

# CAMPUS® Datasheet



## Zytel® 70G35HSLRA4 BK267 - PA66-GF35 DuPont Engineering Polymers

### Product Texts

Common features of Zytel® nylon resin include mechanical and physical properties such as high mechanical strength, excellent balance of stiffness and toughness, good high temperature performance, good electrical and flammability properties, good abrasion and chemical resistance. In addition, Zytel® nylon resins are available in different modified and reinforced grades to create a wide range of products with tailored properties for specific processes and end-uses. Zytel® nylon resin, including most flame retardant grades, offer the ability to be coloured.

The good melt stability of Zytel® nylon resin normally enables the recycling of properly handled production waste. If recycling is not possible, DuPont recommends, as the preferred option, incineration with energy recovery (-31kJ/g of base polymer) in appropriately equipped installations. For disposal, local regulations have to be observed.

Zytel® nylon resin typically is used in demanding applications in the automotive, furniture, domestic appliances, sporting goods and construction industry.

**Zytel® 70G35HSLRA4 BK267 is a 35% glass fiber reinforced, heat stabilized, hydrolysis resistant polyamide 66 resin for injection molding. It has excellent flow characteristics.**

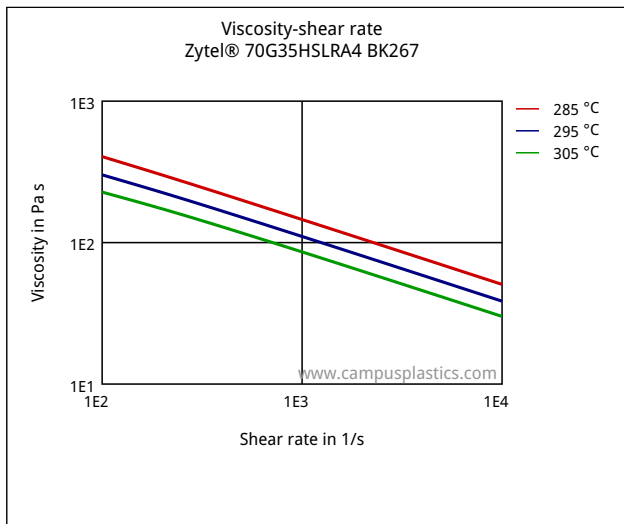
Rheological properties	dry / cond	Unit	Test Standard
Molding shrinkage, parallel	0.4 / *	%	ISO 294-4, 2577
Molding shrinkage, normal	1.1 / *	%	ISO 294-4, 2577
Mechanical properties	dry / cond	Unit	Test Standard
Tensile modulus	11000 / 8000	MPa	ISO 527-1/-2
Stress at break	210 / 135	MPa	ISO 527-1/-2
Strain at break	3 / 5	%	ISO 527-1/-2
Tensile creep modulus, 1h	* / 7500	MPa	ISO 899-1
Tensile creep modulus, 1000h	* / 5000	MPa	ISO 899-1
Charpy impact strength, +23°C	80 / 100	kJ/m <sup>2</sup>	ISO 179/1eU
Charpy impact strength, -30°C	80 / 80	kJ/m <sup>2</sup>	ISO 179/1eU
Charpy notched impact strength, +23°C	13 / 16	kJ/m <sup>2</sup>	ISO 179/1eA
Charpy notched impact strength, -30°C	10 / 10	kJ/m <sup>2</sup>	ISO 179/1eA
Puncture energy, +23°C	6 / -	J	ISO 6603-2
Thermal properties	dry / cond	Unit	Test Standard
Melting temperature, 10°C/min	260 / *	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	65 / *	°C	ISO 11357-1/-2
Temp. of deflection under load, 1.80 MPa	250 / *	°C	ISO 75-1/-2
Temp. of deflection under load, 0.45 MPa	255 / *	°C	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	255 / *	°C	ISO 306
Coeff. of linear therm. expansion, parallel	22 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	69 / *	E-6/K	ISO 11359-1/-2
Burning Behav. at 1.5 mm nom. thickn.	HB / *	class	IEC 60695-11-10
Thickness tested (1.5)	1.5 / *	mm	IEC 60695-11-10
Burning Behav. at thickness h	HB / *	class	IEC 60695-11-10
Thickness tested (h)	0.7 / *	mm	IEC 60695-11-10
Burning rate, thickness 1 mm	41	mm/min	ISO 3795 (FMVSS 302)
FMVSS	B	-	ISO 3795 (FMVSS 302)
Oxygen index	21 / *	%	ISO 4589-1/-2
Electrical properties	dry / cond	Unit	Test Standard
Volume resistivity	1E13 / 1E9	Ohm*m	IEC 62631-3-1
Surface resistivity	* / 1E13	Ohm	IEC 62631-3-2
Comparative tracking index	450 / -	-	IEC 60112

