temperature, first heat                       | 300 / *   | °C    | ISO 11357-1/-3 |
| Glass transition temperature, 10°C/min                | 120 / 65  | °C    | ISO 11357-1/-3 |
| Temp. of deflection under load, 1.8 MPa               | 230 / *   | °C    | ISO 75-1/-2    |
| Temp. of deflection under load, 0.45 MPa              | 280 / *   | °C    | ISO 75-1/-2    |
| Coeff. of linear therm. expansion, parallel, -40-23°C | 34 / *    | E-6/K | ISO 11359-1/-2 |
| Coeff. of linear therm. expansion, parallel           | 34 / *    | E-6/K | ISO 11359-1/-2 |
| Coeff. of linear therm. expansion, normal, -40-23°C   | 70 / *    | E-6/K | ISO 11359-1/-2 |
| Coeff. of linear therm. expansion, normal             | 73 / *    | E-6/K | ISO 11359-1/-2 |
| RTI, electrical, 0.75mm                               | 150       | °C    | UL 746B        |
| RTI, electrical, 1.5mm                                | 150       | °C    | UL 746B        |
| RTI, electrical, 3mm                                  | 150       | °C    | UL 746B        |
| RTI, impact, 0.75mm                                   | 105       | °C    | UL 746B        |



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|-----------------------|-------|----|---------|
| RTI, impact, 1.5mm    | 120   | °C | UL 746B |
| RTI, impact, 3mm      | 130   | °C | UL 746B |
| RTI, strength, 0.75mm | 115   | °C | UL 746B |
| RTI, strength, 1.5mm  | 130/* | °C | UL 746B |
| RTI, strength, 3mm    | 140   | °C | UL 746B |

### Flammability

|                                      |           |        |                      |
|--------------------------------------|-----------|--------|----------------------|
|                                      | dry/cond. |        |                      |
| Burning Behav. at 1.5mm nom. thickn. | HB/*      | class  | UL 94                |
| Thickness tested                     | 1.5/*     | mm     | UL 94                |
| UL recognition                       | yes/*     |        | UL 94                |
| Burning Behav. at thickness h        | HB/*      | class  | UL 94                |
| Thickness tested                     | 0.8/*     | mm     | UL 94                |
| UL recognition                       | yes/*     |        | UL 94                |
| FMVSS Class                          | B         |        | ISO 3795 (FMVSS 302) |
| Burning rate, Thickness 1 mm         | <80       | mm/min | ISO 3795 (FMVSS 302) |

### Electrical properties

|                    |           |       |               |
|--------------------|-----------|-------|---------------|
|                    | dry/cond. |       |               |
| Volume resistivity | 1E13/-    | Ohm.m | IEC 62631-3-1 |

### Other properties

|         |           |       |          |
|---------|-----------|-------|----------|
|         | dry/cond. |       |          |
| Density | 1250/-    | kg/m³ | ISO 1183 |

### Injection

|                                 |       |    |          |
|---------------------------------|-------|----|----------|
| Drying Recommended              | yes   |    |          |
| Drying Temperature              | 100   | °C |          |
| Drying Time, Dehumidified Dryer | 6 - 8 | h  |          |
| Processing Moisture Content     | ≤0.1  | %  |          |
| Melt Temperature Optimum        | 325   | °C | Internal |
| Min. melt temperature           | 320   | °C |          |
| Max. melt temperature           | 330   | °C |          |
| Min. mould temperature          | 90    | °C |          |
| Max. mould temperature          | 110   | °C |          |

