

# Zytel® HTNFE350064 BK544

## 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® HTNFE350064 BK544 is a carbon fiber reinforced, toughened, heat stabilised, conductive high performance polyamide resin developed for static dissipative applications. It is also a PPA resin.

### Product information

Resin Identification	PA-ICF15	ISO 1043
Part Marking Code	>PA-ICF15<	ISO 11469
Part Marking Code	>PPA-ICF<	SAE J1344
ISO designation	ISO 16396-PA-I,CF,M1CGHRSZ,S10-100	

### Rheological properties

	dry/cond.		
Temperature	325 / *	°C	
Load	5 / *	kg	
Melt mass-flow rate	40 / *	g/10min	ISO 1133
Viscosity number	105 / *	cm <sup>3</sup> /g	ISO 307, 1628
Moulding shrinkage, parallel	0.2 / -	%	ISO 294-4, 2577
Moulding shrinkage, normal	0.5 / -	%	ISO 294-4, 2577

### Typical mechanical properties

	dry/cond.		
Tensile modulus	10400 / 11000	MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	168 / 162	MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	2.4 / 2.3	%	ISO 527-1/-2
Flexural modulus	8700 / -	MPa	ISO 178
Flexural strength	240 / -	MPa	ISO 178
Charpy impact strength, 23°C	48 / -	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	3 / -	kJ/m <sup>2</sup>	ISO 179/1eA
Poisson's ratio	0.34 / 0.34		

### Thermal properties

	dry/cond.		
Melting temperature, 10°C/min	305 / *	°C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	258 / *	°C	ISO 75-1/-2
Coeff. of linear therm. expansion, parallel, -40-23°C	17 / *	E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), parallel	14 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, parallel, 55-160°C	15 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, -40-23°C	80 / *	E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	83 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, 55-160°C	85 / *	E-6/K	ISO 11359-1/-2
Thermal conductivity, flow	0.46	W/(m K)	ISO 22007-2
Specific heat capacity of melt	2600	J/(kg K)	ISO 22007-4

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Specific heat capacity solid	1120	J/(kg K)	ISO 22007-4
TGA curve	available		ISO 11359-1/-2

### Flammability

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	1000/-	Ohm.m	IEC 62631-3-1
Comparative tracking index	-/175		IEC 60112
Volume resistivity, conductive plastics	1000/-	Ohm.m	ASTM D 4496

### Physical/Other properties

	dry/cond.		
Density	1200/-	kg/m <sup>3</sup>	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
Min. melt temperature	320 °C
Max. melt temperature	330 °C
Mold Temperature Optimum	95 °C
Min. mould temperature	85 °C
Max. mould temperature	105 °C
Ejection temperature	263 °C

### Characteristics

Processing	Injection Moulding
Delivery form	Pellets
Additives	Release agent
Special characteristics	Increased electrical conductivity, Static dissipative, Heat stabilised or stable to heat

