Celanese
The chemistry inside innovation™

Minlon® 73M30 NC010

MINERAL REINFORCED NYLON RESIN

Common features of Minlon® nylon resin include mechanical and physical properties such as high mechanical strength, excellent balance of stiffness /toughness, good high temperature performance, good chemical resistance, paintability, dimensional stability and low warpage.
Grades with improved electrical and flammability properties are available within the Zytel® nylon resin product line. In addition, Minlon® nylon resin is available in different modified and reinforced grades to create a wide range of products with tailored properties for specific processes and end-uses.

The good melt stability of Minlon® 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.

Minlon® nylon resin typically is used in demanding applications in the automotive, electrical, electronic, domestic appliances and construction industries.

Minlon® 73M30 NC010 is a 30% mineral reinforced, heat stabilised polyamide 6 resin for injection moulding. It has isotropic properties and low warpage.

Product information

Resin Identification	PA6-MD30	ISO 1043
Part Marking Code	>PA6-MD30<	ISO 11469
ISO designation	ISO 16396-PA6,MD30,M1GHNR,S14-050	

Rheological properties

	dry/cond.		
Viscosity number	145 / *	cm^3/g	ISO 307, 1628
Moulding shrinkage, parallel	0.9 / -	%	ISO 294-4, 2577
Moulding shrinkage, normal	0.9 / -	%	ISO 294-4, 2577

Typical mechanical properties

	dry/cond.		
Tensile modulus	4800 / 1700	MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	82 / 55	MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	15 / 40	%	ISO 527-1/-2
Flexural modulus	4800 / 1800	MPa	ISO 178
Tensile creep modulus, 1h	* / 1180	MPa	ISO 899-1
Tensile creep modulus, 1000h	* / 740	MPa	ISO 899-1
Charpy impact strength, 23°C	110 / N	kJ/m^2	ISO 179/1eU
Charpy impact strength, -30°C	85 / 85	kJ/m^2	ISO 179/1eU
Charpy notched impact strength, 23°C	5.5 / 11	kJ/m^2	ISO 179/1eA
Charpy notched impact strength, -30°C	3.5 / 3.5	kJ/m^2	ISO 179/1eA
Izod notched impact strength, 23°C	5.5 / 9	kJ/m^2	ISO 180/1A
Izod notched impact strength, -30°C	4.0 / -	kJ/m^2	ISO 180/1A
Poisson's ratio	0.36 / 0.42		

Thermal properties

	dry/cond.		
Melting temperature, 10°C/min	221 / *	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	70 / -	°C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	80 / *	°C	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	195 / *	°C	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	210 / *	°C	ISO 306

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Coeff. of linear therm. expansion, parallel, -40-23°C	56 / *	E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), parallel	63 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, parallel, 55-160°C	89 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, -40-23°C	57 / *	E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	65 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, 55-160°C	110 / *	E-6/K	ISO 11359-1/-2
RTI, electrical, 0.75mm	65	°C	UL 746B
RTI, impact, 0.75mm	65	°C	UL 746B
RTI, strength, 0.75mm	65	°C	UL 746B
TGA curve	available		ISO 11359-1/-2

Flammability

	dry/cond.		
Burning Behav. at thickness h	HB / *	class	IEC 60695-11-10
Thickness tested	0.85 / *	mm	IEC 60695-11-10
UL recognition	yes / *		UL 94
FMVSS Class	SE		ISO 3795 (FMVSS 302)

Physical/Other properties

	dry/cond.		
Humidity absorption, 2mm	2.1 / *	%	Sim. to ISO 62
Water absorption, 2mm	6.3 / *	%	Sim. to ISO 62
Density	1350 / -	kg/m³	ISO 1183

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
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

Processing	Injection Moulding
Delivery form	Pellets
Additives	Release agent
Special characteristics	Platable, Heat stabilised or stable to heat, Low Warpage