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**DuPont Engineering Polymers**

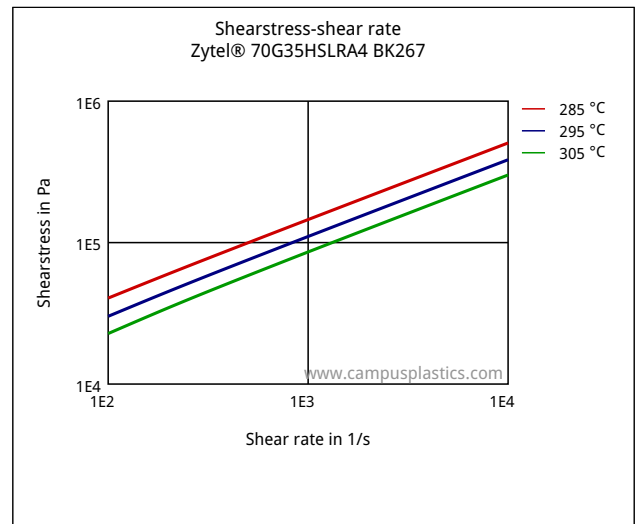
Other properties	dry / cond	Unit	Test Standard
Water absorption	5.5 / *	%	Sim. to ISO 62
Humidity absorption	1.7 / *	%	Sim. to ISO 62
Density	1410 / -	kg/m <sup>3</sup>	ISO 1183
Material specific properties	dry / cond	Unit	Test Standard
Viscosity number	125 / *	cm <sup>3</sup> /g	ISO 307, 1157, 1628
Rheological calculation properties	Value	Unit	Test Standard
Density of melt	1270	kg/m <sup>3</sup>	-
Thermal conductivity of melt	0.22	W/(m K)	-
Spec. heat capacity melt	2300	J/(kg K)	-
Ejection temperature	210	°C	-

