Celanese
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Zytel® 73G30L NC010

NYLON RESIN

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, we recommend, 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® 73G30L NC010 is a 30% glass fiber reinforced polyamide 6 resin for injection moulding.

Product information

Resin Identification	PA6-GF30	ISO 1043
Part Marking Code	>PA6-GF30<	ISO 11469
ISO designation	ISO 16396-PA6,GF30,M1GNR,S14-100	

Rheological properties

	dry/cond.		
Viscosity number	140 / *	cm^3/g	ISO 307, 1157, 1628
Moulding shrinkage, parallel	0.2 / -	%	ISO 294-4, 2577
Moulding shrinkage, normal	0.6 / -	%	ISO 294-4, 2577

Typical mechanical properties

	dry/cond.		
Tensile Modulus	10000 / 6000	MPa	ISO 527-1/-2
Stress at break, 5mm/min	180 / 120	MPa	ISO 527-1/-2
Strain at break, 5mm/min	3.5 / 6	%	ISO 527-1/-2
Flexural Modulus	8500 / 5500	MPa	ISO 178
Flexural Strength	240 / -	MPa	ISO 178
Compressive strength	160 / -	MPa	ISO 604
Shear Strength	60 / -	MPa	ASTM D 732
Tensile creep modulus, 1h	* / 5500	MPa	ISO 899-1
Tensile creep modulus, 1000h	* / 4500	MPa	ISO 899-1
Charpy impact strength, 23°C	90 / 100	kJ/m^2	ISO 179/1eU
Charpy impact strength, -30°C	80 / 80	kJ/m^2	ISO 179/1eU
Charpy notched impact strength, 23°C	14 / 23	kJ/m^2	ISO 179/1eA
Charpy notched impact strength, -30°C	11 / 21	kJ/m^2	ISO 179/1eA
Charpy notched impact strength, -40°C	11 / -	kJ/m^2	ISO 179/1eA
Izod notched impact strength, 23°C	15 / 20	kJ/m^2	ISO 180/1A
Izod notched impact strength, -30°C	11 / 11	kJ/m^2	ISO 180/1A

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Izod notched impact strength, -40 °C	11 / -	kJ/m²	ISO 180/1A
Izod impact strength, 23 °C	100 / -	kJ/m²	ISO 180/1U
Izod impact strength, -30 °C	90 / -	kJ/m²	ISO 180/1U
Ball indentation hardness, H 961/30	233 / 147	MPa	ISO 2039-1
Poisson's ratio	0.34 / 0.35		

Tribological properties

	dry/cond.		
Coefficient of static friction, against steel	- / 0.26		ASTM 1894
Coefficient of sliding friction, 1h against steel	- / 0.32		ASTM 1894

Thermal properties

	dry/cond.		
Melting temperature, 10 °C/min	221 / *	°C	ISO 11357-1/-3
Glass transition temperature, 10 °C/min	60 / 15	°C	ISO 11357-1/-3
Temp. of deflection under load, 1.8 MPa	210 / *	°C	ISO 75-1/-2
Temp. of deflection under load, 0.45 MPa	220 / *	°C	ISO 75-1/-2
Coeff. of linear therm. expansion, parallel, -40-23 °C	26 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, parallel	14 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, parallel, 55-160 °C	14 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, -40-23 °C	75 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	102 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, 55-160 °C	130 / *	E-6/K	ISO 11359-1/-2
RTI, electrical, 1.5mm	65	°C	UL 746B
RTI, electrical, 3mm	65	°C	UL 746B
RTI, impact, 1.5mm	65	°C	UL 746B
RTI, impact, 3mm	65	°C	UL 746B
RTI, strength, 1.5mm	65 / *	°C	UL 746B
RTI, strength, 3mm	65	°C	UL 746B
TGA curve	available		ISO 11359-1/-2

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	3 / *	mm	UL 94
UL recognition	yes / *		UL 94
Oxygen index	21 / *	%	ISO 4589-1/-2
Glow Wire Flammability Index, 1mm	700 / -	°C	IEC 60695-2-12
Glow Wire Flammability Index, 2mm	700 / -	°C	IEC 60695-2-12
Glow Wire Flammability Index, 3mm	750 / -	°C	IEC 60695-2-12
Glow Wire Ignition Temperature, 1mm	700 / -	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 2mm	700 / -	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 3mm	700 / -	°C	IEC 60695-2-13
FMVSS Class	B		ISO 3795 (FMVSS 302)

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Burning rate, Thickness 1 mm	25	mm/min	ISO 3795 (FMVSS 302)

Electrical properties

	dry/cond.		
Relative permittivity, 100Hz	3.8 / -		IEC 62631-2-1
Dissipation factor, 100Hz	220 / -	E-4	IEC 62631-2-1
Volume resistivity	1E12 / -	Ohm.m	IEC 62631-3-1
Comparative tracking index	600 / -		IEC 60112
Comparative tracking index	0 / -	PLC	UL 746A

