

DuPont™ Zytel® 70G35HSLR BK099

NYLON RESIN

Product Information

Zytel® 70G35HSLR BK099 is a 35% Glass Reinforced, Heat Stabilized, Hydrolysis Resistant, Polyamide 66

Product information	Value	Unit	Test Standard
Resin Identification	PA66-GF35	-	ISO 1043
Part Marking Code	PA66-GF35	-	ISO 11469
Rheological properties	dry / cond	Unit	Test Standard
Moulding shrinkage, parallel	0.4 / -	%	ISO 294-4, 2577
Moulding shrinkage, normal	1.1 / -	%	ISO 294-4, 2577
Mechanical properties	dry / cond	Unit	Test Standard
Tensile Modulus	11000 / 7500	MPa	ISO 527-1/-2
Stress at break	210 / 140	MPa	ISO 527-1/-2
Strain at break	3 / 5	%	ISO 527-1/-2
Tensile creep modulus			ISO 899-1
1h	* / 7500	MPa	
1000h	* / 5000	MPa	
Charpy impact strength			ISO 179/1eU
23°C	80 / 100	kJ/m ²	
-30°C	80 / 80	kJ/m ²	
Charpy notched impact strength			ISO 179/1eA
23°C	15 / 18	kJ/m ²	
-30°C	10 / 10	kJ/m ²	
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	70 / 20	°C	ISO 11357-1/-2
Temp. of deflection under load			ISO 75-1/-2
1.8 MPa	250 / *	°C	
0.45 MPa	255 / *	°C	
Vicat softening temperature, 50°C/h, 50N	255 / *	°C	ISO 306
Coeff. of linear therm. expansion, parallel	17 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	85 / *	E-6/K	ISO 11359-1/-2
Thermal conductivity of melt	0.22	W/(m K)	-
Spec. heat capacity of melt	2300	J/(kg K)	-
Flammability	dry / cond	Unit	Test Standard
Burning Behav. at 1.5mm nom. thickn.	HB / *	class	IEC 60695-11-10
Thickness tested	1.5 / *	mm	IEC 60695-11-10
UL recognition	yes / *	-	UL 94
Burning Behav. at thickness h	HB / *	class	IEC 60695-11-10
Thickness tested	0.7 / *	mm	IEC 60695-11-10
UL recognition	yes / *	-	UL 94
Oxygen index	21 / *	%	ISO 4589-1/-2
FMVSS Class	B	-	ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	<80	mm/min	ISO 3795 (FMVSS 302)
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	425 / -	-	IEC 60112
Other properties	dry / cond	Unit	Test Standard
Humidity absorption, 2mm	1.7 / *	%	Sim. to ISO 62
Water absorption, 2mm	5.5 / *	%	Sim. to ISO 62
Density	1410 / -	kg/m ³	ISO 1183
Density of melt	1270	kg/m ³	-

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Injection	dry / cond	Unit	Test Standard
Drying Recommended	yes		-
Drying Temperature	≥80	°C	-
Drying Time, Dehumidified Dryer	2 - 4	h	-
Processing Moisture Content	≤0.2	%	-
Melt Temperature Optimum	295	°C	-
Min. melt temperature	285	°C	-
Max. melt temperature	305	°C	-
Max. screw tangential speed	0.2 / *	m/s	-
Mold Temperature Optimum	100	°C	-
Min. mould temperature	70	°C	-
Max. mould temperature	120	°C	-
Hold pressure range	50 - 100	MPa	-
Hold pressure time	3	s/mm	-
Ejection temperature	210	°C	-

Characteristics	
Processing	• Injection Moulding
Delivery form	• Pellets
Additives	• Lubricants • Release agent
Special characteristics	• Heat stabilised or stable to heat