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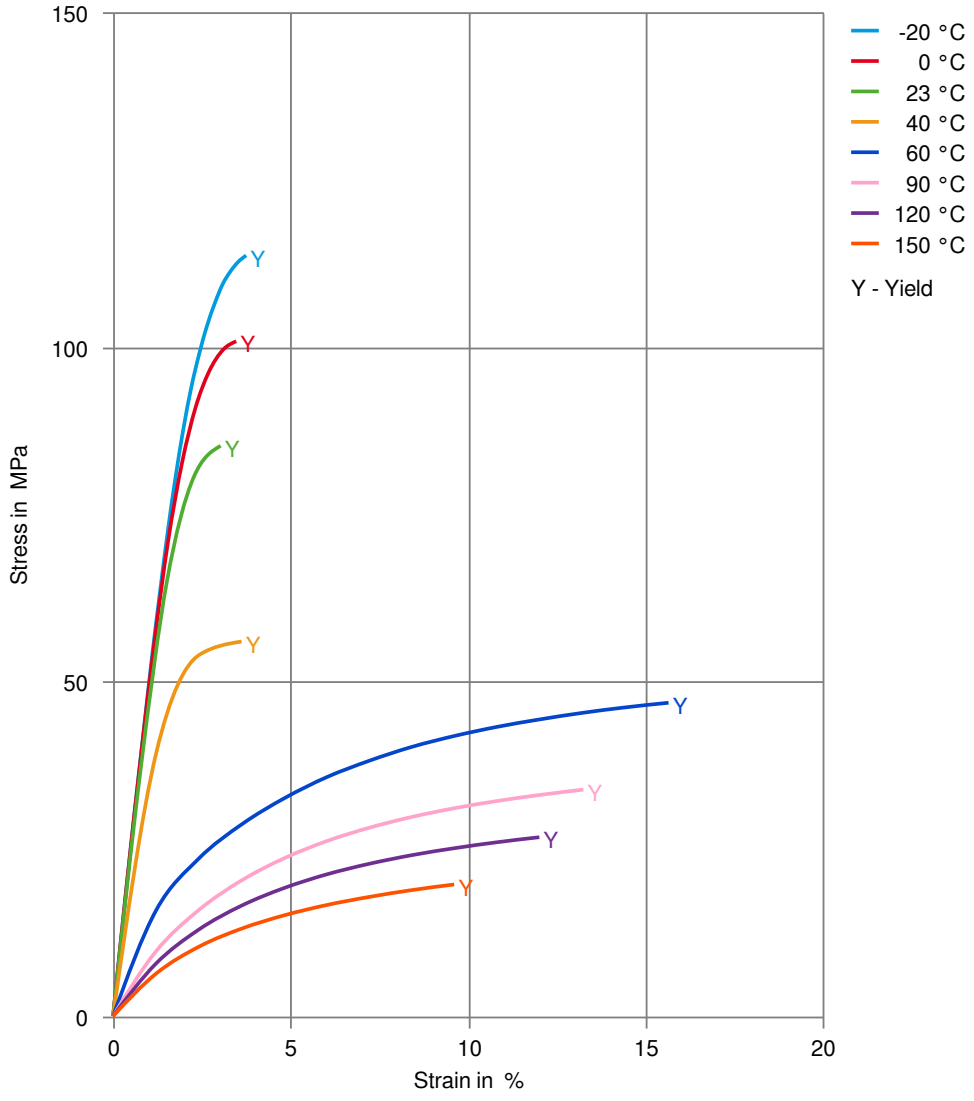
Stress-strain (dry)



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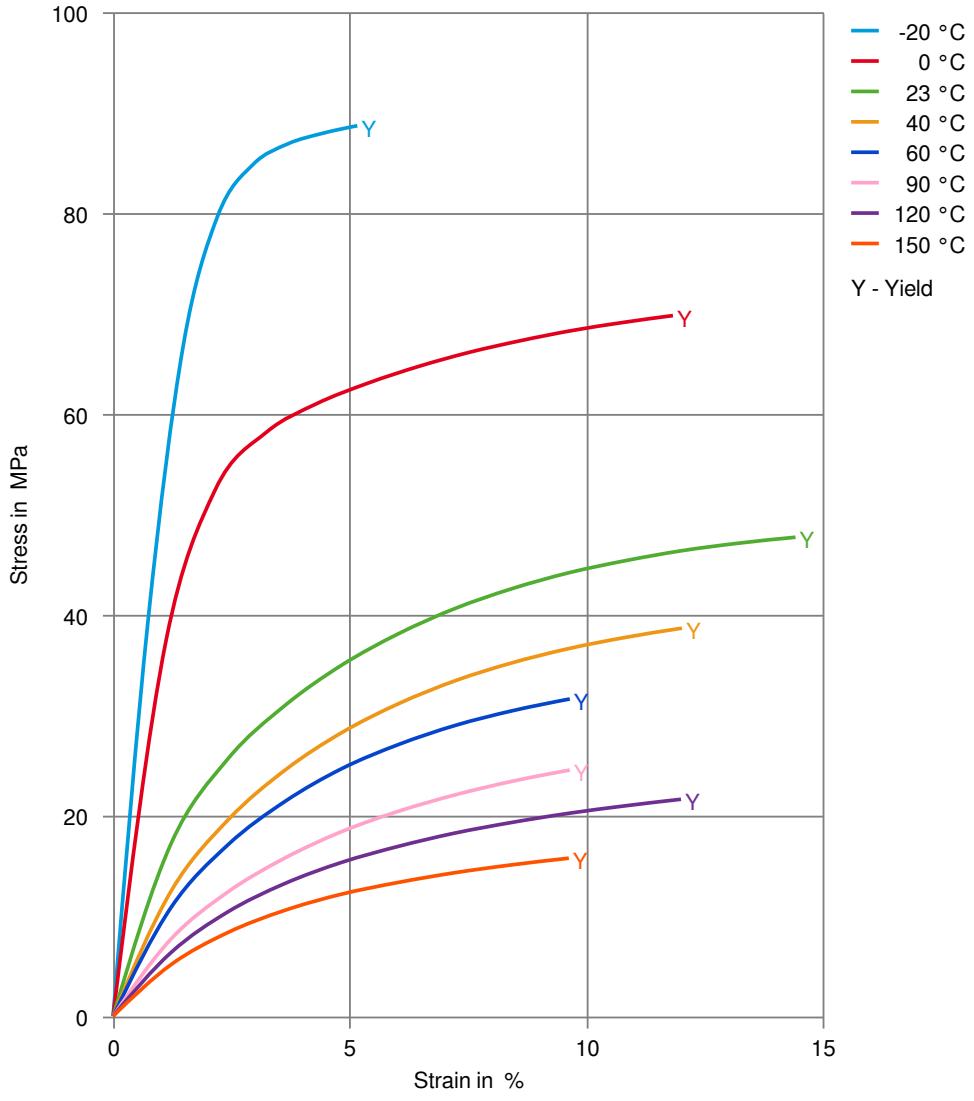
Stress-strain (cond.)