Other properties

	dry/cond.		
Humidity absorption, 2mm	2.1 / *	%	Sim. to ISO 62
Water absorption, 2mm	6.3 / *	%	Sim. to ISO 62
Density	1360 / -	kg/m³	ISO 1183
Density of melt	1200	kg/m³	Internal

VDA Properties

	dry/cond.		
Emission of organic compounds	8.5	µgC/g	VDA 277
Odour	3.5	class	VDA 270
Fogging, F-value (refraction)	95 / *	%	ISO 6452
Fogging, G-value (condensate)	0.1 / *	mg	ISO 6452

Injection

Drying Recommended	yes		
Drying Temperature	80	°C	
Drying Time, Dehumidified Dryer	2 - 4	h	
Processing Moisture Content	≤0.2	%	
Melt Temperature Optimum	270	°C	Internal
Min. melt temperature	260	°C	
Max. melt temperature	280	°C	
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	

Characteristics

Additives	Release agent

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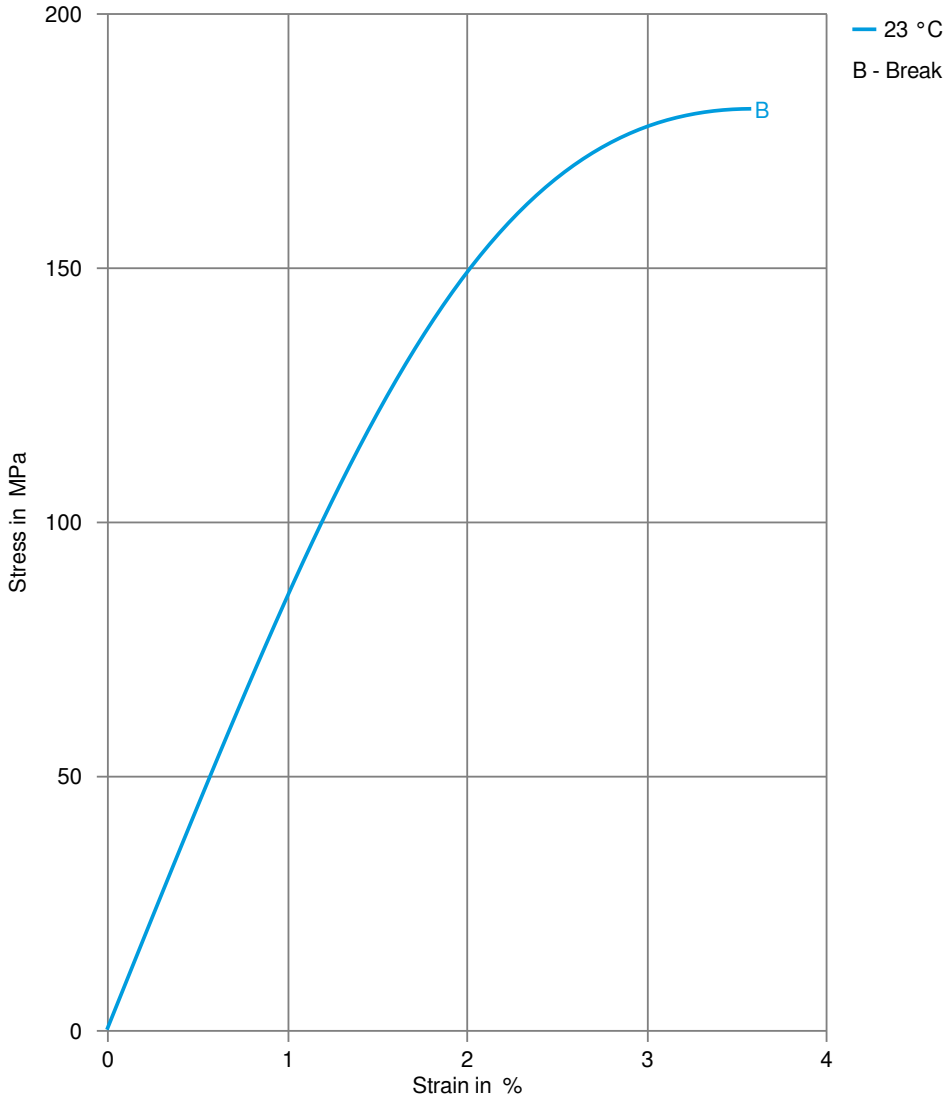
Stress-strain (dry)