### 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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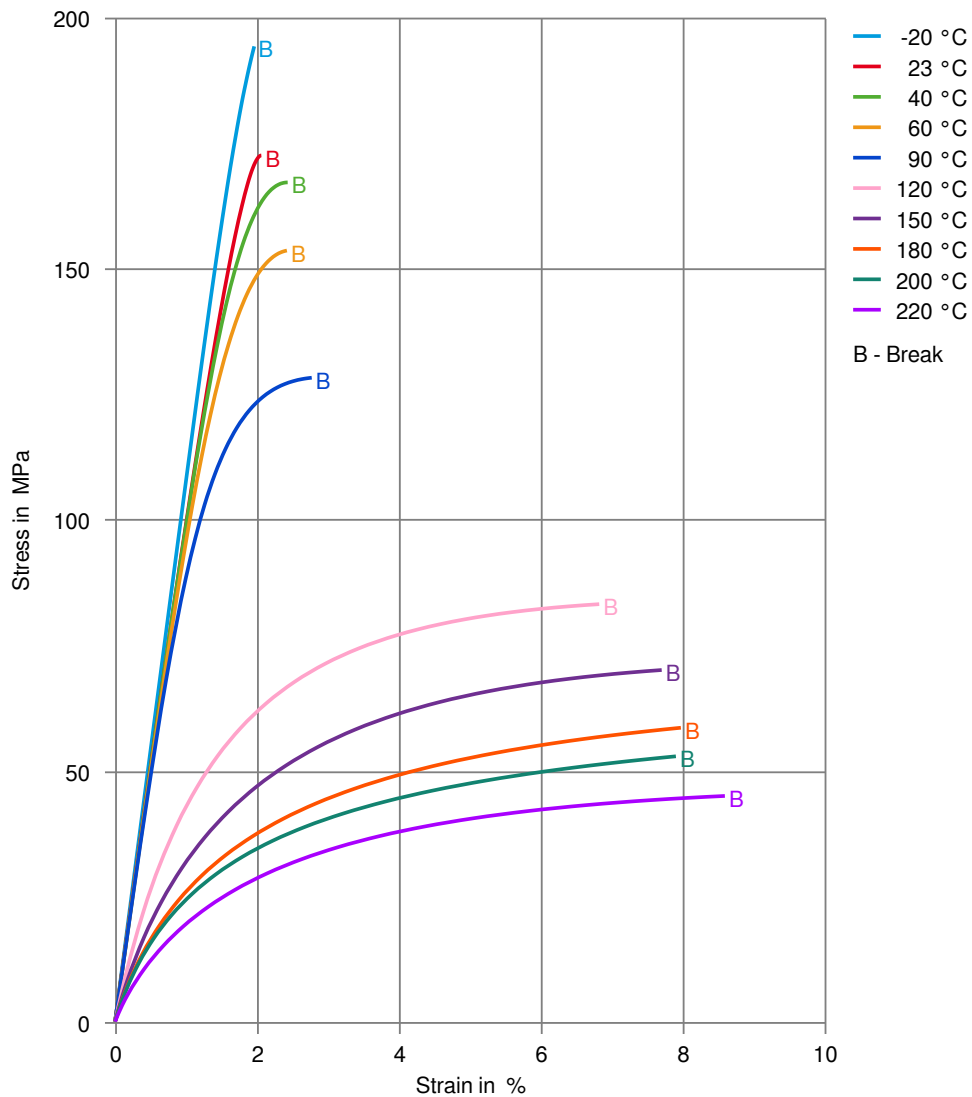
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### Automotive

OEM  
Ford

STANDARD  
WSS-M98P14-A3

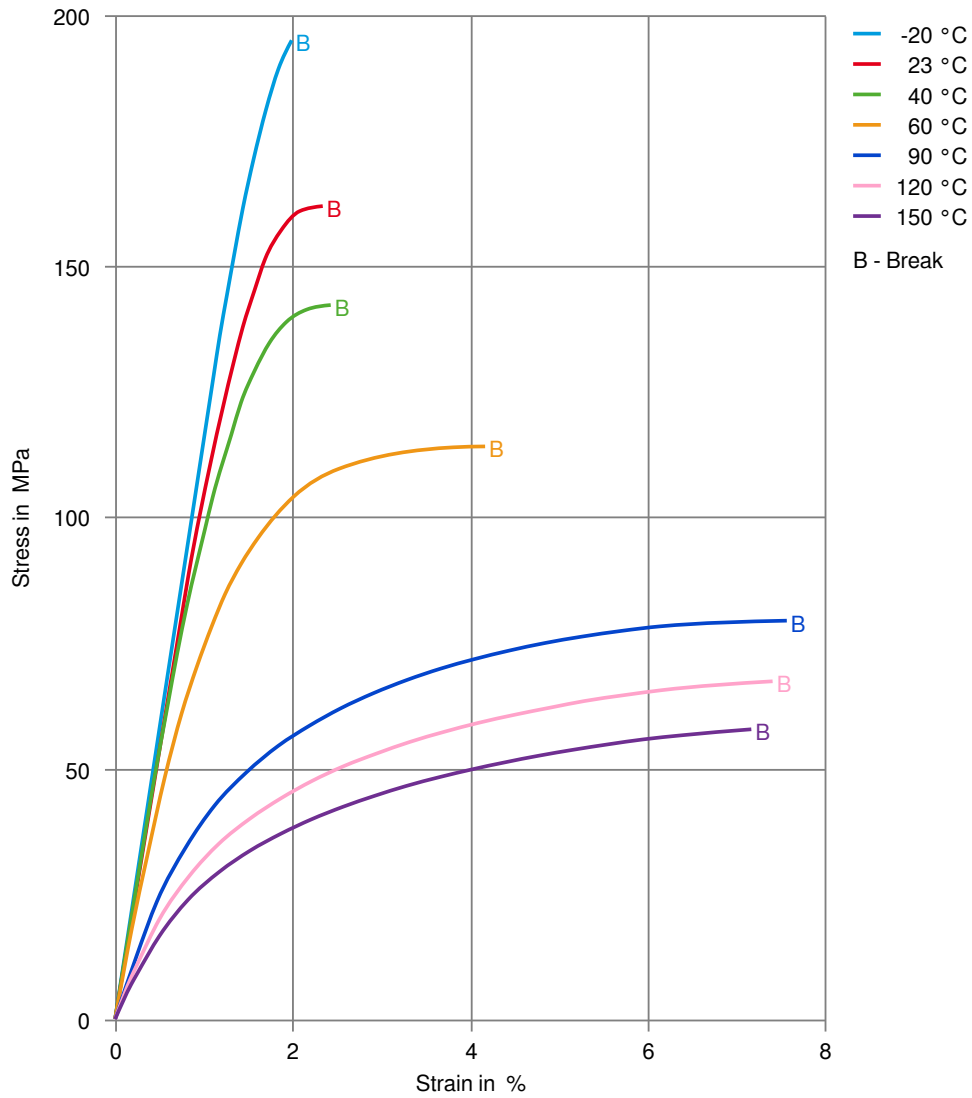
### Stress-strain (dry)