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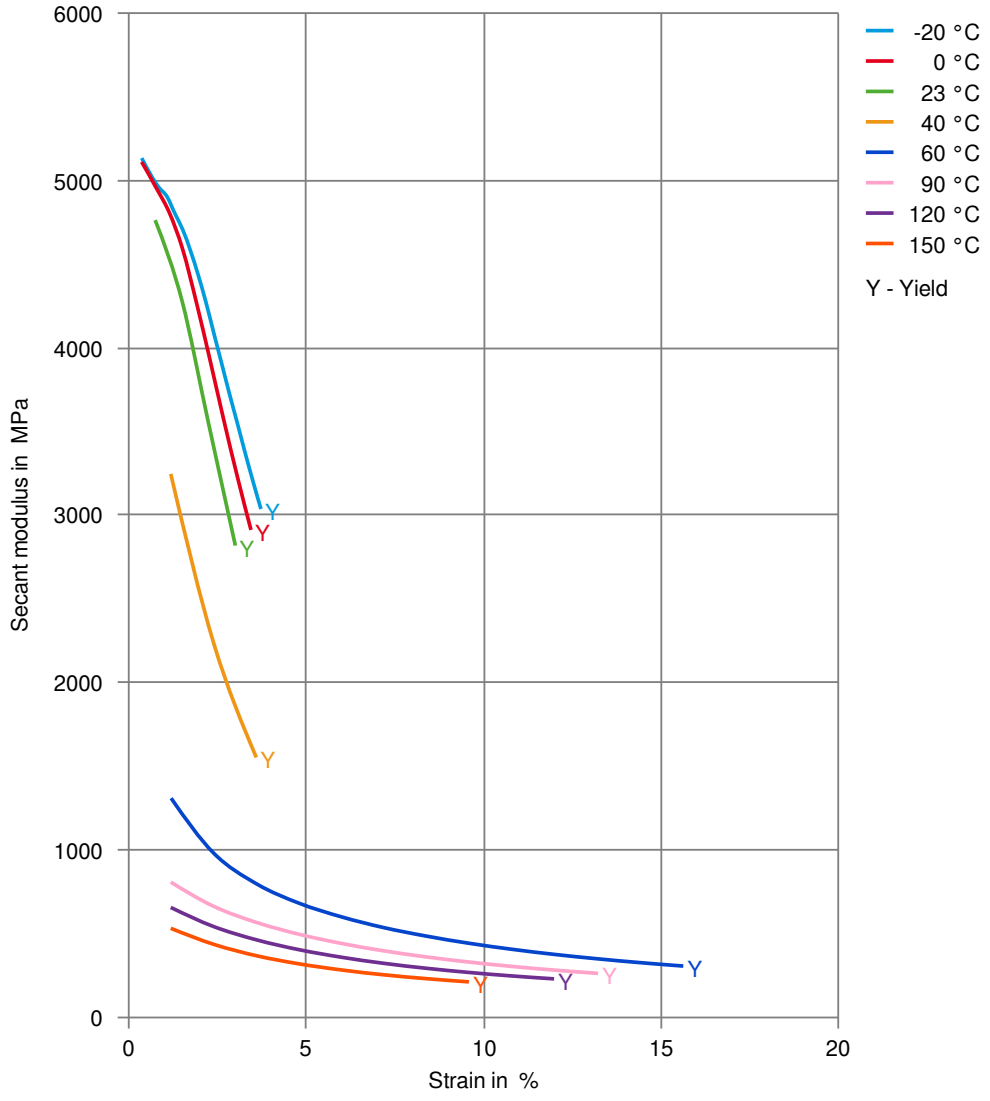
Secant modulus-strain (dry)