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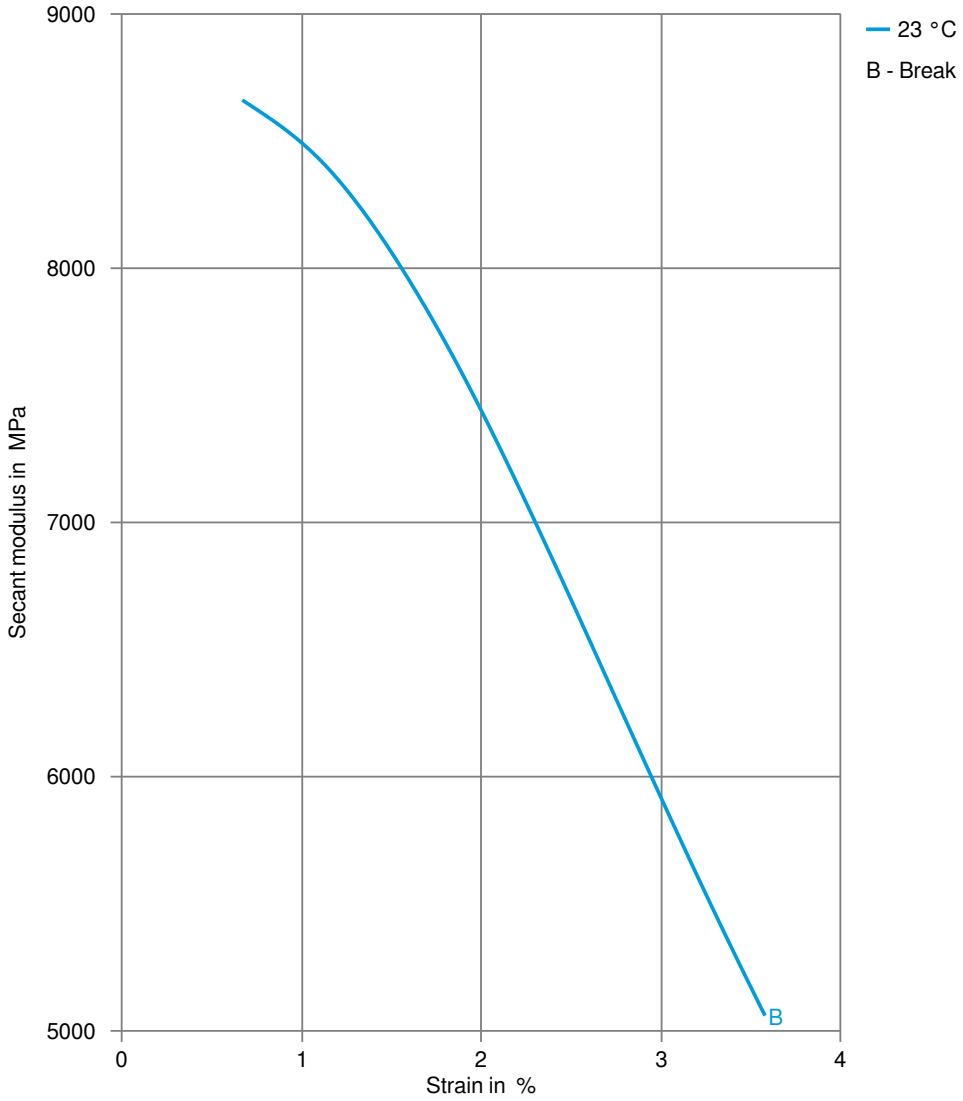
NYLON RESIN

Secant modulus-strain (dry)



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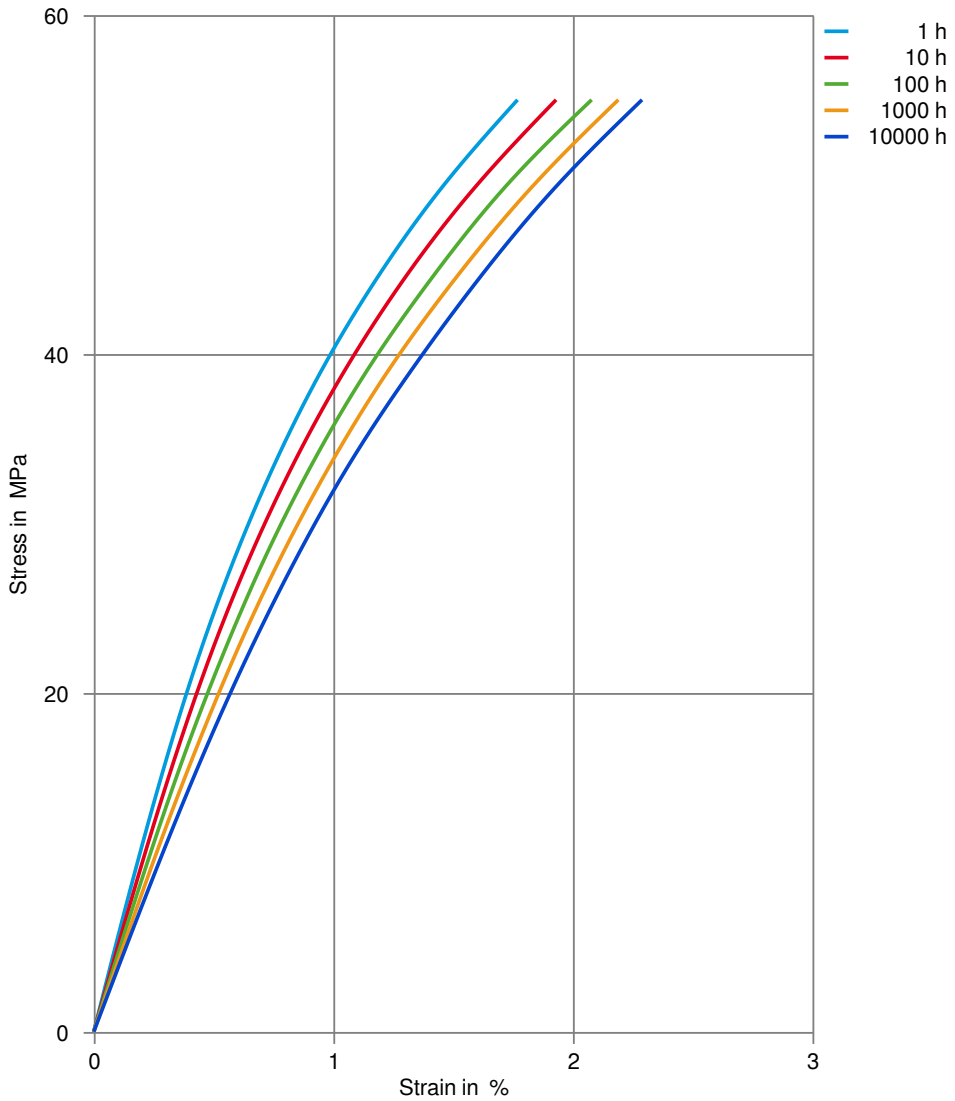
NYLON RESIN