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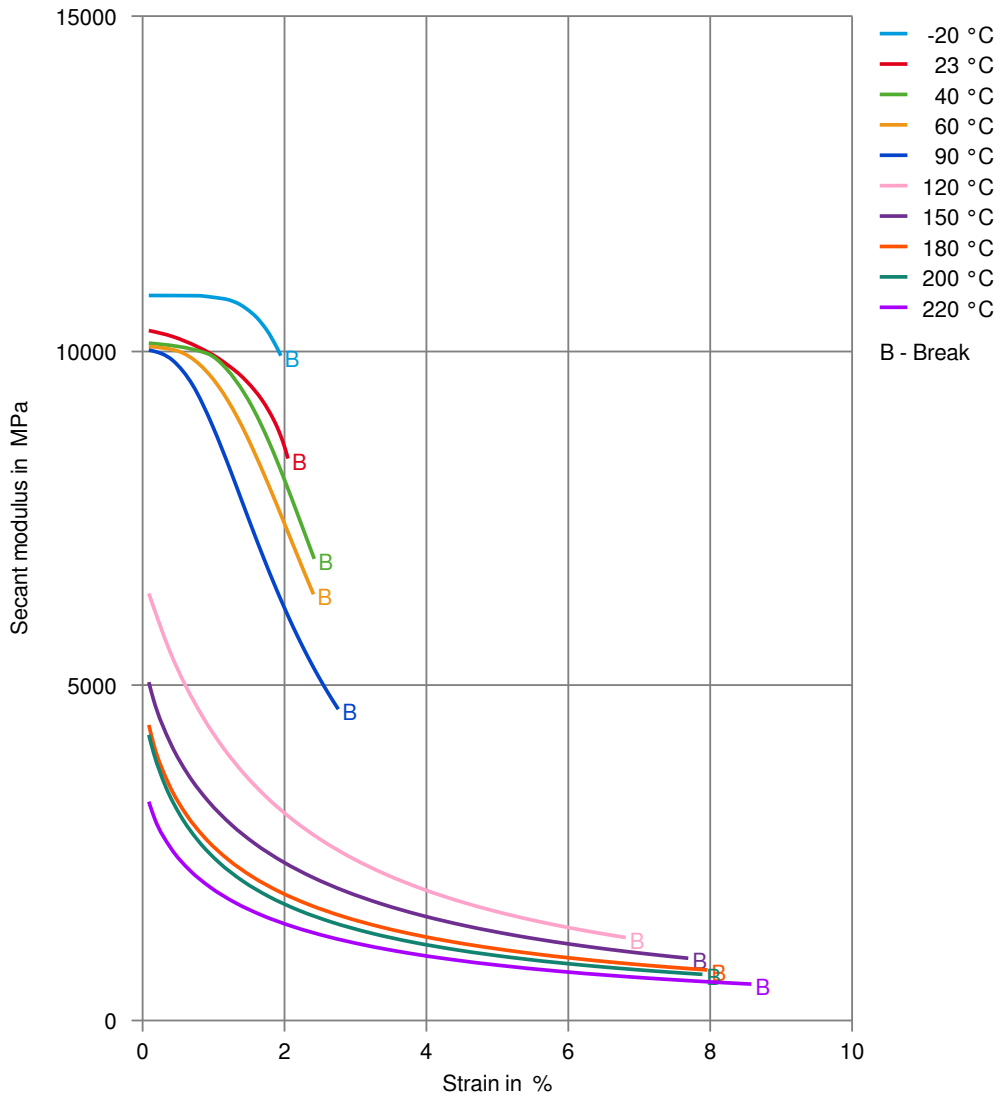
## Stress-strain (cond.)