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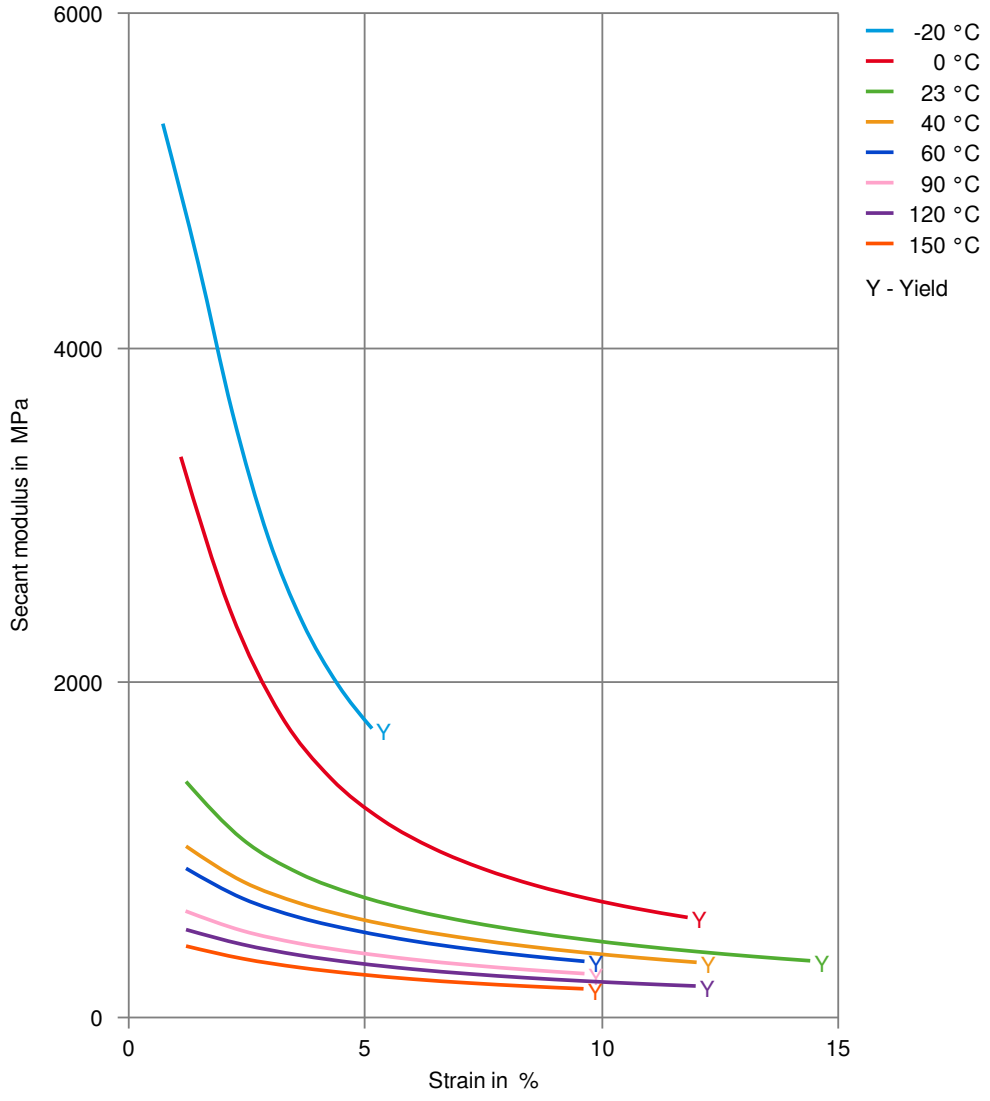
Secant modulus-strain (cond.)



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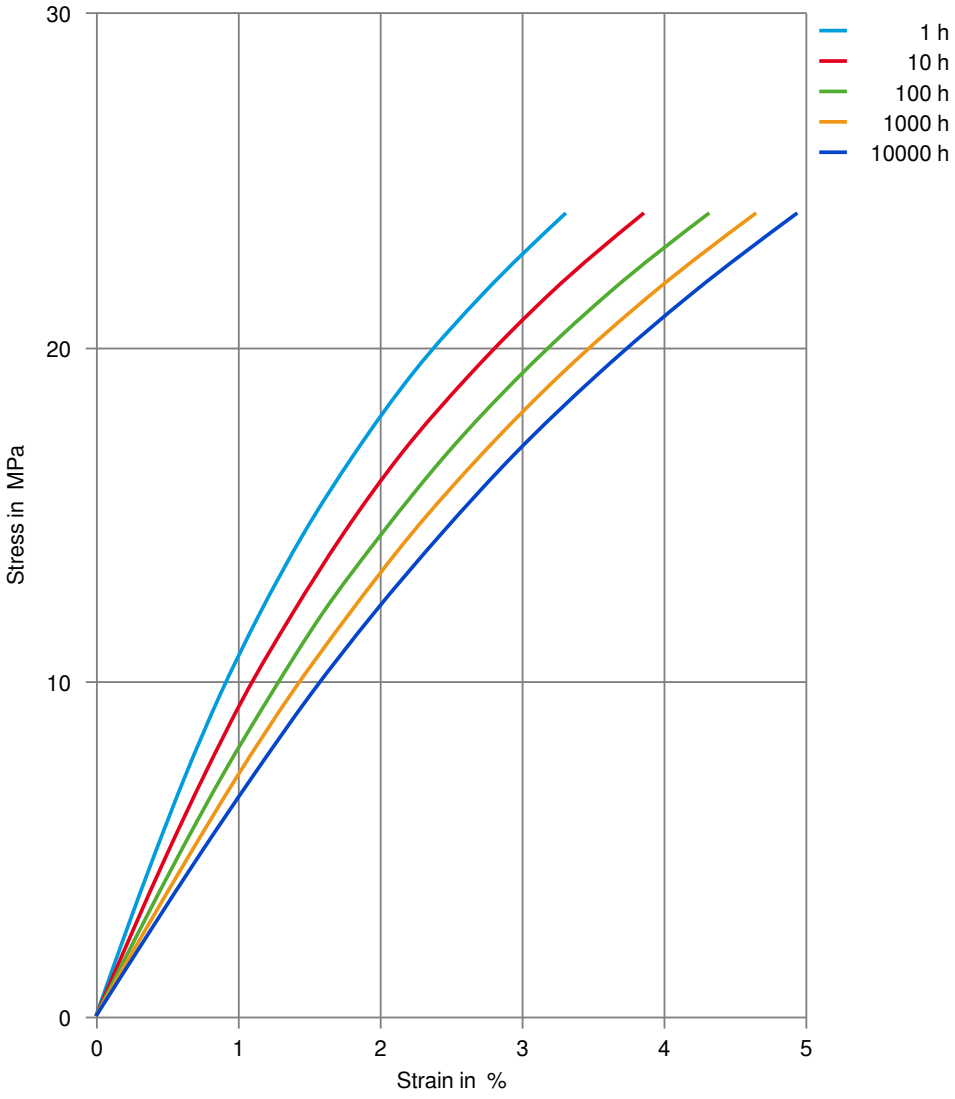
MINERAL REINFORCED NYLON RESIN