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



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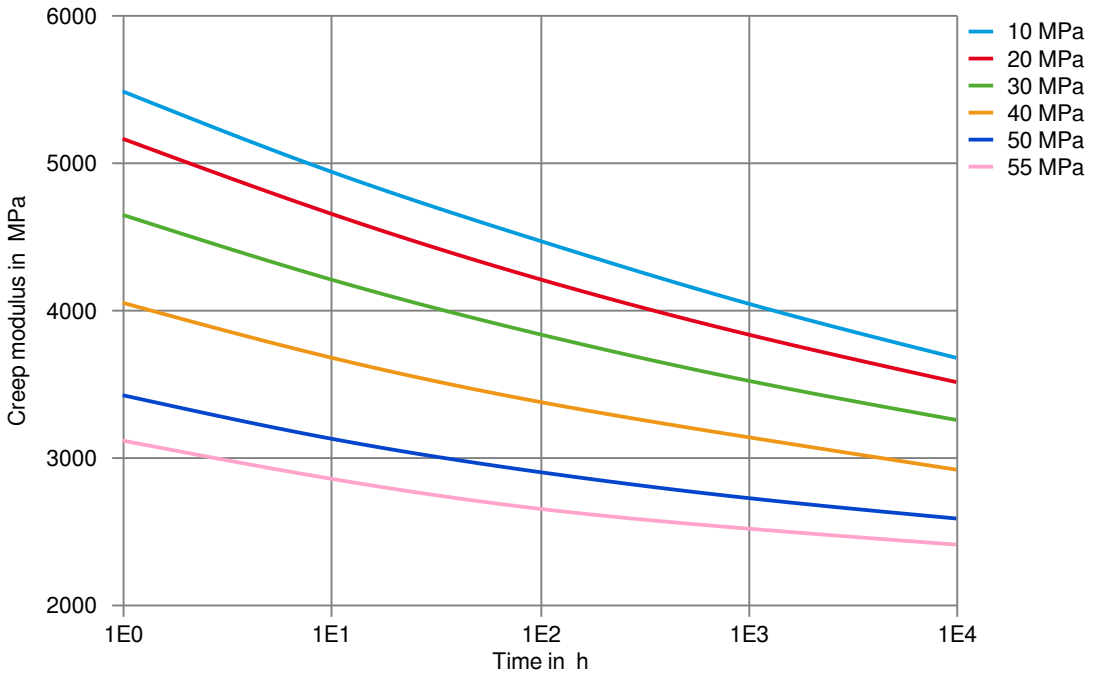
NYLON RESIN

Creep modulus-time 23 °C (cond.)