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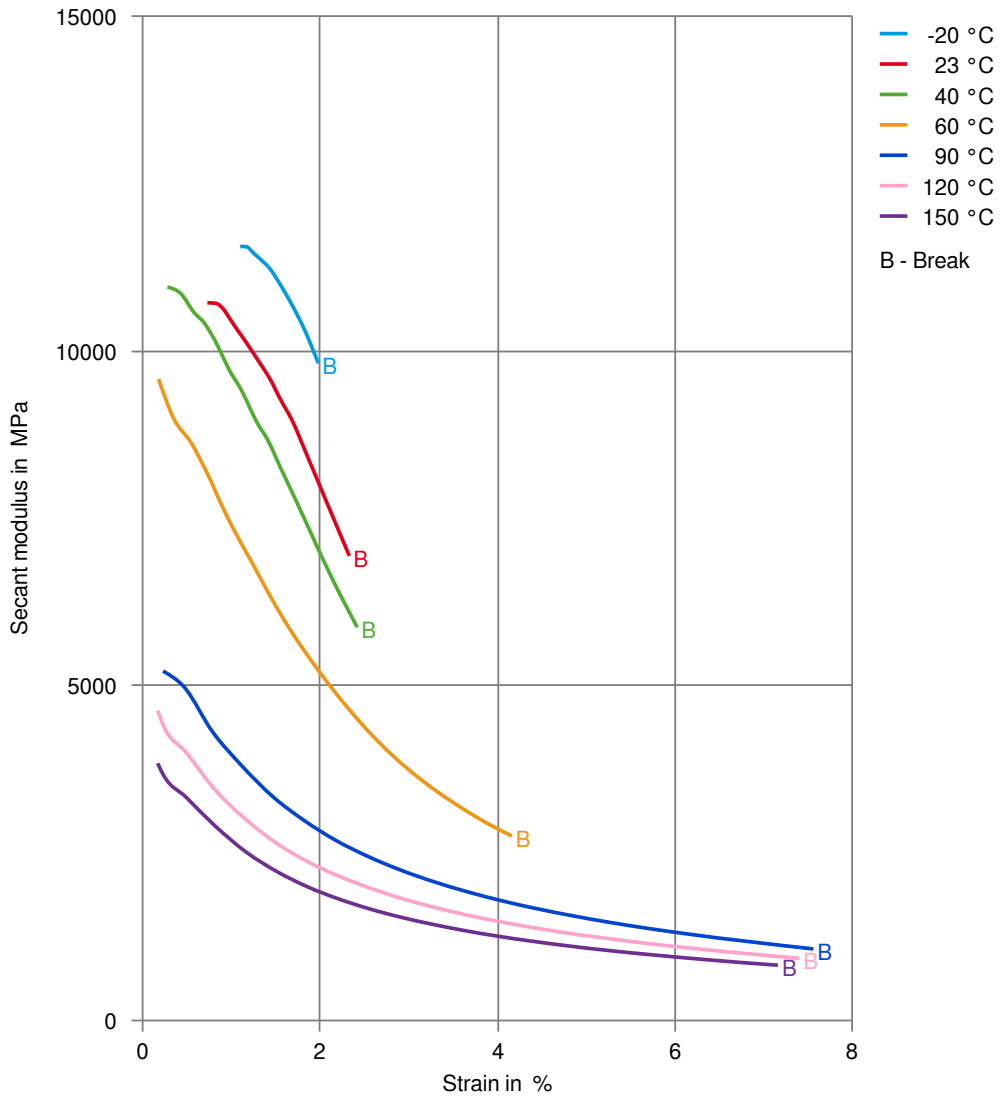
## Secant modulus-strain (dry)