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



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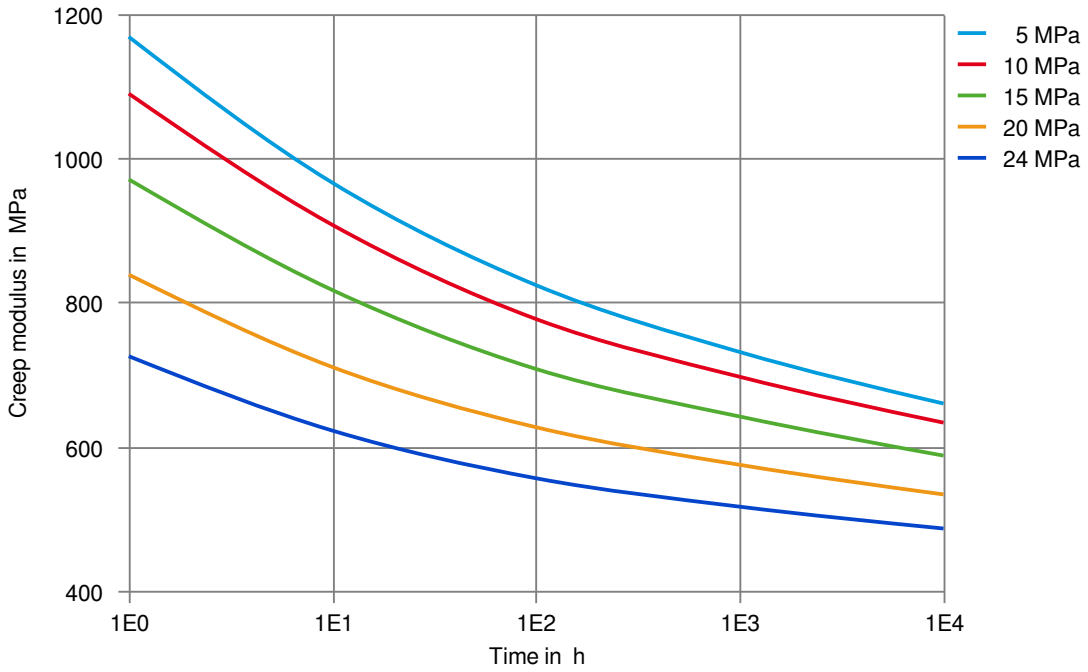
MINERAL REINFORCED NYLON RESIN

Creep modulus-time 23 °C (cond.)