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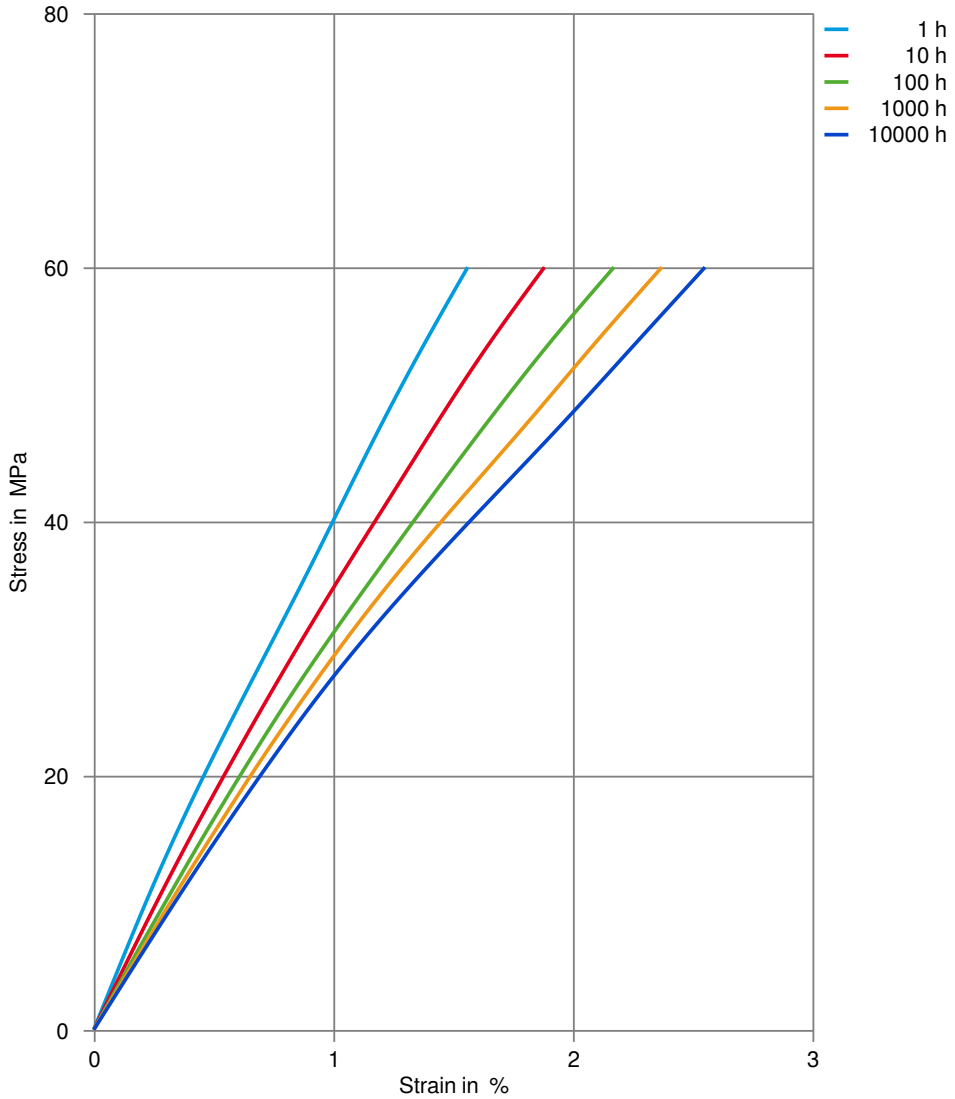
NYLON RESIN

Stress-strain (isochronous) 60 °C (dry)



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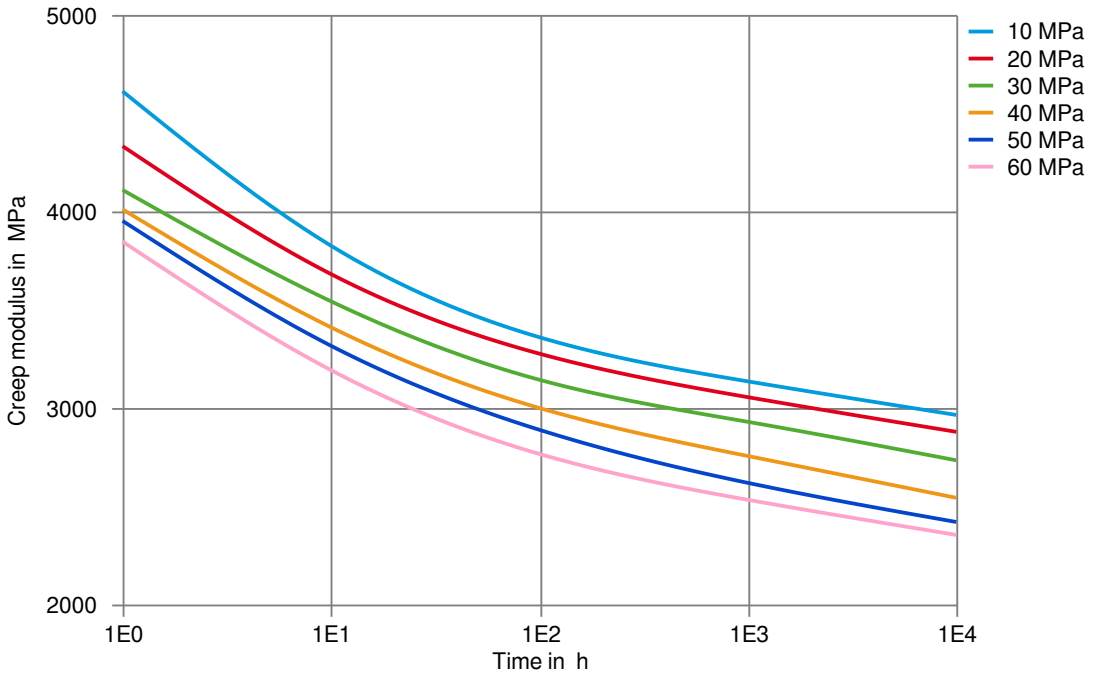
NYLON RESIN