**Diagrams**

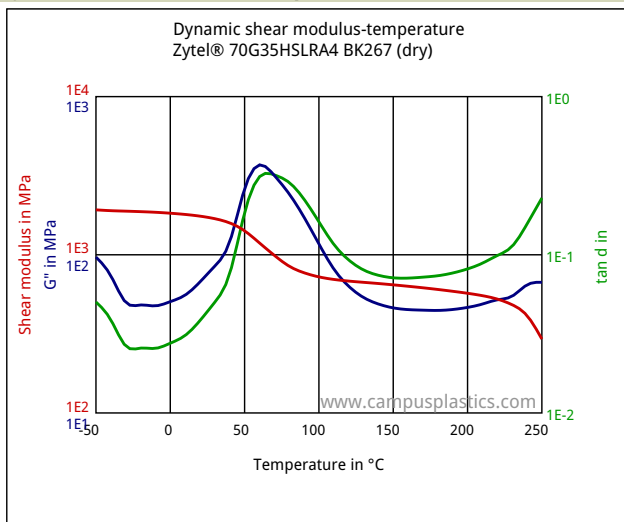
**Viscosity-shear rate**



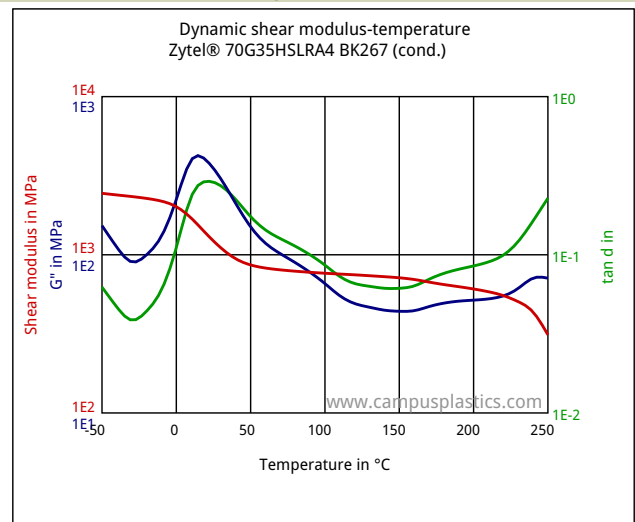
**Shearstress-shear rate**



**Dynamic shear modulus-temperature**

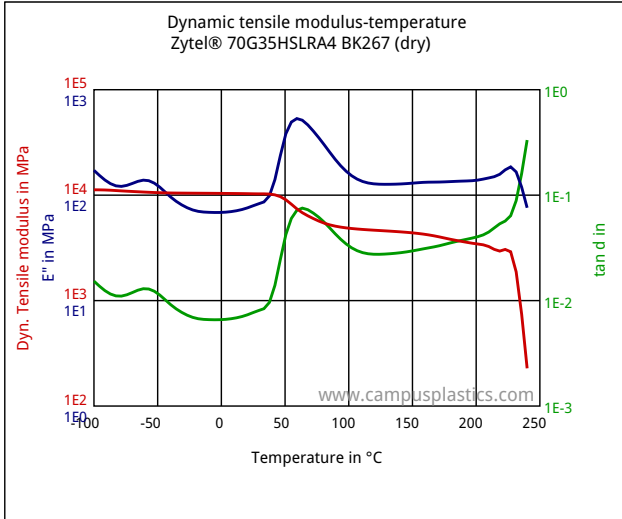


**Dynamic shear modulus-temperature**

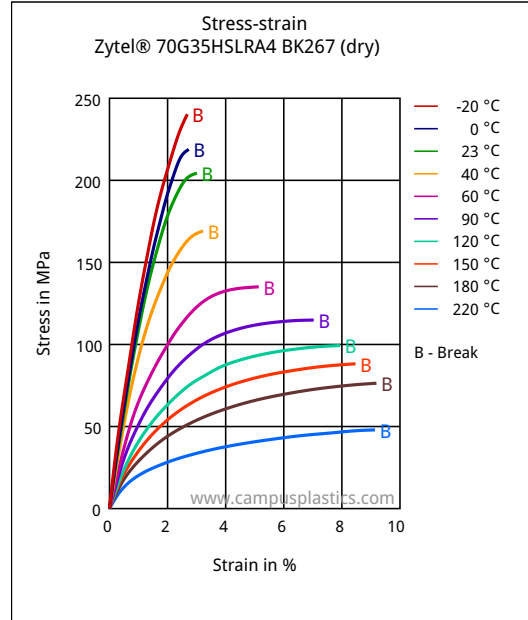


**Zytel® 70G35HSLRA4 BK267 - PA66-GF35**  
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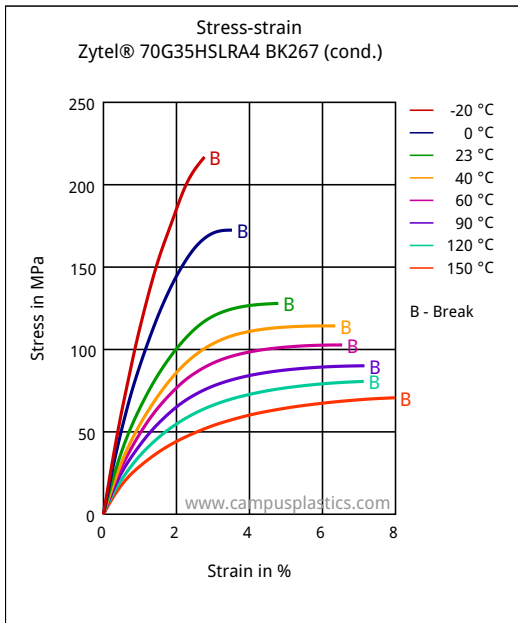
**Dynamic tensile modulus-temperature**



