

DuPont™ Zytel® BM70G20HSLX BK537

NYLON RESIN

Product Information

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® BM70G20HSLX BK537 is a 20% glass fiber reinforced polyamide 66 for blow molding.

General information	Value	Unit	Test Standard
Resin Identification	PA66-IGF20	-	ISO 1043
Part Marking Code	PA66-IGF20	-	ISO 11469
Rheological properties	dry / cond	Unit	Test Standard
Viscosity number	155 ⁽¹⁾ / *	cm ³ /g	ISO 307, 1157, 1628
Molding shrinkage, parallel	0.5 / -	%	ISO 294-4, 2577
Molding shrinkage, normal	0.7 / -	%	ISO 294-4, 2577
Melt viscosity, @ 1000 sec-1, 280°C	330 / *	Pa s	ISO 11443
1: Sulfuric acid 96%			
Mechanical properties	dry / cond	Unit	Test Standard
Tensile Modulus	6500 / 4000	MPa	ISO 527-1/-2
Stress at break	120 / 75	MPa	ISO 527-1/-2
Strain at break	4 / 13	%	ISO 527-1/-2
Flexural Modulus	6000 / 3600	MPa	ISO 178 A
Flexural Strength	160 / -	MPa	ISO 178 DS
Shear Modulus	1400 / -	MPa	ISO 6721
Poisson's ratio	- / 0.36	-	ISO 527-1/-2
Tensile creep modulus			ISO 899-1
1h	* / 3900	MPa	
1000h	* / 3200	MPa	
Charpy impact strength			ISO 179/1eU
73°F	80 / 80	kJ/m ²	
-22°F	40 / -	kJ/m ²	
Charpy notched impact strength			ISO 179/1eA
73°F	15 / 16	kJ/m ²	
-22°F	8 / 6	kJ/m ²	
-40°F	7.5 / -	kJ/m ²	
Izod notched impact strength			ISO 180/1A
73°F	14 / 16	kJ/m ²	
-22°F	8 / 6	kJ/m ²	
Izod impact strength, 73°F	73 / -	kJ/m ²	ISO 180/1U
Ball indentation hardness, H 961/30	225 / -	MPa	ISO 2039-1
A: Assessed DS: Derived from similar grade			
Thermal properties	dry / cond	Unit	Test Standard
Melting temperature, 18°F/min	260 / *	°C	ISO 11357-1/-3
Glass transition temperature, 18°F/min	60 / 45	°C	ISO 11357-1/-2
Temp. of deflection under load			ISO 75-1/-2
260 psi	239 / *	°C	
65 psi	257 / *	°C	
Thermal conductivity of melt	0.2	W/(m K)	-

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Spec. heat capacity of melt	2000	J/(kg K)	-
Flammability	Value	Unit	Test Standard
FMVSS Class	SE	-	ISO 3795 (FMVSS 302)
Other properties	dry / cond	Unit	Test Standard
Humidity absorption, 80mil	1.6 / *	%	Sim. to ISO 62
Water absorption, 80mil	5.2 / *	%	Sim. to ISO 62
Density	1250 / -	kg/m ³	ISO 1183
Density of melt	1070	kg/m ³	-
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	90	°C	-
Min. mold temperature	50	°C	-
Max. mold temperature	100	°C	-
Hold pressure range	50 - 100	MPa	-
Hold pressure time	3	s/mm	-
Ejection temperature	210	°C	-

Characteristics			
Processing	• Injection Molding	• Blow Molding	
Delivery form	• Pellets		
Special characteristics	• Light stabilized or stable to light	• Heat stabilized or stable to heat	
Regional Availability	• North America • Europe	• Asia Pacific • South and Central America	• Near East/Africa • Global