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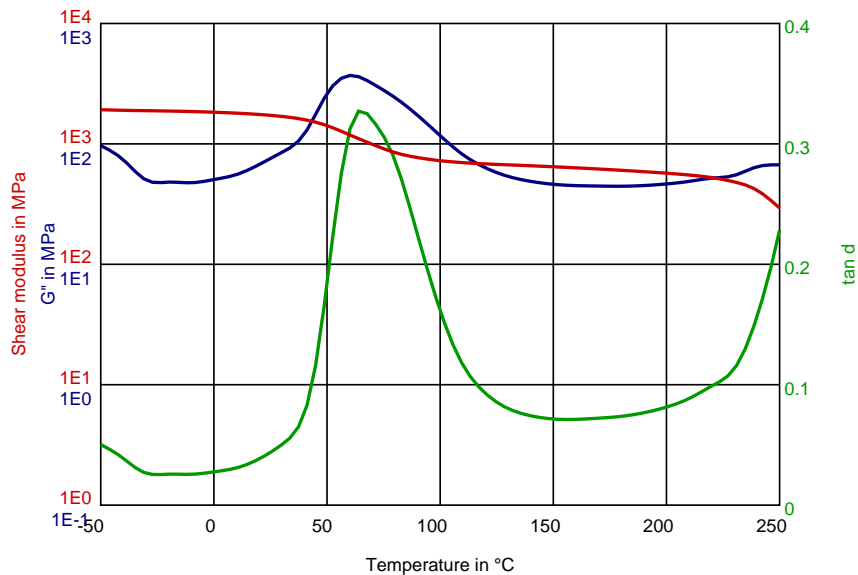


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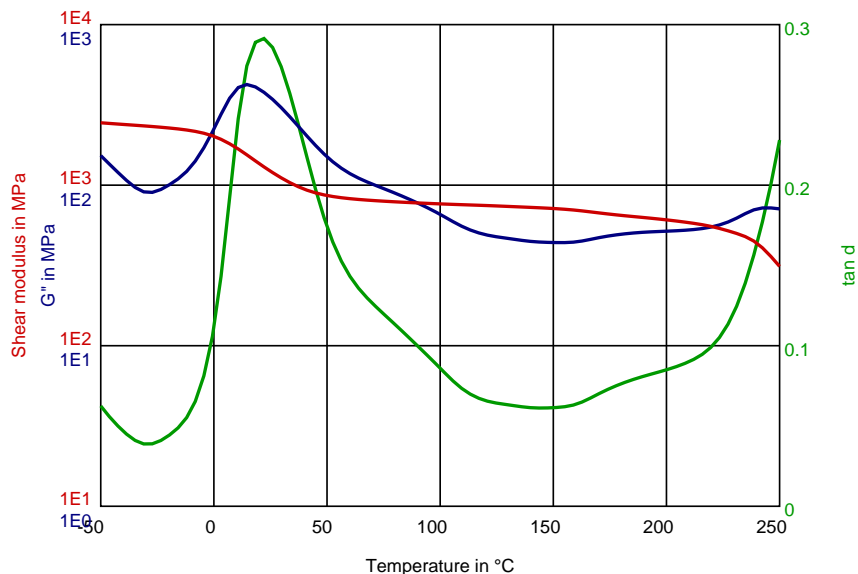
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Diagrams

Dynamic Shear modulus-temperature (dry)



Dynamic Shear modulus-temperature (cond.)



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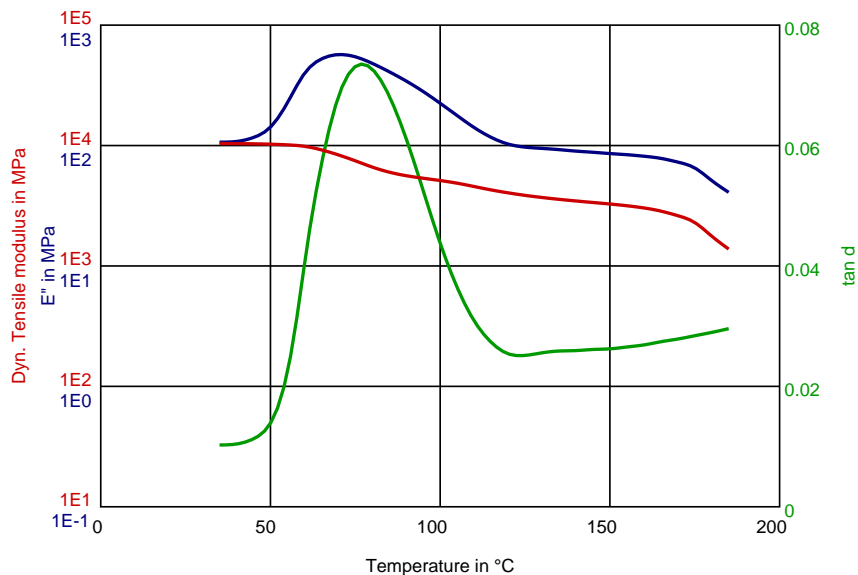
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Dynamic Tensile modulus-temperature (dry)