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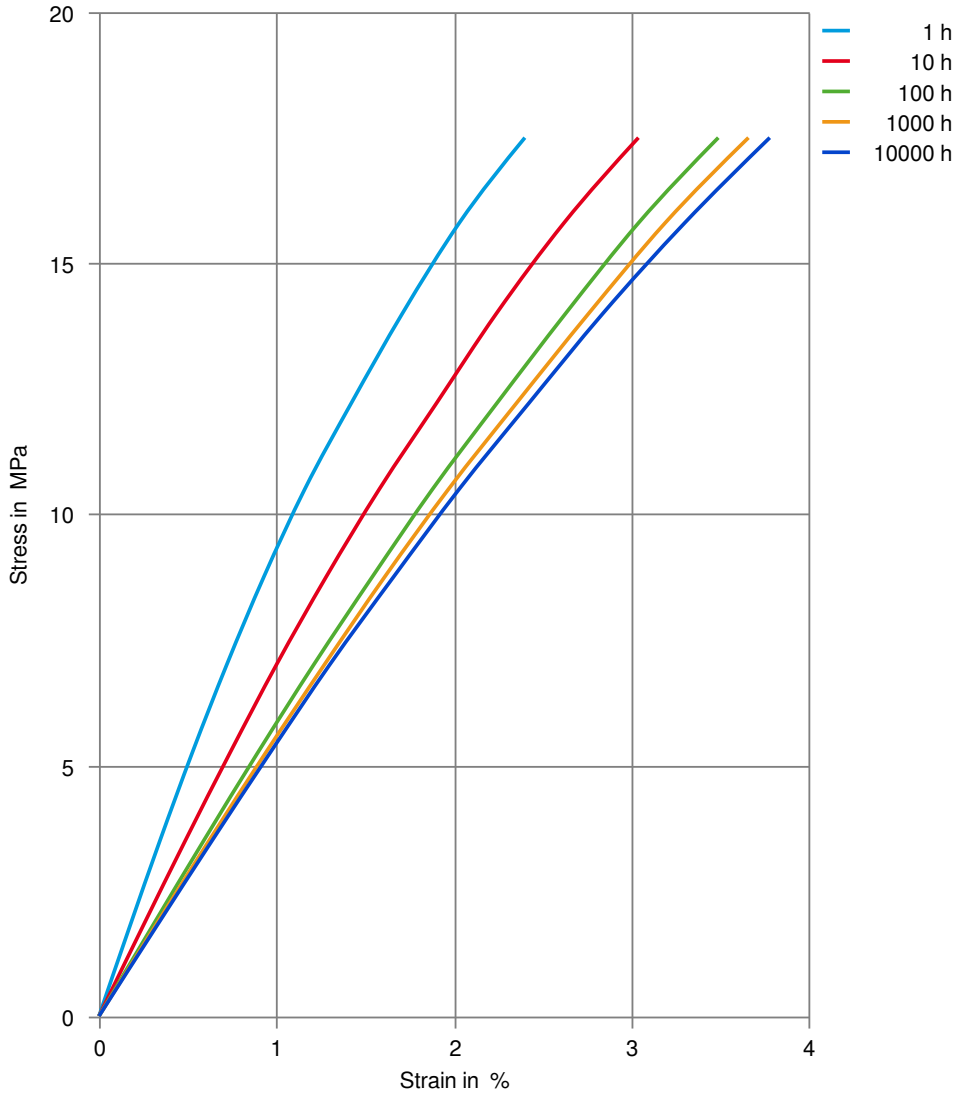
MINERAL REINFORCED NYLON RESIN

Stress-strain (isochronous) 60 °C (cond.)



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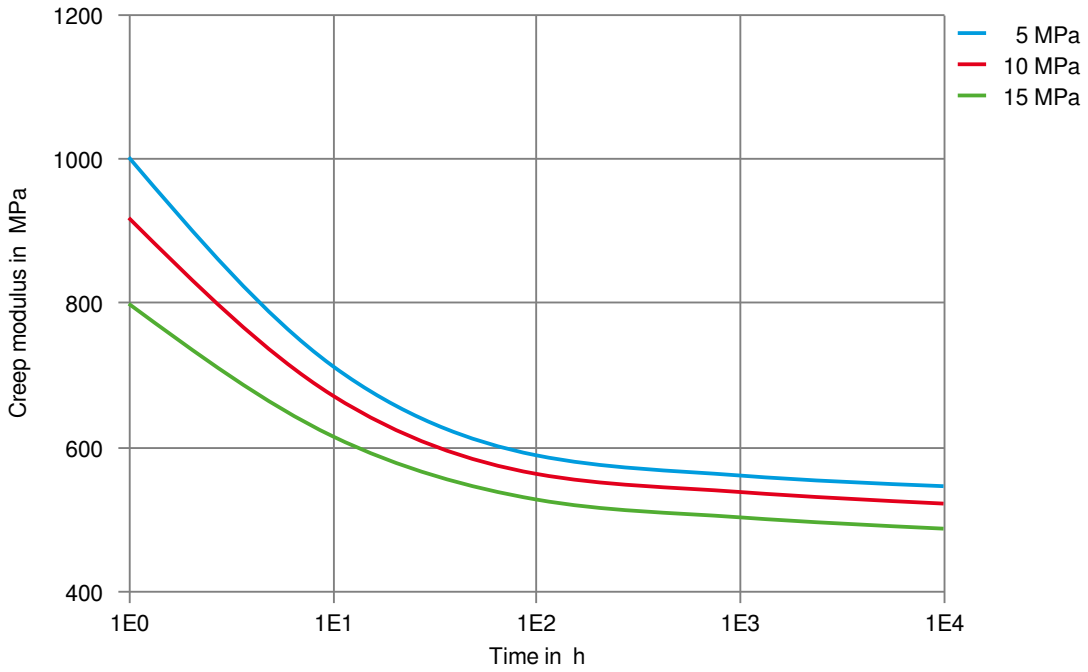
Creep modulus-time 60 °C (cond.)