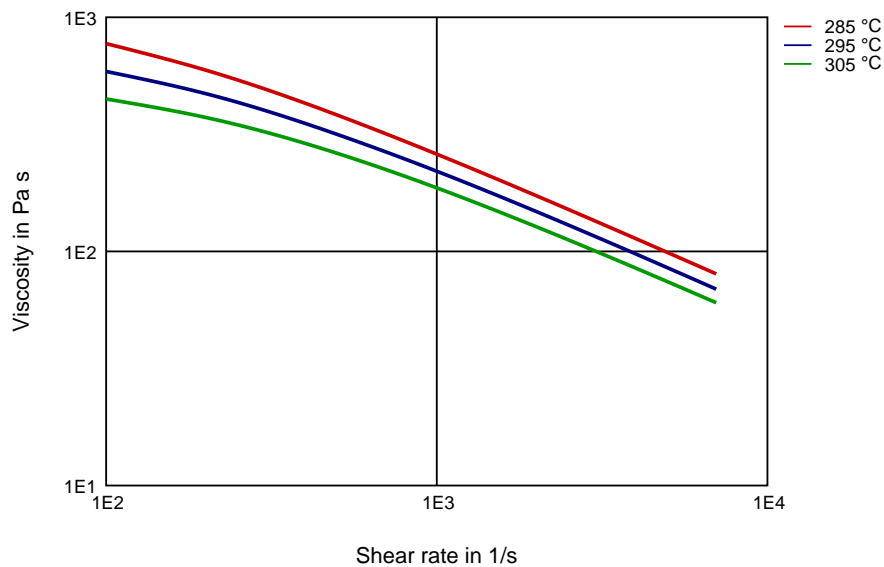


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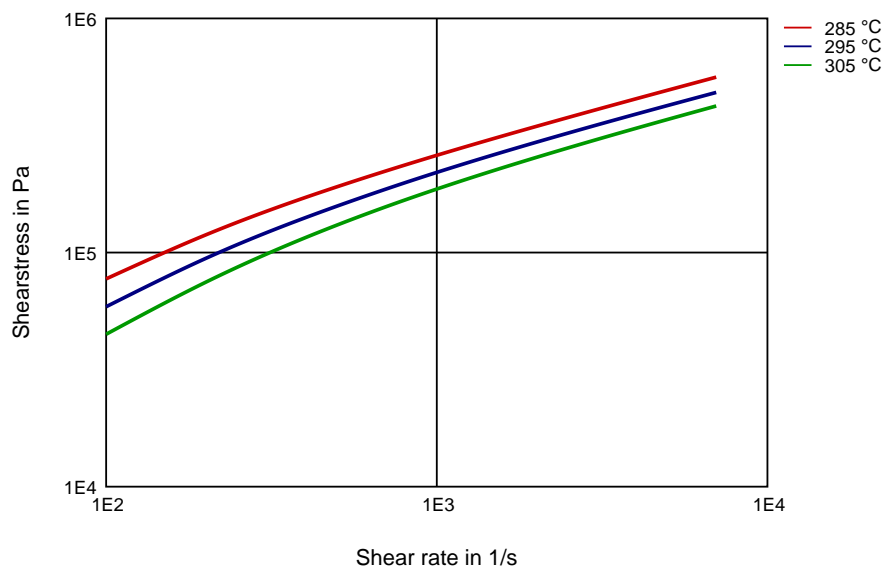
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Diagrams