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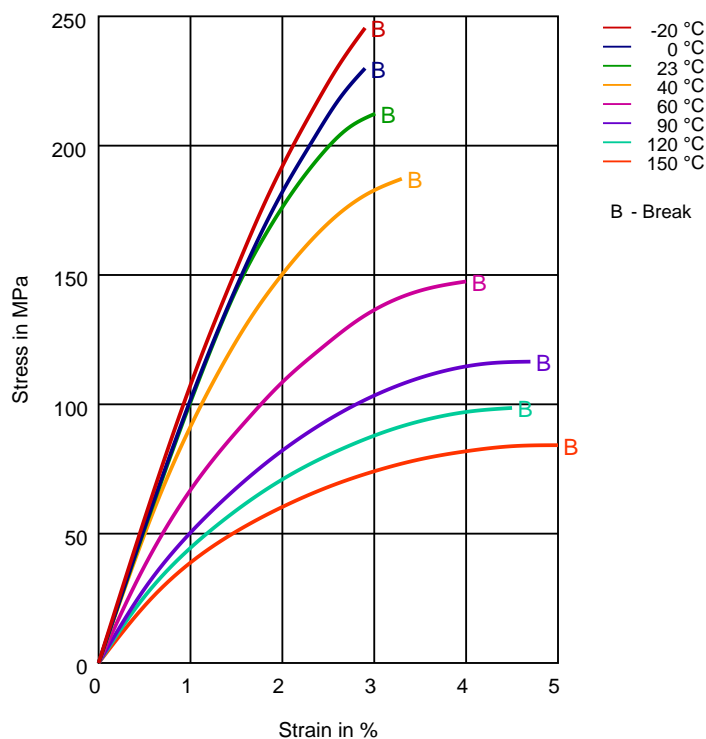
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Stress-strain (dry)



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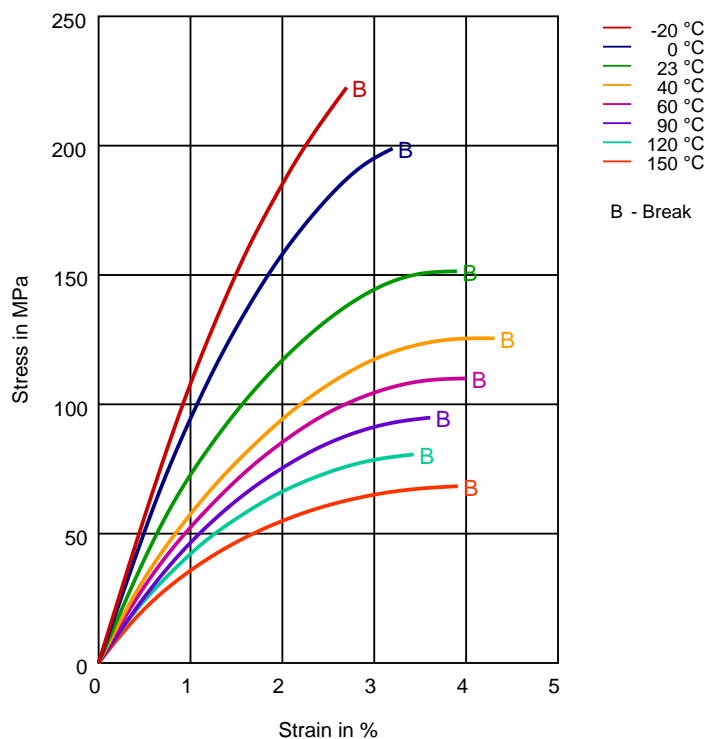


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Stress-strain (cond.)