### Additional information

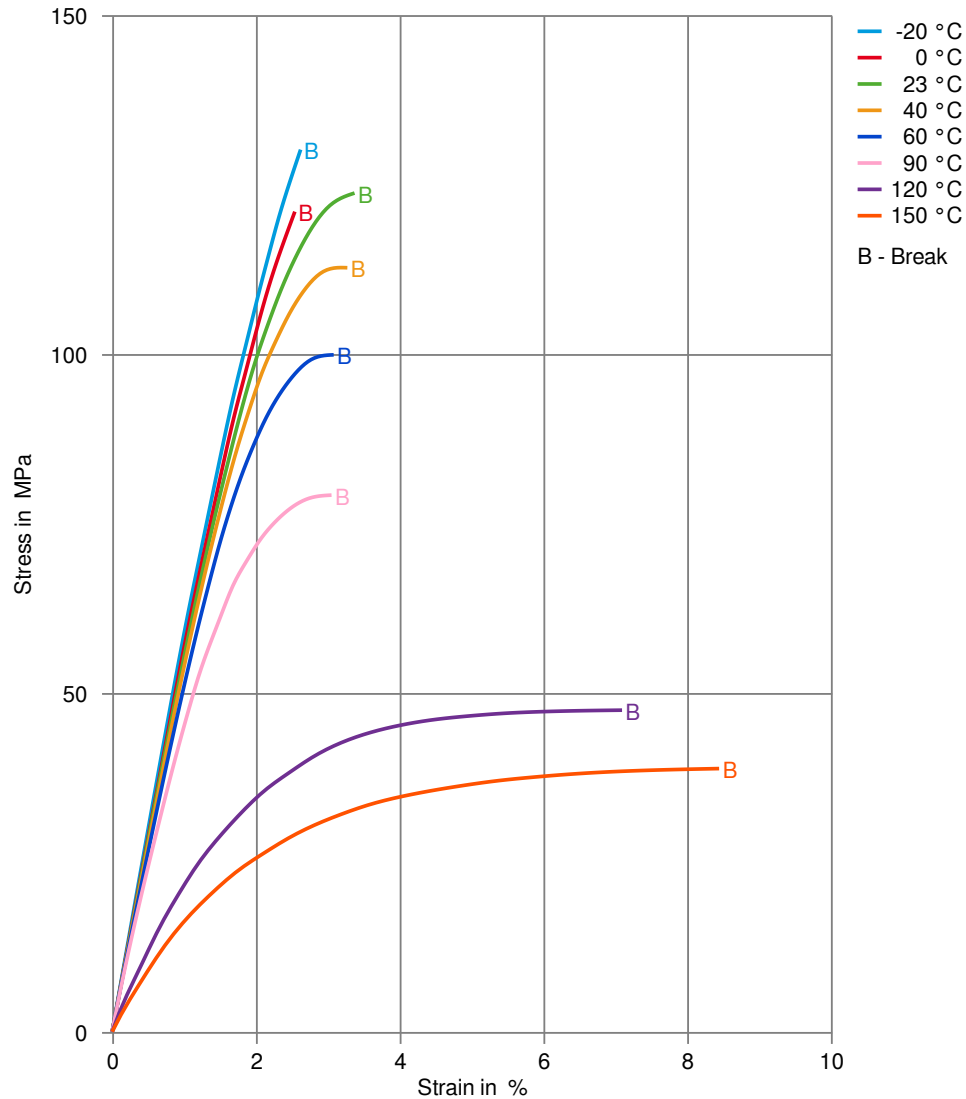
|                   |                                                                                                                                                                                                                     |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Injection molding | During molding, use proper protective equipment and adequate ventilation. Avoid exposure to fumes and limit the hold up time and temperature of the resin in the machine. Purge degraded resin carefully with HDPE. |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



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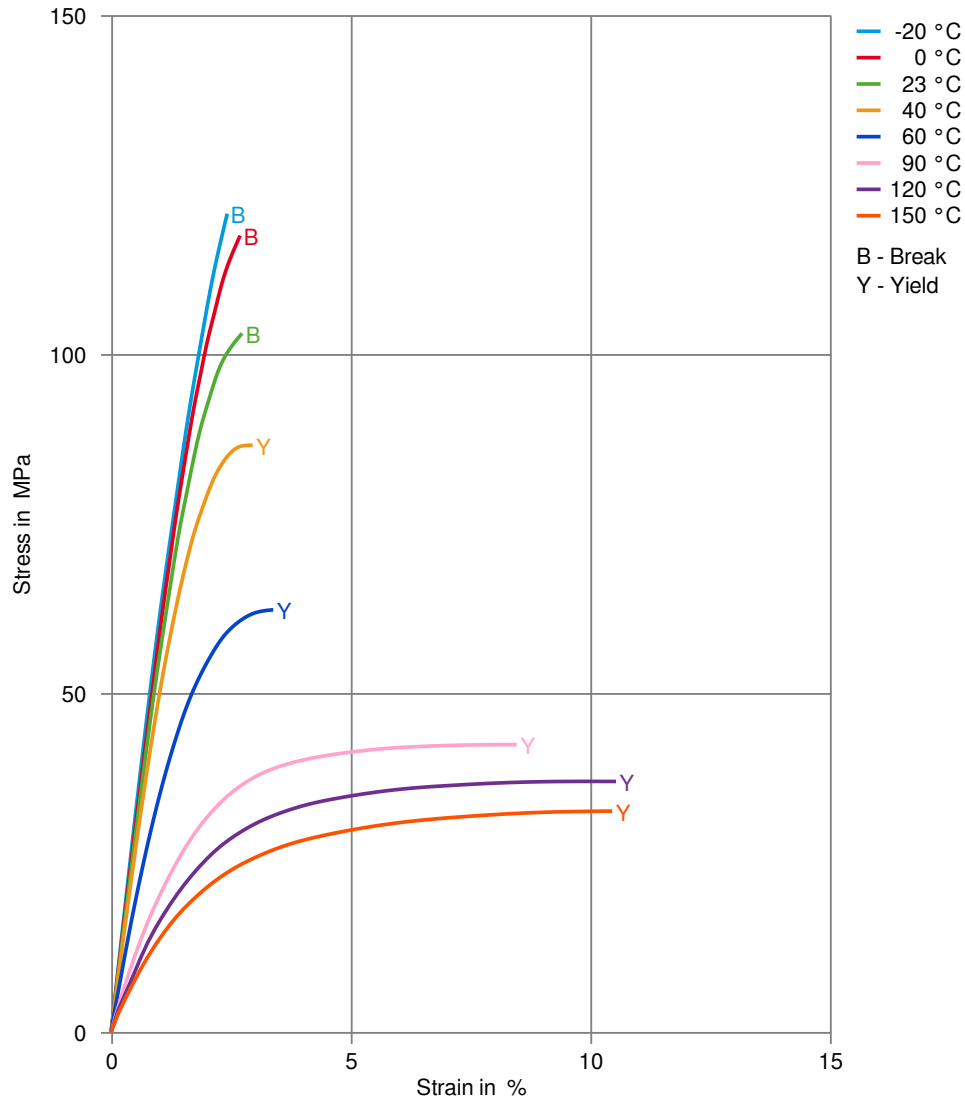
### Stress-strain (dry)