Viscosity-shear rate



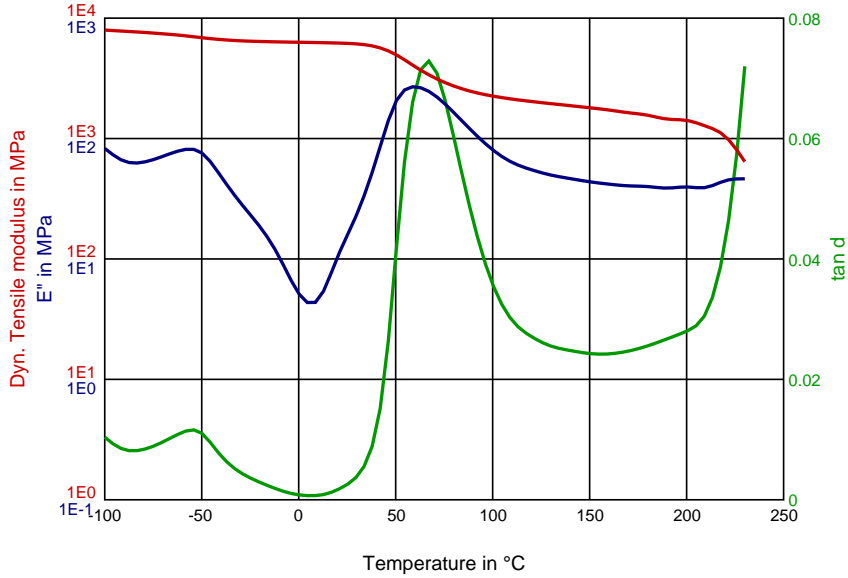
Shearstress-shear rate



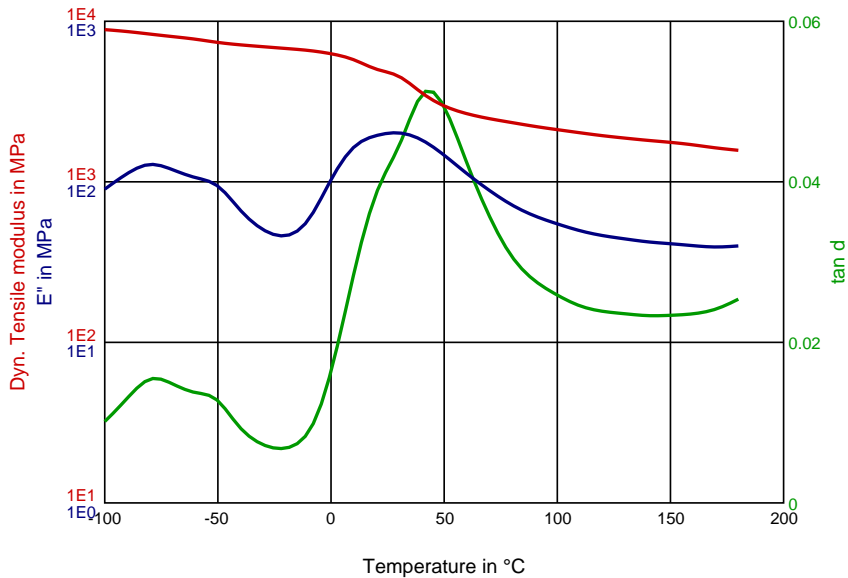
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Dynamic Tensile modulus-temperature (dry)

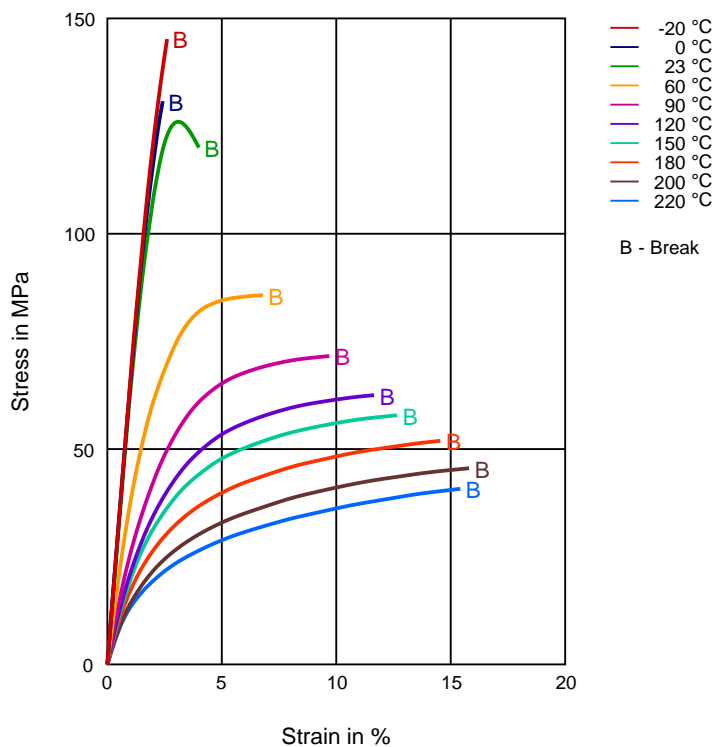


Dynamic Tensile modulus-temperature (cond.)



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Stress-strain (dry)