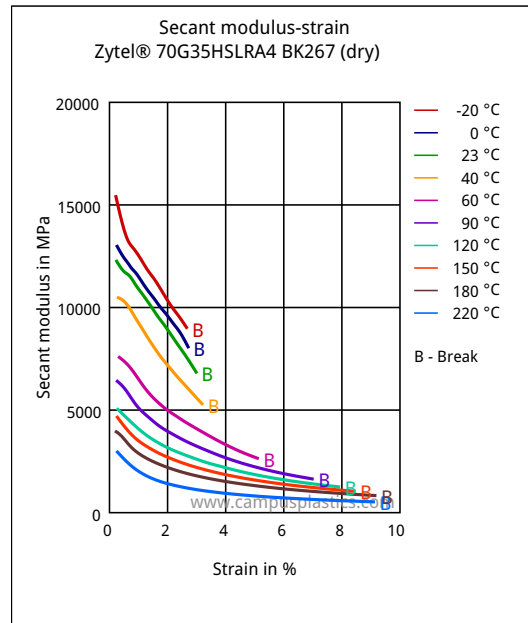
**Stress-strain**



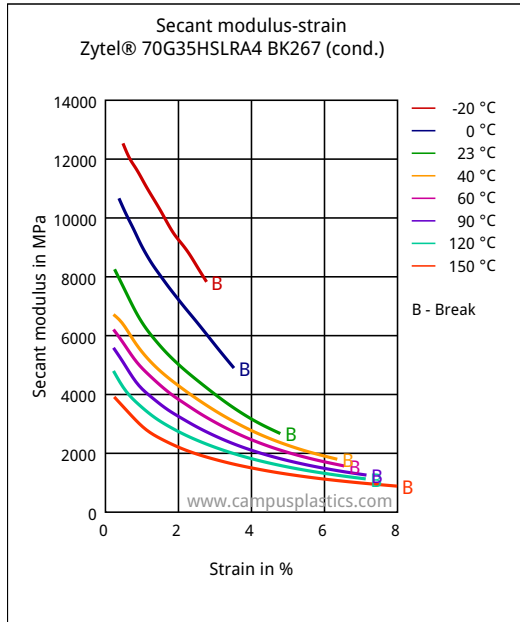
**Stress-strain**



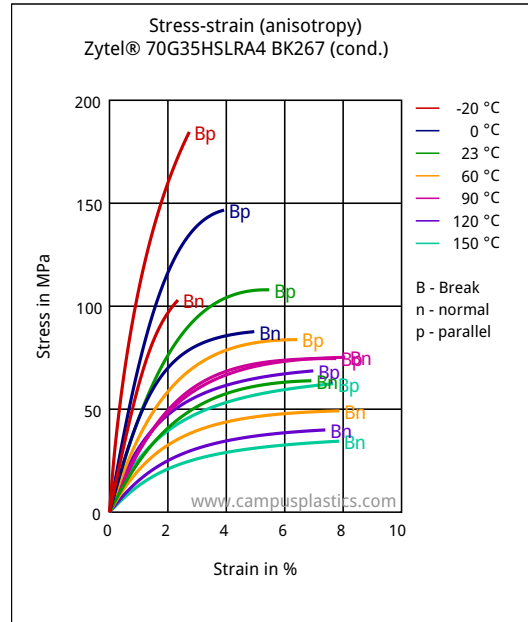
**Secant modulus-strain**



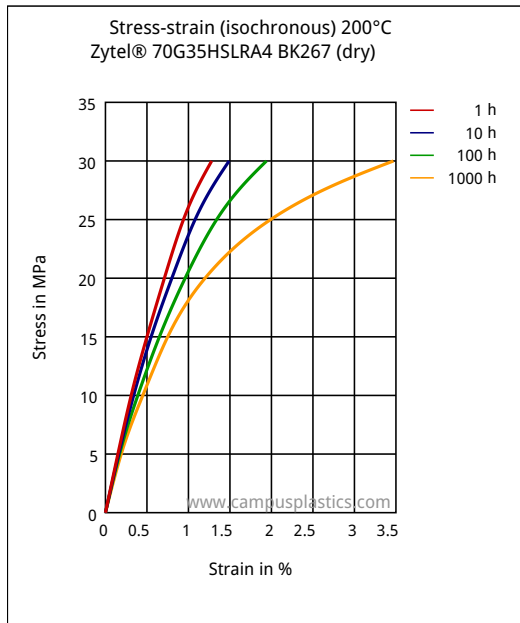
**Secant modulus-strain**



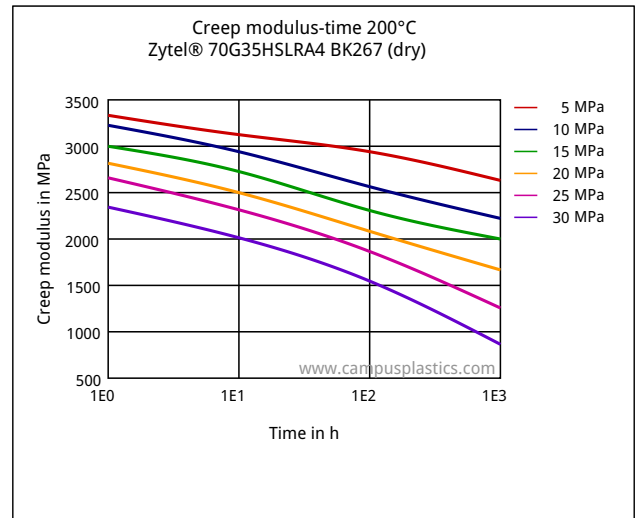
**Stress-strain (anisotropy)**



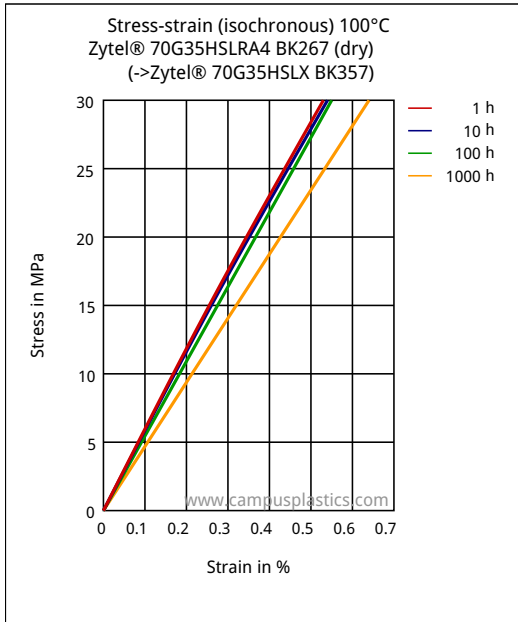
**Stress-strain (isochronous) 200°C**



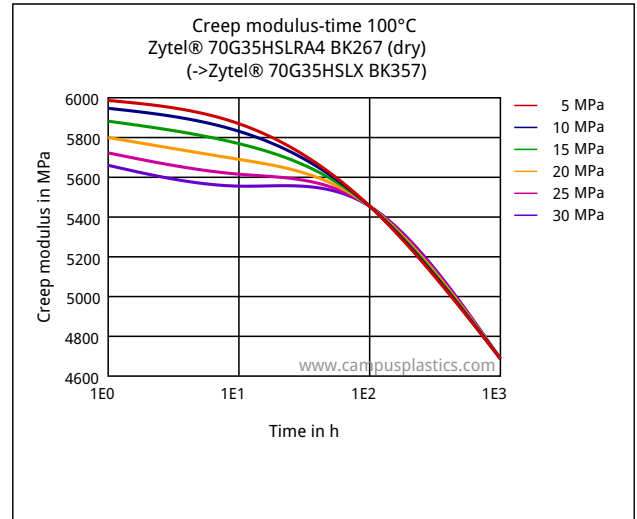
**Creep modulus-time 200°C**



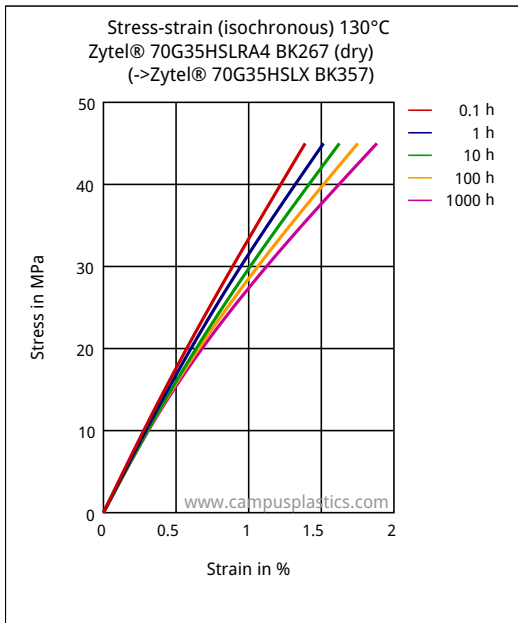
**Stress-strain (isochronous) 100°C**



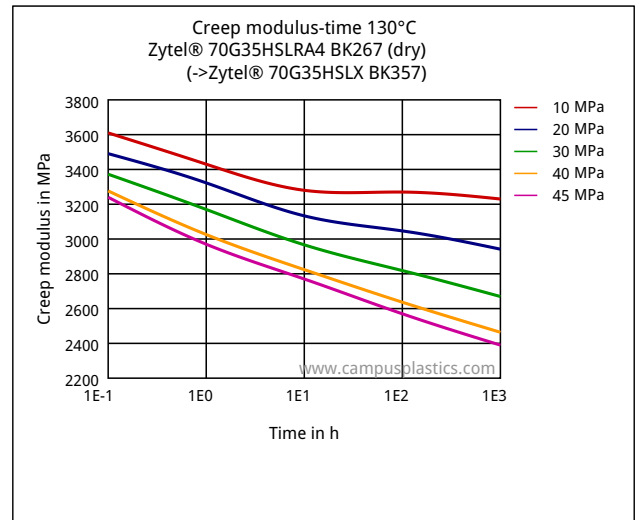
**Creep modulus-time 100°C**



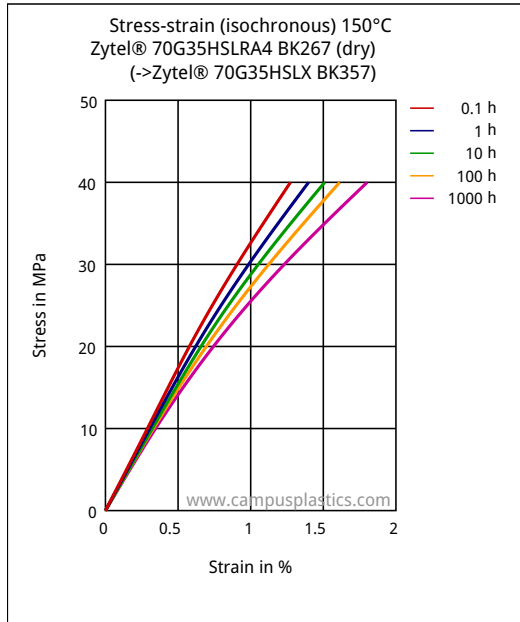
**Stress-strain (isochronous) 130°C**



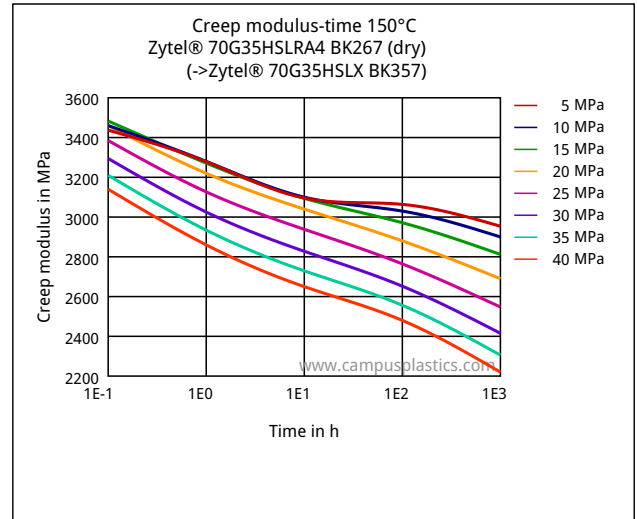