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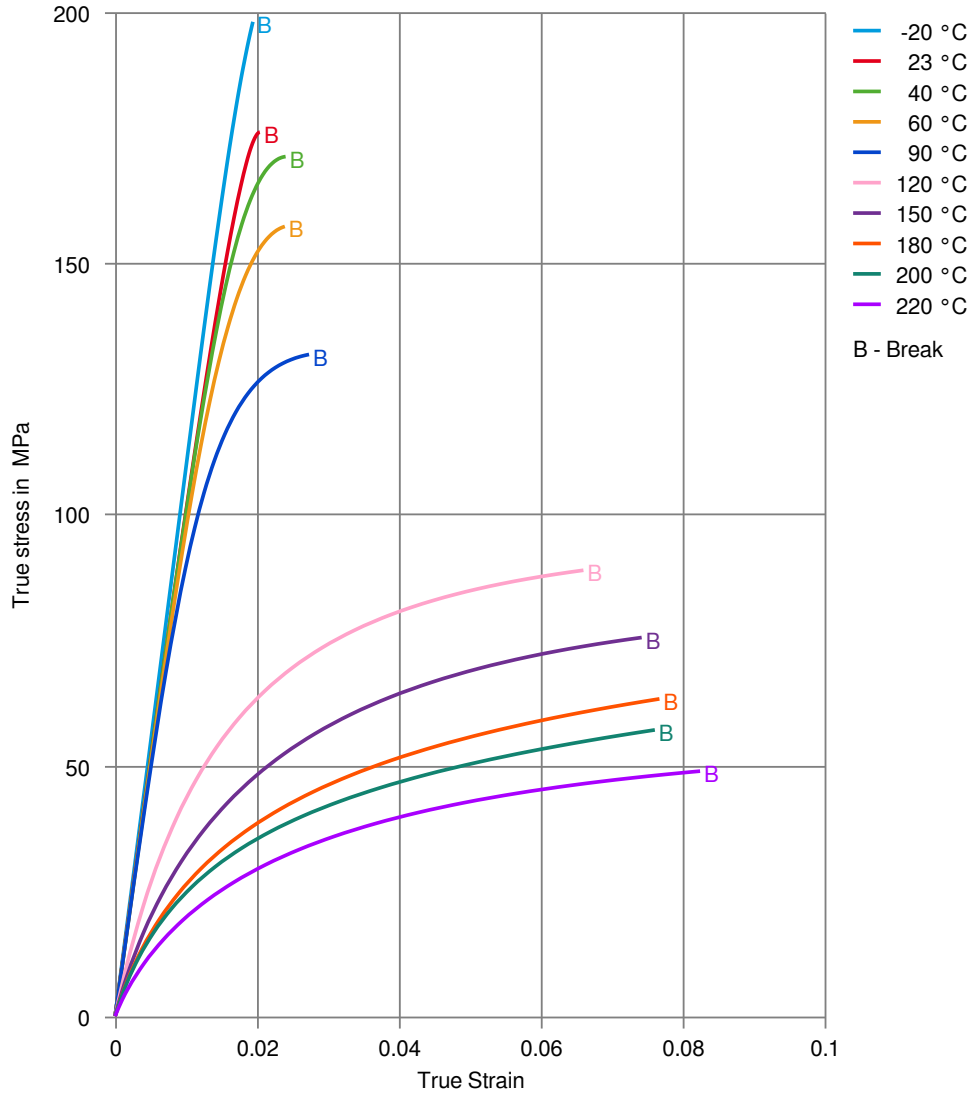
## Secant modulus-strain (cond.)