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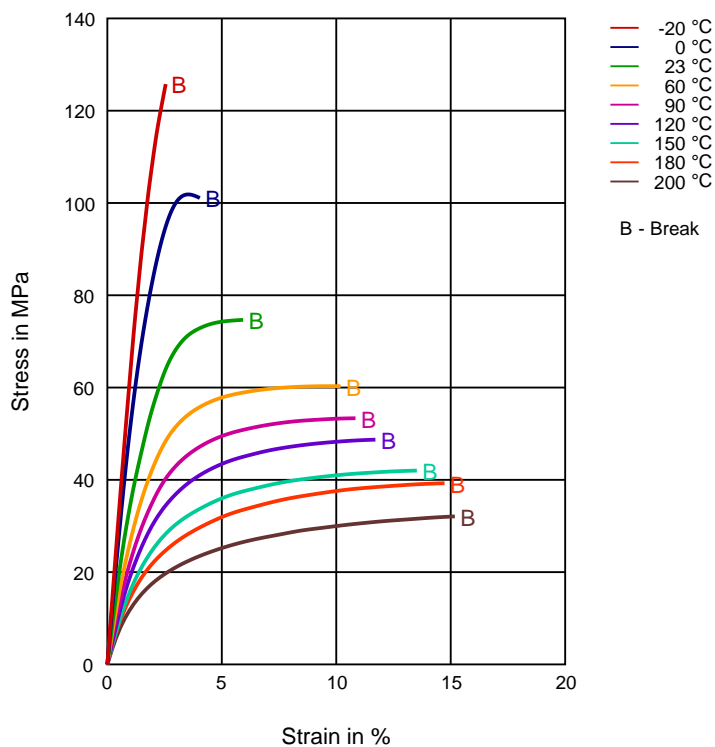
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Stress-strain (cond.)



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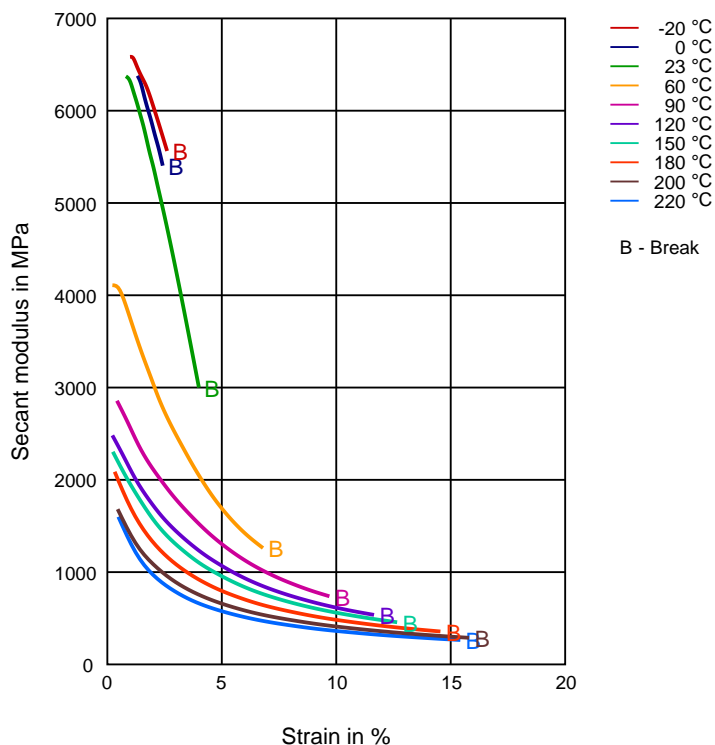
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Secant modulus-strain (dry)



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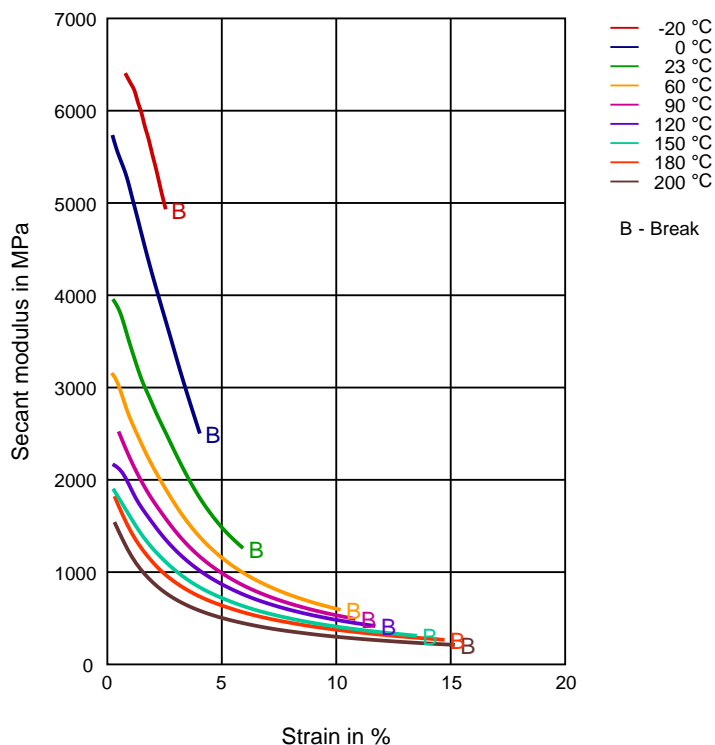
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Secant modulus-strain (cond.)