**Creep modulus-time 130°C**



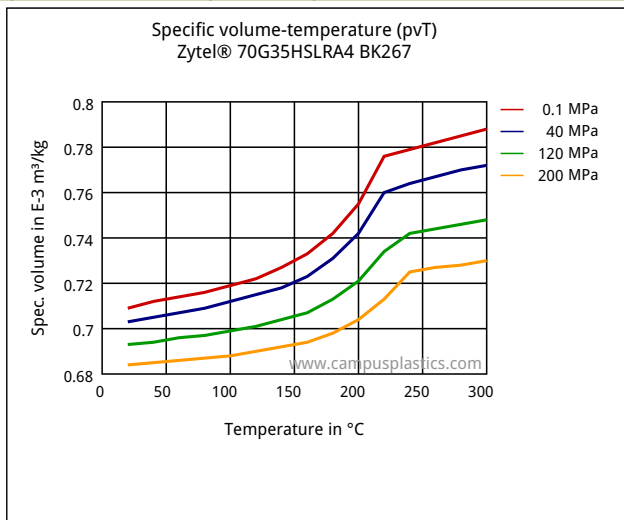
**Stress-strain (isochronous) 150°C**



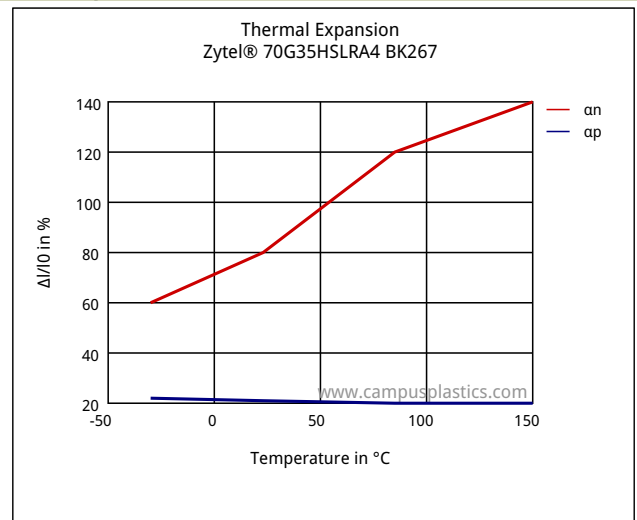
**Creep modulus-time 150°C**



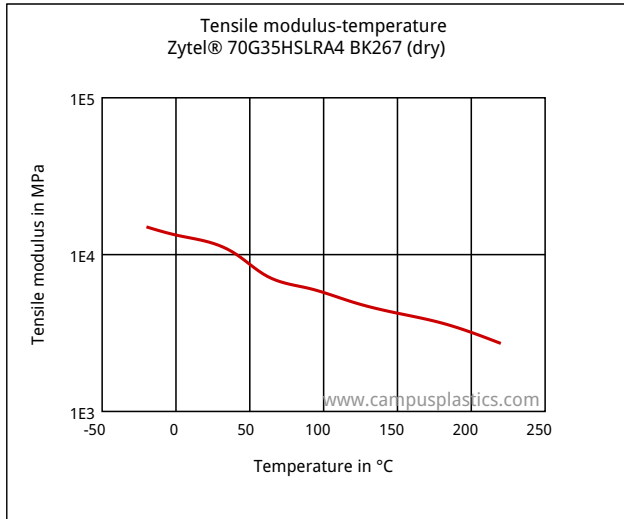
**Specific volume-temperature (pvT)**



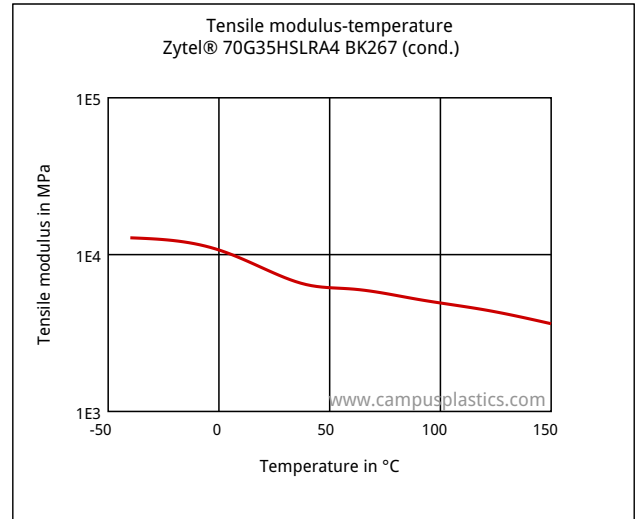
**Thermal expansion**



**Tensile modulus-temperature**



**Tensile modulus-temperature**



**Characteristics**

**Processing**

Injection Molding

**Delivery form**

Pellets

**Additives**

Lubricants, Release agent

**Special Characteristics**

Heat stabilized or stable to heat

**Chemical Media Resistance**

**Acids**

- ☺ Acetic Acid (5% by mass) (23°C)
- ☺ Citric Acid solution (10% by mass) (23°C)
- ☺ Lactic Acid (10% by mass) (23°C)