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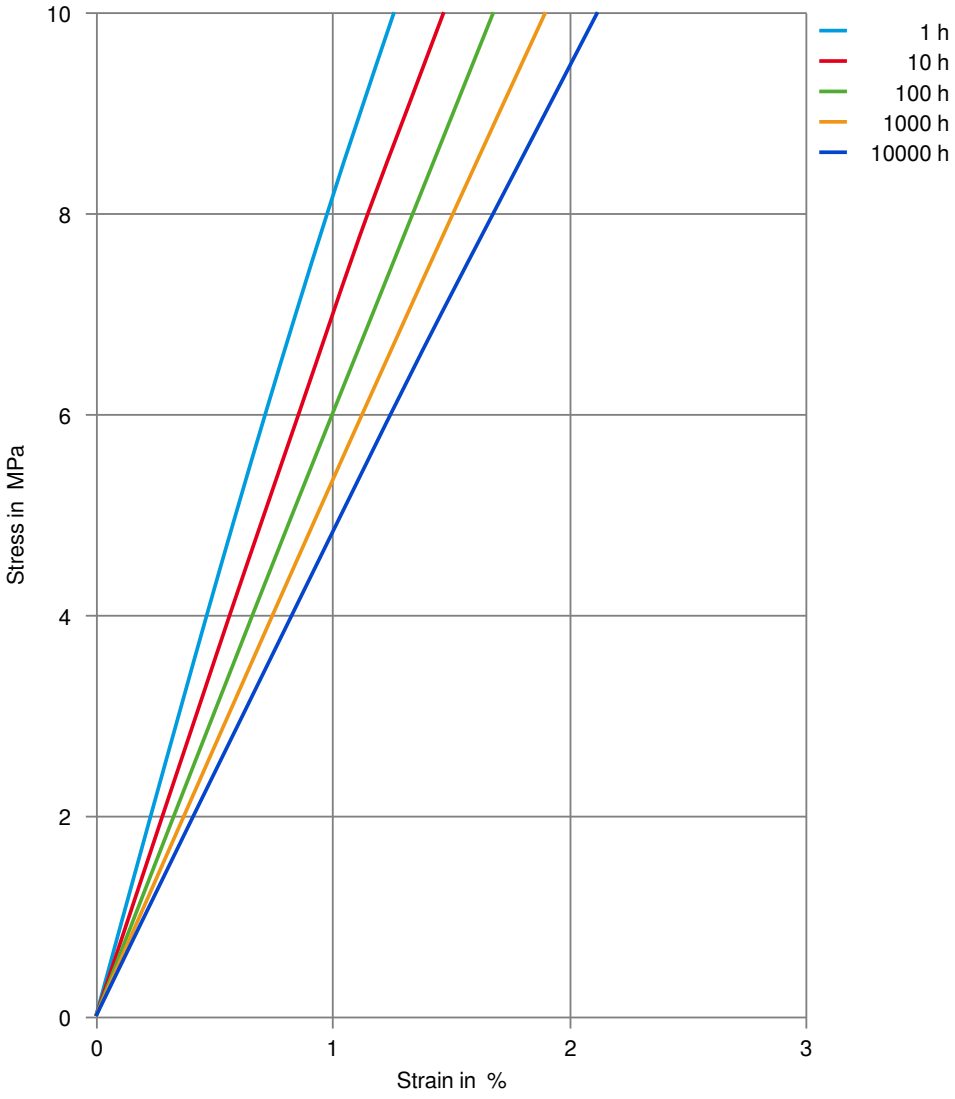
MINERAL REINFORCED NYLON RESIN

Stress-strain (isochronous) 90 °C (cond.)



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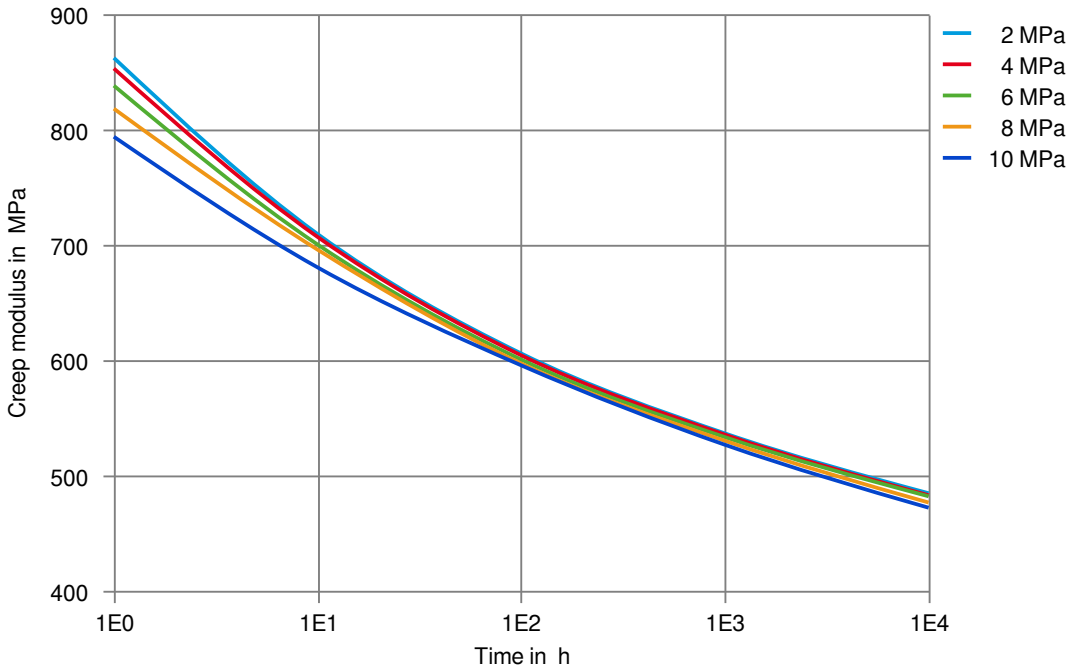
MINERAL REINFORCED NYLON RESIN

Creep modulus-time 90 °C (cond.)