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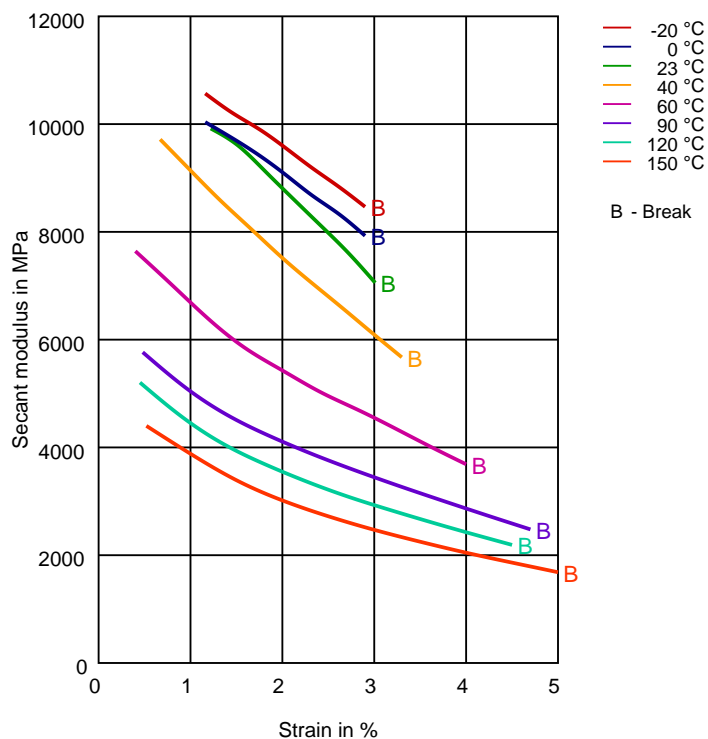


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Secant modulus-strain (dry)



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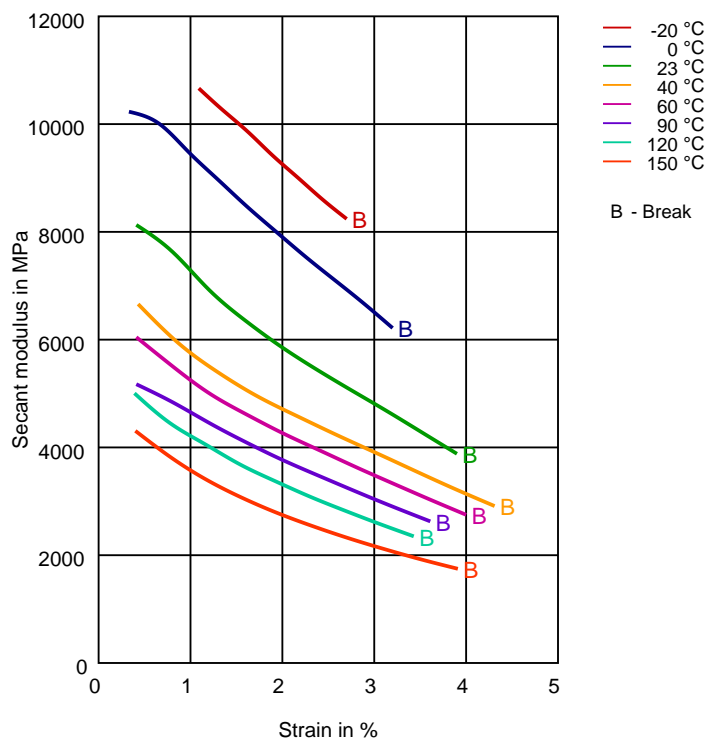
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Secant modulus-strain (cond.)