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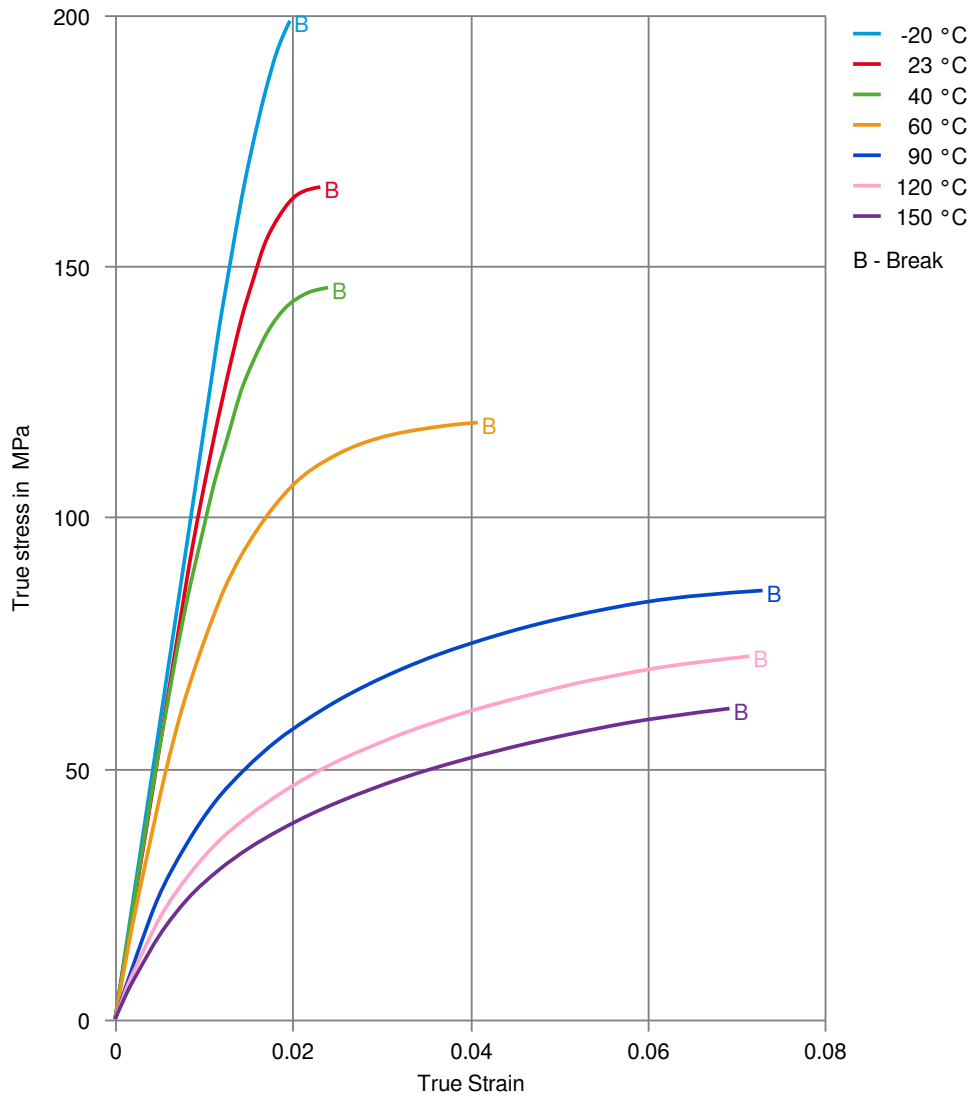
## True stress-strain (dry)



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## True stress-strain (cond.)



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## HIGH PERFORMANCE POLYAMIDE RESIN

### Mineral oils

#### Mineral oils

- ✓ SAE 10W40 multigrade motor oil, 130°C

#### Standard Fuels

- ✓ Diesel fuel (pref. ISO 1817 Liquid F), 23°C
- ✓ Diesel fuel (pref. ISO 1817 Liquid F), 90°C
- ✓ Diesel fuel (pref. ISO 1817 Liquid F), >90°C
- ✓ Diesel EN 590, 100°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).