- ☹ Hydrochloric Acid (36% by mass) (23°C)
- ☹ Nitric Acid (40% by mass) (23°C)
- ☹ Sulfuric Acid (38% by mass) (23°C)
- ☹ Sulfuric Acid (5% by mass) (23°C)
- ☹ Chromic Acid solution (40% by mass) (23°C)

**Bases**

- ☹ Sodium Hydroxide solution (35% by mass) (23°C)
- ☺ Sodium Hydroxide solution (1% by mass) (23°C)
- ☺ Ammonium Hydroxide solution (10% by mass) (23°C)

**Alcohols**

- ☺ Isopropyl alcohol (23°C)
- ☺ Methanol (23°C)
- ☺ Ethanol (23°C)

**Hydrocarbons**

- ☺ n-Hexane (23°C)
- ☺ Toluene (23°C)
- ☺ iso-Octane (23°C)

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### Ketones

- ☹️ Acetone (23°C)

### Ethers

- ☹️ Diethyl ether (23°C)

### Mineral oils

- ☹️ SAE 10W40 multigrade motor oil (23°C)
- ☹️ SAE 10W40 multigrade motor oil (130°C)
- ☹️ SAE 80/90 hypoid-gear oil (130°C)
- ☹️ Insulating Oil (23°C)
- ☹️ Motor oil OS206 304 Ref.Eng.Oil, ISP (135°C)
- ☹️ Automatic hypoid-gear oil Shell Donax TX (135°C)
- ☹️ Hydraulic oil Pentosin CHF 202 (125°C)

### Standard Fuels

- ☹️ ISO 1817 Liquid 1 (60°C)
- ☹️ ISO 1817 Liquid 2 (60°C)
- ☹️ ISO 1817 Liquid 3 (60°C)
- ☹️ ISO 1817 Liquid 4 (60°C)
- ☹️ Standard fuel without alcohol (pref. ISO 1817 Liquid C) (23°C)
- ☹️ Standard fuel with alcohol (pref. ISO 1817 Liquid 4) (23°C)
- ☹️ 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)

### Salt solutions

- ☹️ Sodium Chloride solution (10% by mass) (23°C)
- 🚫 Sodium Hypochlorite solution (10% by mass) (23°C)
- ☹️ Sodium Carbonate solution (20% by mass) (23°C)
- ☹️ Sodium Carbonate solution (2% by mass) (23°C)
- 🚫 Zinc Chloride solution (50% by mass) (23°C)

### Other

- ☹️ Ethyl Acetate (23°C)
- 🚫 Hydrogen peroxide (23°C)
- ☹️ DOT No. 4 Brake fluid (130°C)
- ☹️ Ethylene Glycol (50% by mass) in water (108°C)
- ☹️ 1% nonylphenoxy-polyethyleneoxy ethanol in water (23°C)
- ☹️ 50% Oleic acid + 50% Olive Oil (23°C)
- ☹️ Water (23°C)
- 🚫 Deionized water (90°C)
- 🚫 Phenol solution (5% by mass) (23°C)
- 🚫 Coolant Glysantin G48, 1:1 in water (125°C)

All data provided according to ISO 10350 for single points and ISO 11403 for multipoints.

Contact DuPont for Material Safety Data Sheet, general guides and/or additional information about ventilation, handling, purging, drying, etc.

Test temperatures are 23°C unless otherwise stated.



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