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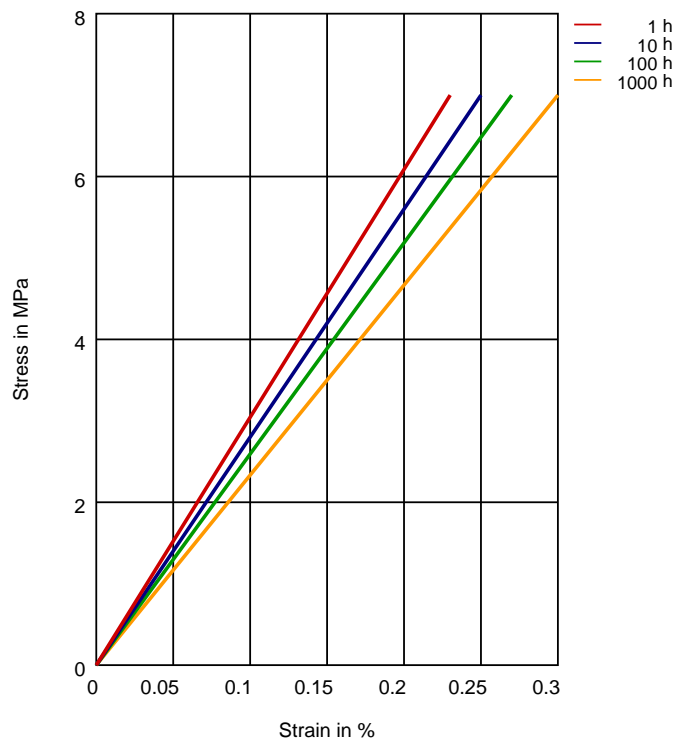
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Stress-strain (isochronous) 200°C (dry)



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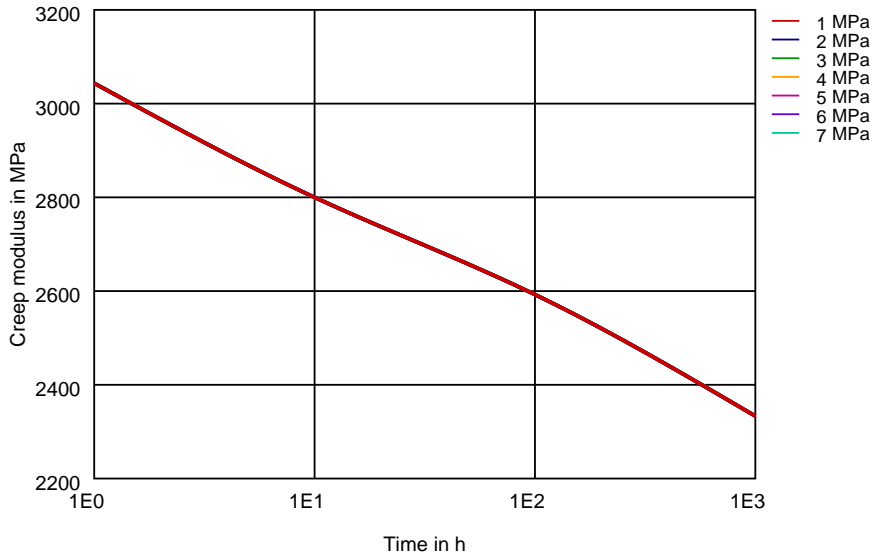
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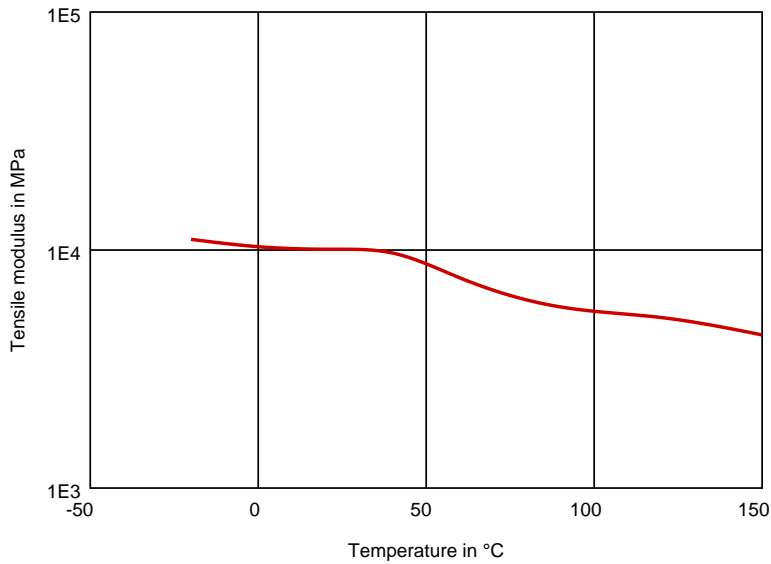
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Creep modulus-time 200°C (dry)



Tensile modulus-temperature (dry)