Creep modulus-time 60 °C (dry)



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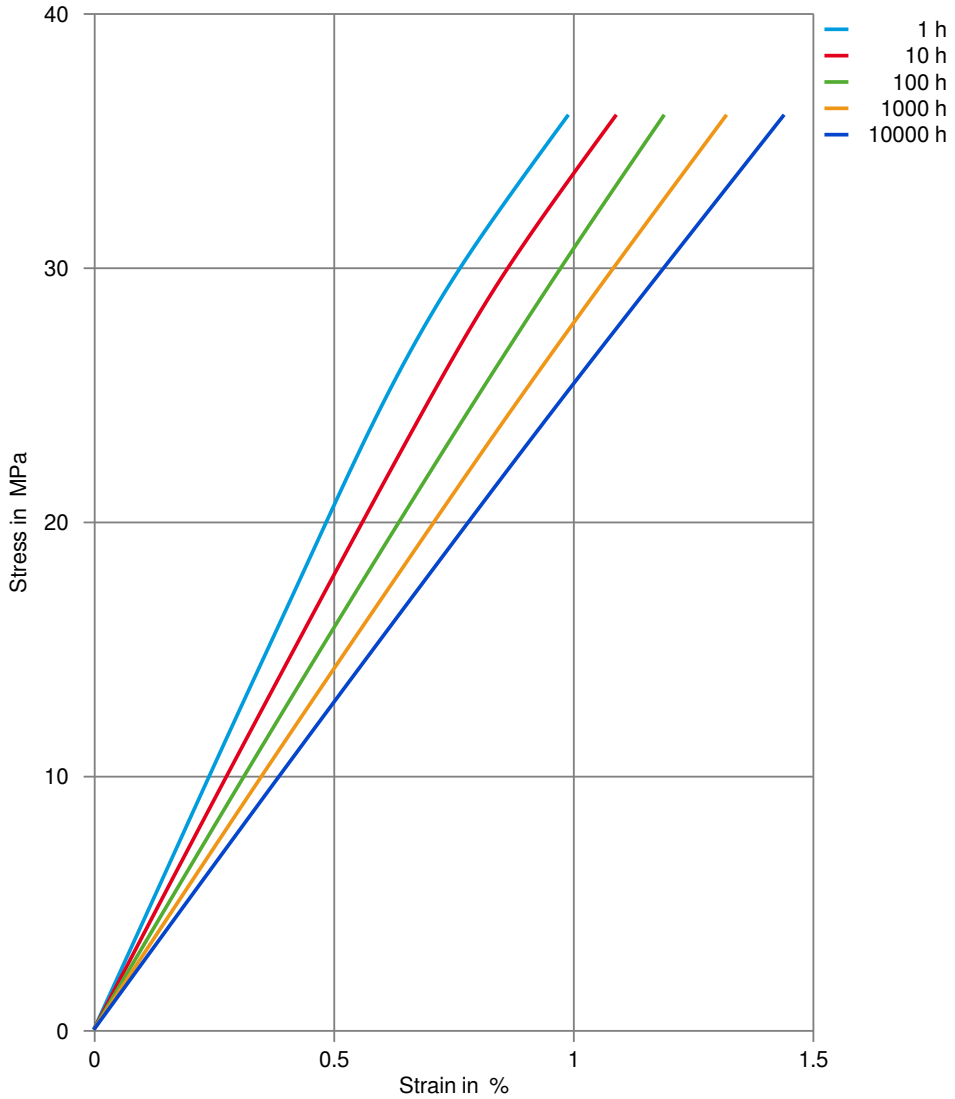
Stress-strain (isochronous) 90 °C (dry)