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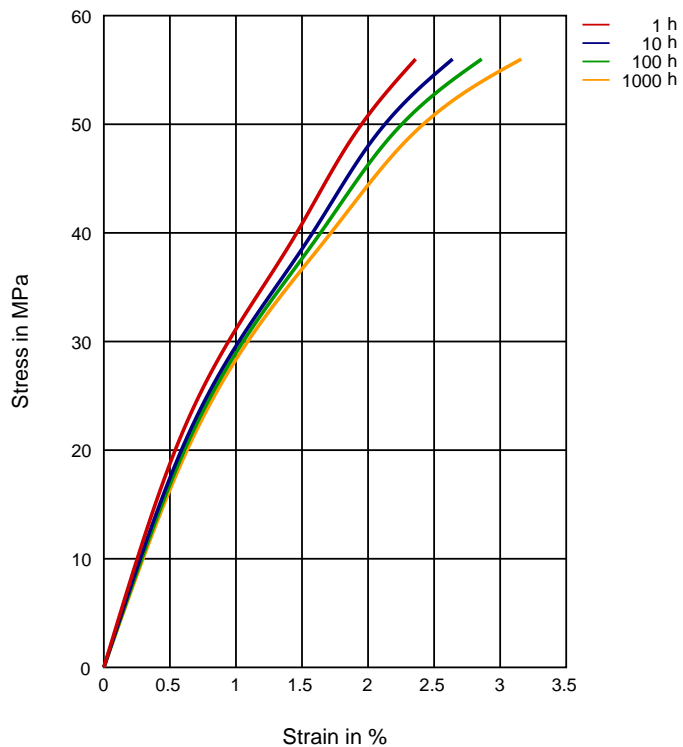
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DuPont™ Zytel® BM70G20HSLX BK537 NYLON RESIN

Stress-strain (isochronous) 23°C(cond.)



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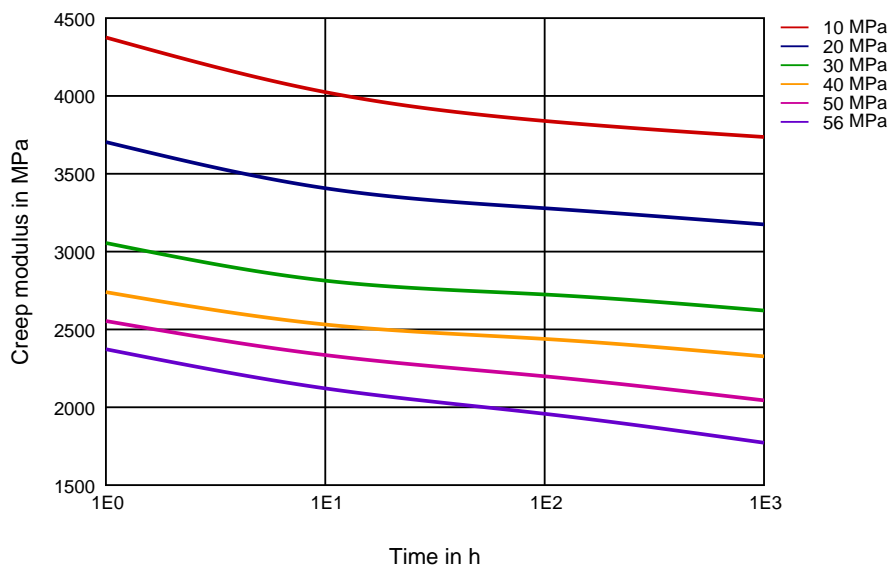
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Creep modulus-time 23 °C (cond.)