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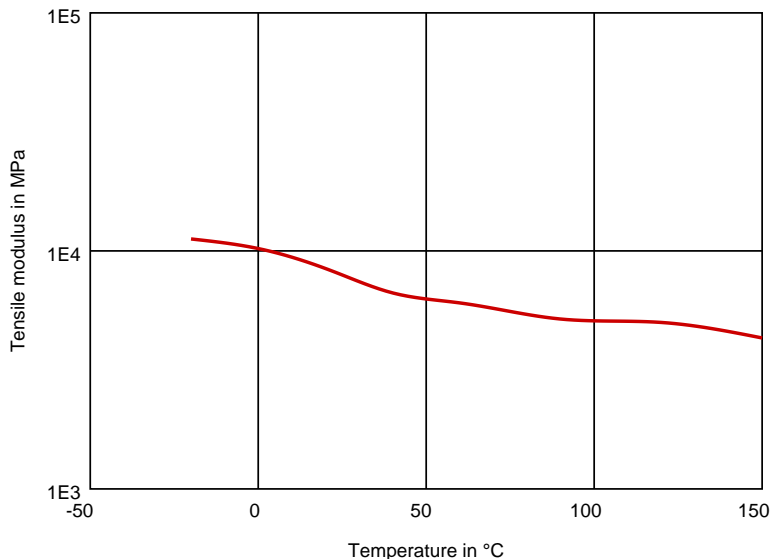
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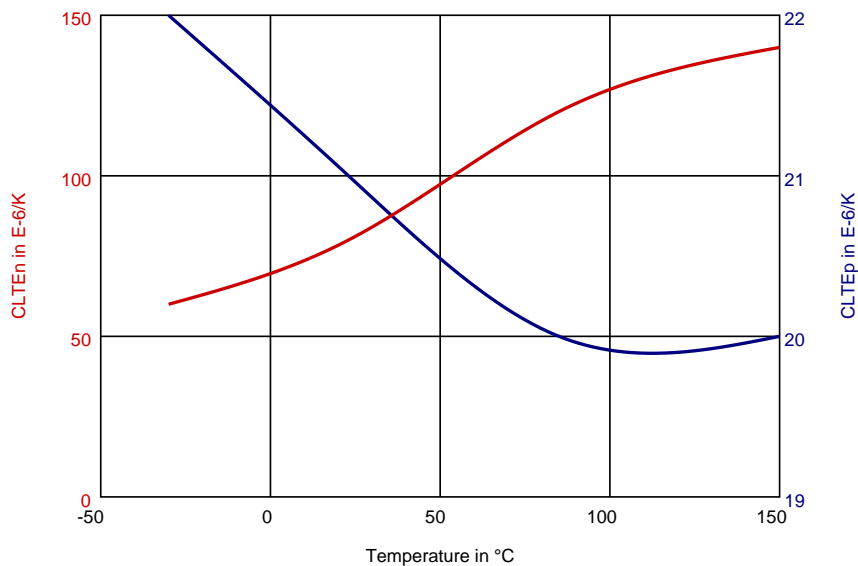
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Tensile modulus-temperature (cond.)



Coeff. of linear thermal expansion, normal (measured on Zytel® 70G35HSLRA4 BK267)



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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)

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)

Standard Fuels

- ✓ ISO 1817 Liquid 1 - E5 (60°C)
- ✓ ISO 1817 Liquid 2 - M15E4 (60°C)
- ✓ ISO 1817 Liquid 3 - M3E7 (60°C)
- ✓ ISO 1817 Liquid 4 - M15 (60°C)

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- ✓ 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)

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)
- ✓ DOT No. 4 Brake fluid (120°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)
- ✗ Water (90°C)
- ✗ Phenol solution (5% by mass) (23°C)
- ✗ Coolant Glysantin G48, 1:1 in water (125°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).

Contact DuPont for Material Safety Data Sheet, general guides and/or additional information about ventilation, handling, purging, drying, etc. ISO Mechanical properties measured at 4mm (Hytrel® measured at 2 mm), IEC Electrical properties measured at 2mm, all ASTM properties measured at 3.2mm, and test temperatures are 23°C unless otherwise stated.

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the human body. For other medical applications, discuss with your DuPont customer representative and read Medical Caution H-50103-5.

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