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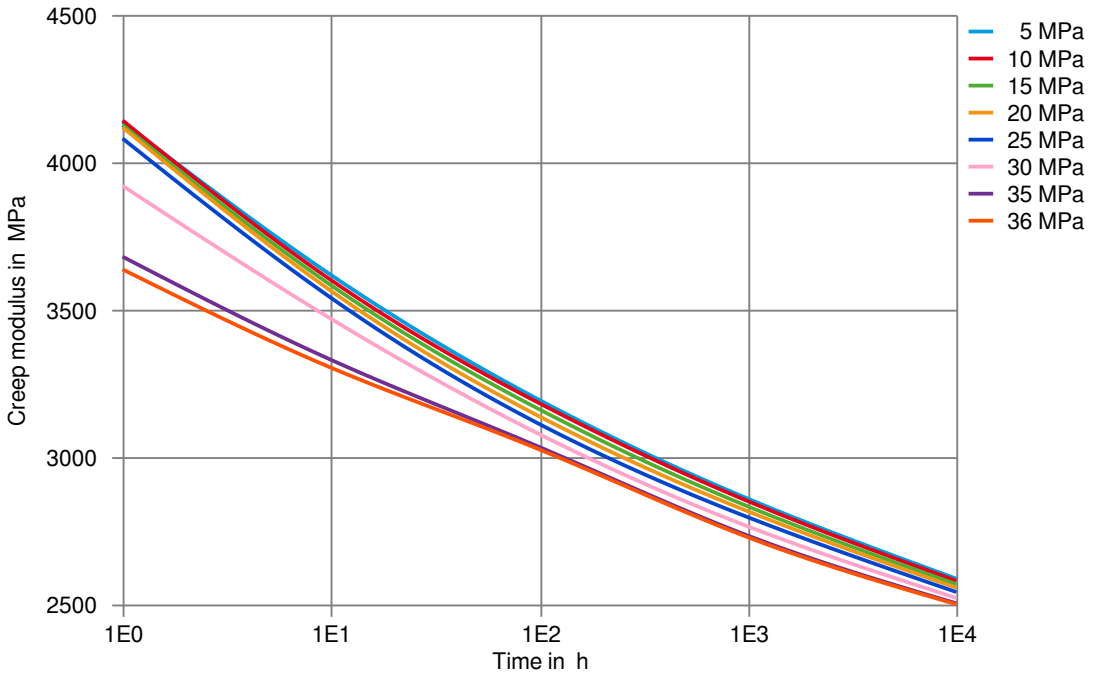
NYLON RESIN

Creep modulus-time 90 °C (dry)



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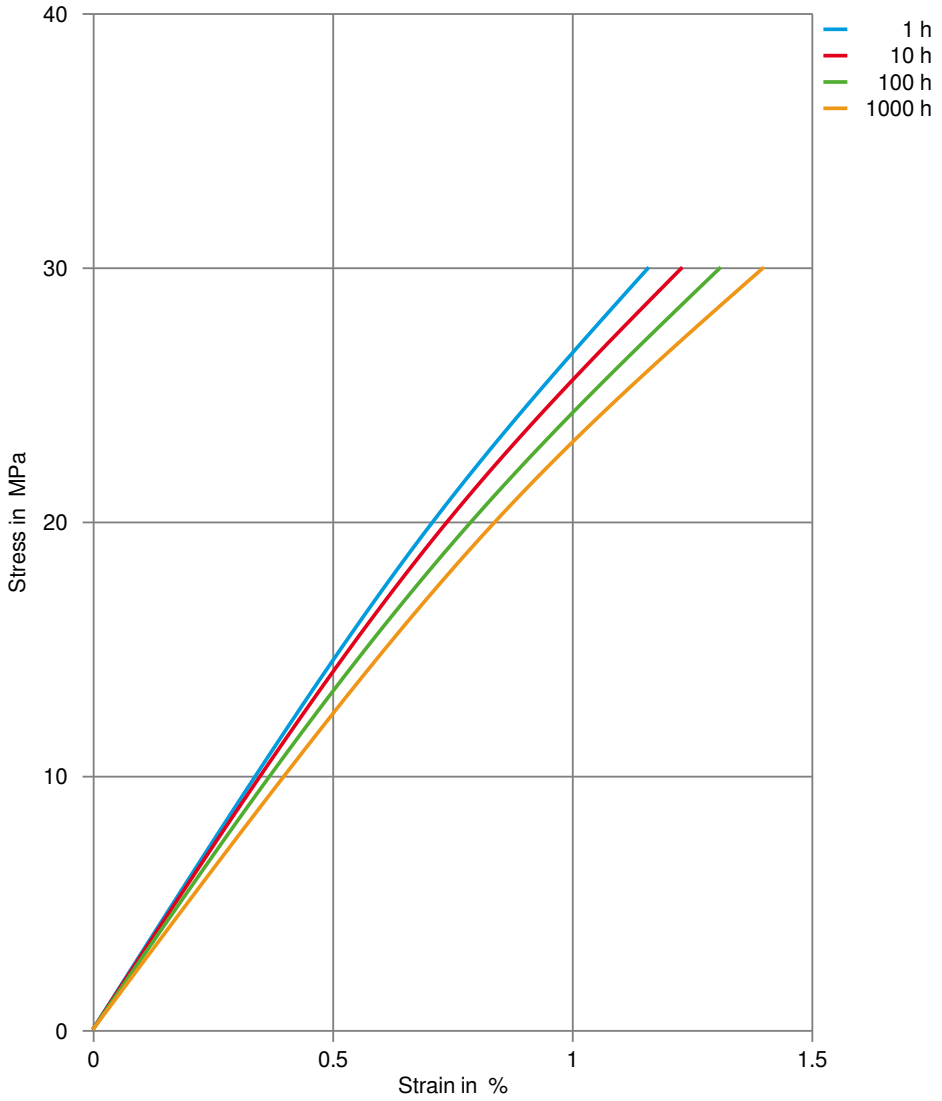
NYLON RESIN