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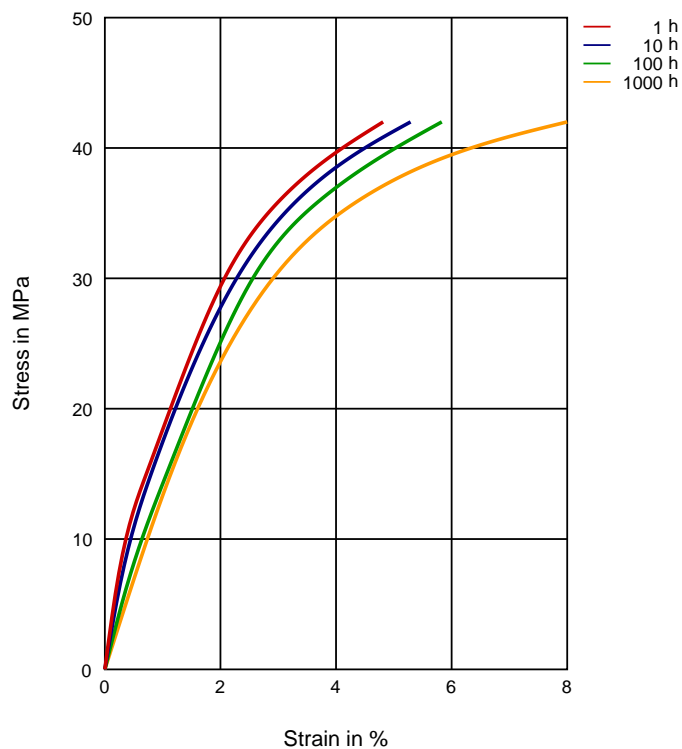
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Stress-strain (isochronous) 150°C (dry)



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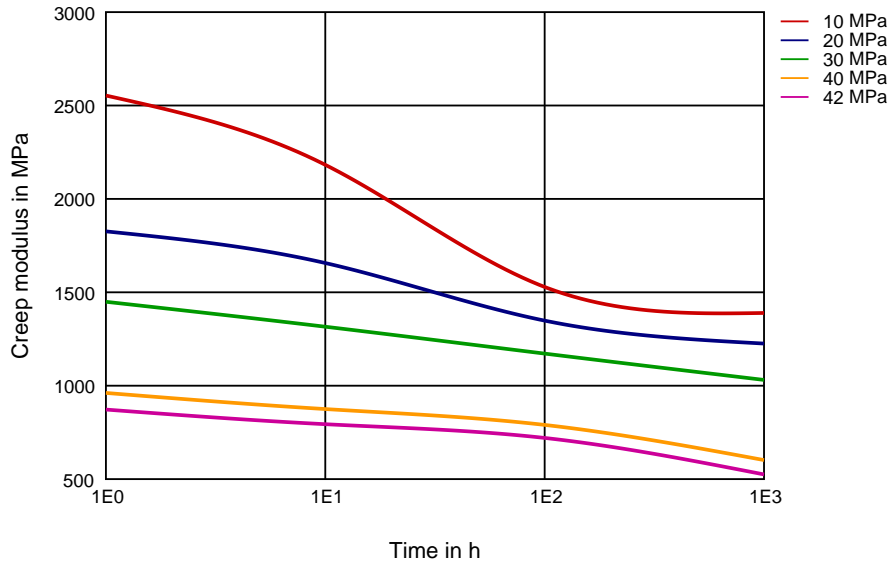
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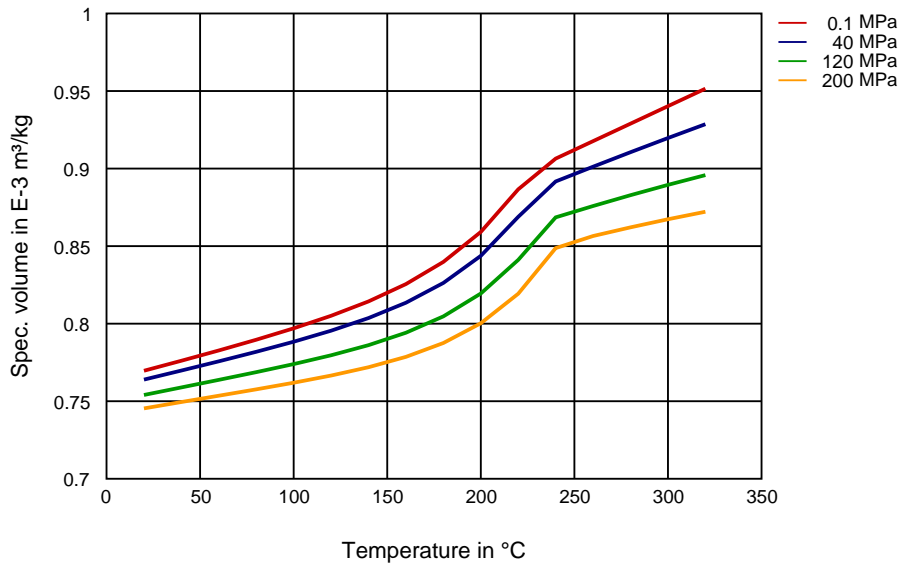
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Creep modulus-time 150°C (dry)