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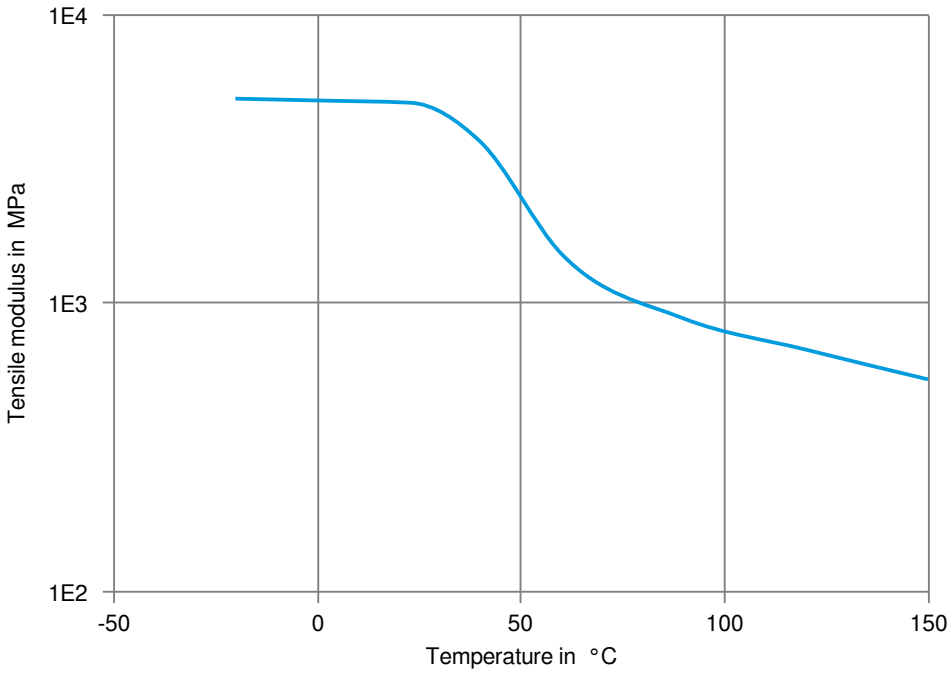
Tensile modulus-temperature (dry)



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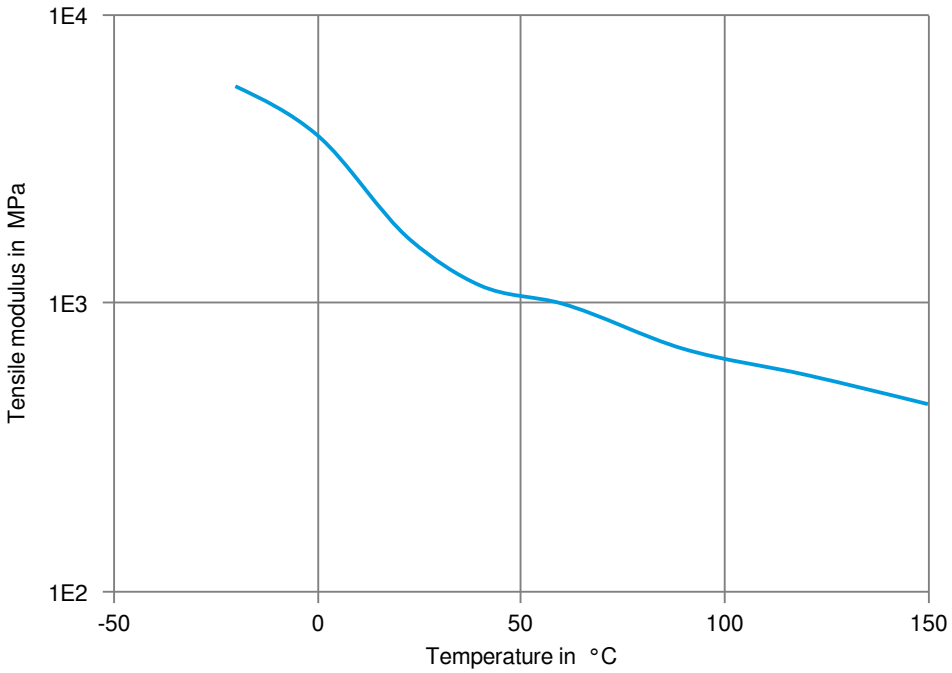
Tensile modulus-temperature (cond.)



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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
- ✔ 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

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- ✔ 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).