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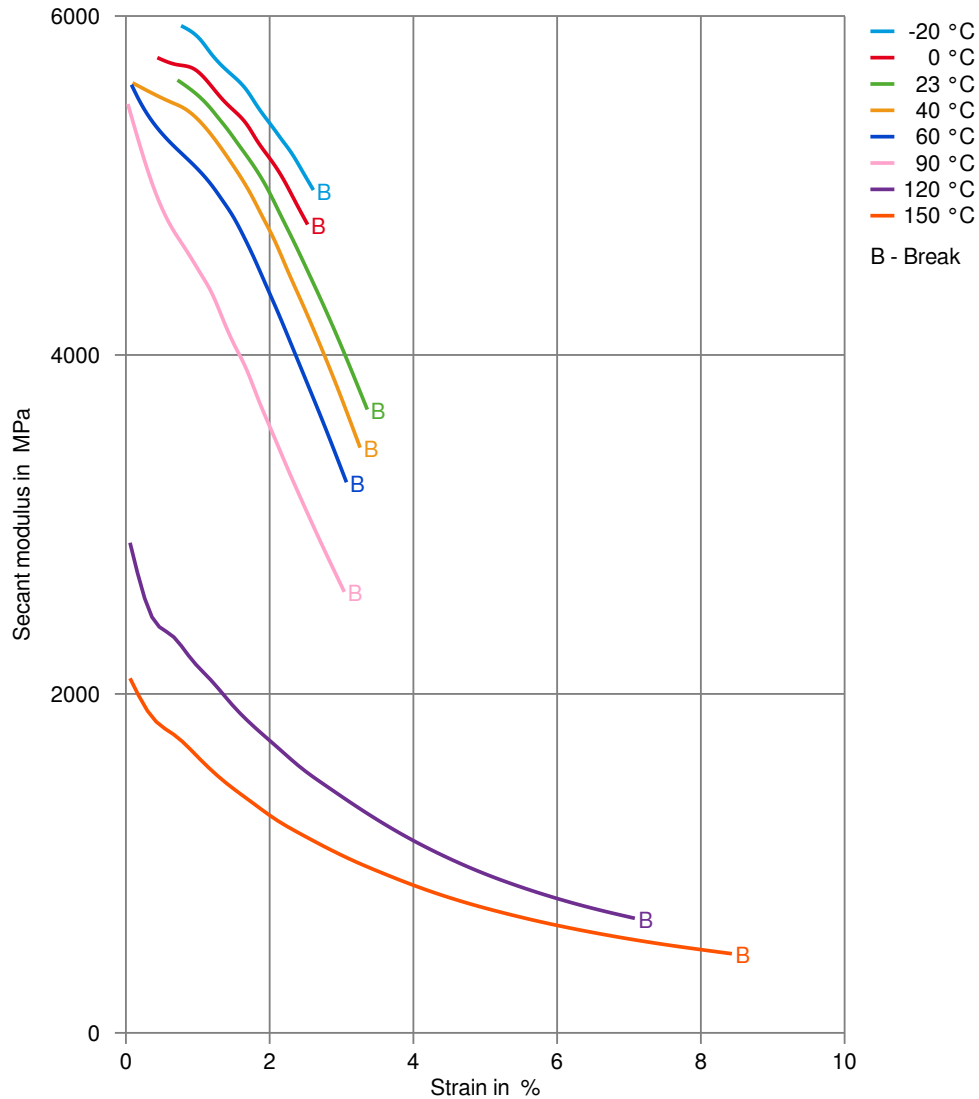
### Stress-strain (cond.)