Specific volume-temperature (pvT)



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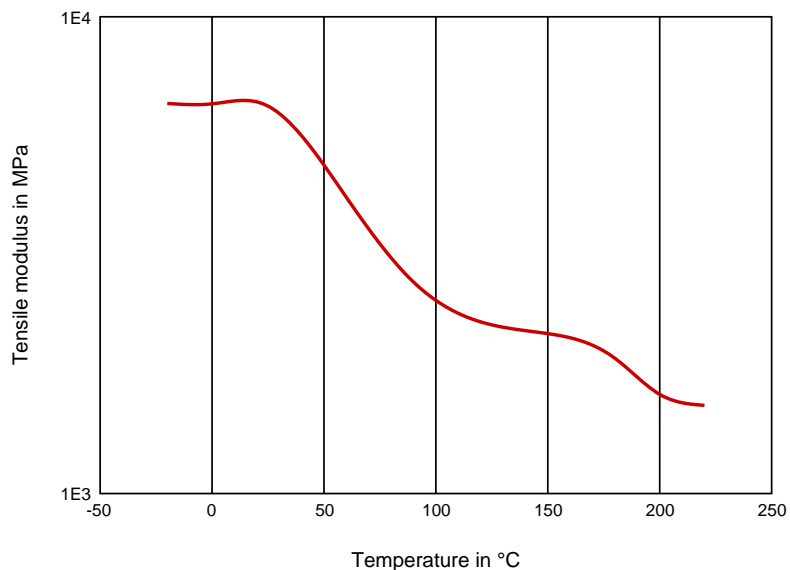
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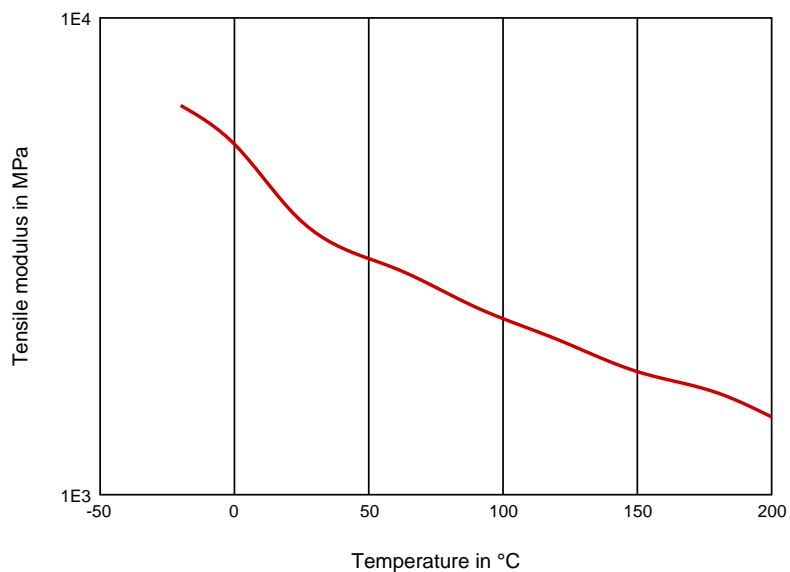
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Tensile modulus-temperature (dry)



Tensile modulus-temperature (cond.)



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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)

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)
- ✓ Standard fuel without alcohol (pref. ISO 1817 Liquid C) (23 °C)
- ✓ Standard fuel with alcohol (pref. ISO 1817 Liquid 4) (23 °C)

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- ✓ 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)
- ✓ 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)

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 160 mil (Hytrel® measured at 80 mil), IEC Electrical properties measured at 80 mil, all ASTM properties measured at 120 mil, and test temperatures are 73°F unless otherwise stated.

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