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



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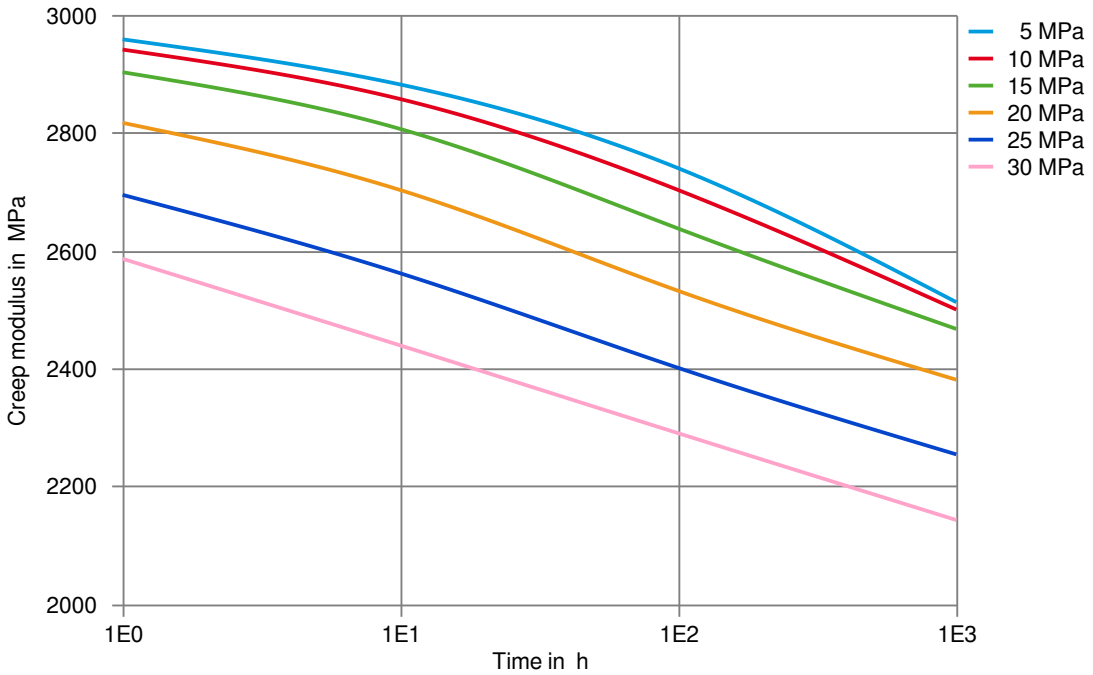
Creep modulus-time 100 °C (dry)



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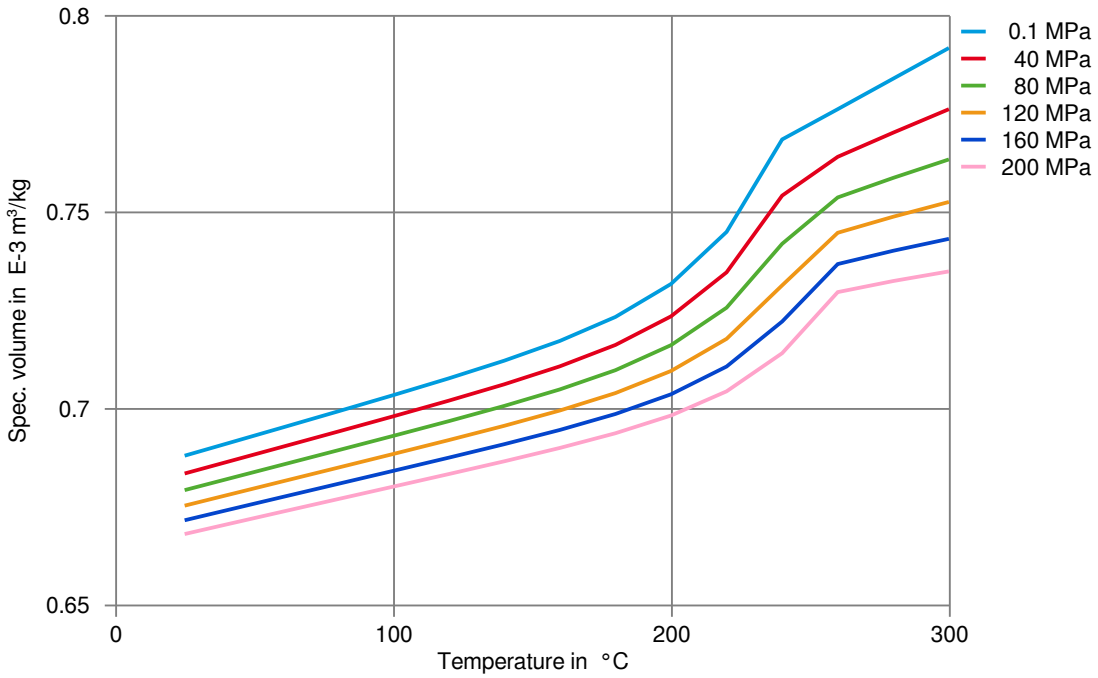
Specific volume-temperature (pvT)



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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
- ✔ 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

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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).