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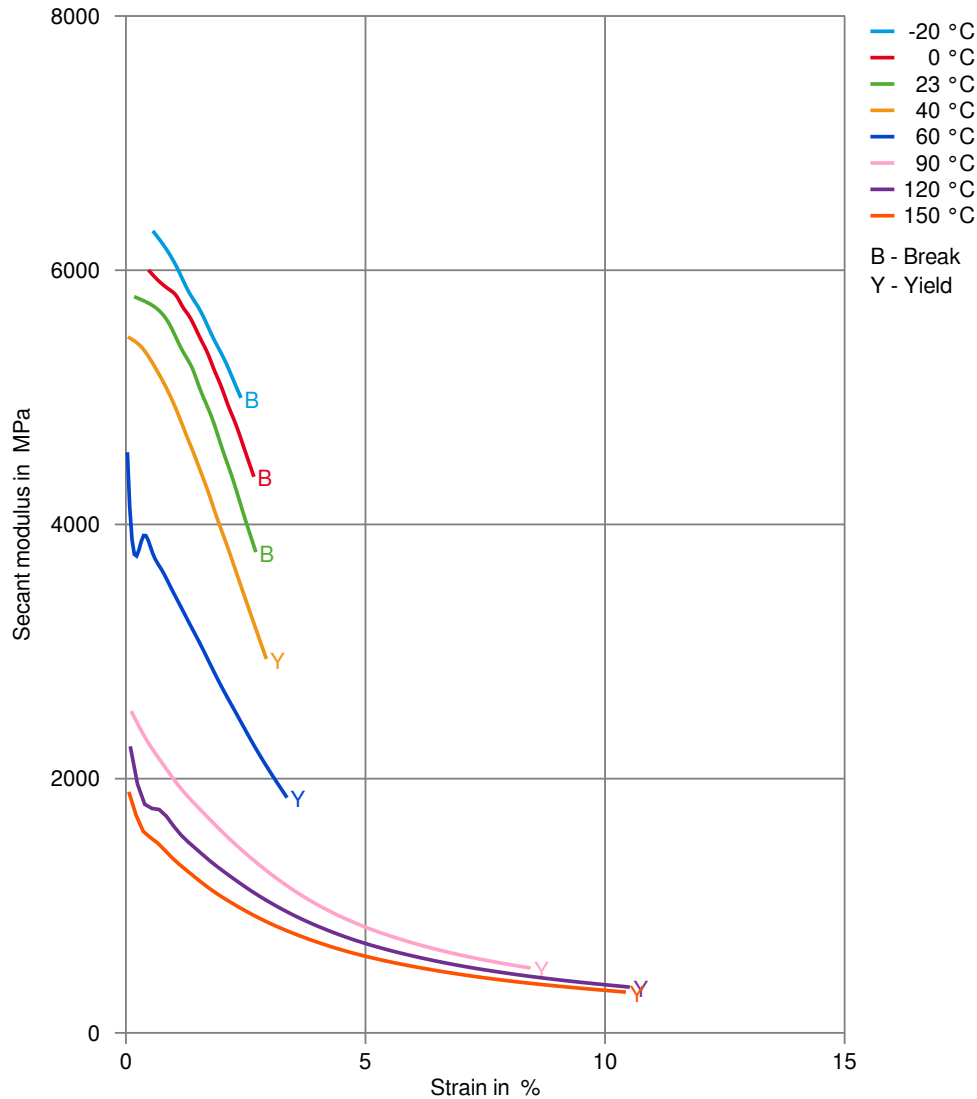
## Secant modulus-strain (dry)



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### Secant modulus-strain (cond.)



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### Chemical Media Resistance

#### Other

- ✓ Water, 23°C
- ✗ Water, 90°C

#### Symbols used:

- ✓ possibly resistant  
Defined as: Supplier has sufficient indication that contact with chemical can be potentially accepted under the intended use conditions and expected service life. Criteria for assessment have to be indicated (e.g. surface aspect, volume change, property change).
- ✗ not recommended - see explanation  
Defined as: Not recommended for general use. However, short-term exposure under certain restricted conditions could be acceptable (e.g. fast cleaning with thorough rinsing, spills, wiping, vapor exposure).

