



Zytel® 70G43L 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, 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® 70G43L NC010 is a 43% glass fiber reinforced polyamide 66 resin for injection moulding.

Product information

Resin Identification	PA66-GF43	ISO 1043
Part Marking Code	>PA66-GF43<	ISO 11469
ISO designation	ISO 16396-PA66,GF43,M1GNR,S14-140	

Rheological properties

	dry/cond.		
Moulding shrinkage, parallel	0.3/-	%	ISO 294-4, 2577
Moulding shrinkage, normal	1.0/-	%	ISO 294-4, 2577

Typical mechanical properties

	dry/cond.		
Tensile Modulus	14000/11000	MPa	ISO 527-1/-2
Stress at break	225/160	MPa	ISO 527-1/-2
Strain at break	3/4	%	ISO 527-1/-2
Flexural Modulus	12000/9000	MPa	ISO 178
Flexural Strength	340/260	MPa	ISO 178
Tensile creep modulus, 1h	*/10800	MPa	ISO 899-1
Tensile creep modulus, 1000h	*/7960	MPa	ISO 899-1
Charpy impact strength, 23°C	100/105	kJ/m ²	ISO 179/1eU
Charpy impact strength, -30°C	85/75	kJ/m ²	ISO 179/1eU
Charpy notched impact strength, 23°C	16/19	kJ/m ²	ISO 179/1eA
Charpy notched impact strength, -30°C	12/12	kJ/m ²	ISO 179/1eA
Charpy notched impact strength, -40°C	11/11	kJ/m ²	ISO 179/1eA
Izod notched impact strength, 23°C	14/16	kJ/m ²	ISO 180/1A
Izod notched impact strength, -30°C	12/11	kJ/m ²	ISO 180/1A
Izod notched impact strength, -40°C	11/11	kJ/m ²	ISO 180/1A
Izod impact strength, 23°C	105/90	kJ/m ²	ISO 180/1U
Izod impact strength, -30°C	105/65	kJ/m ²	ISO 180/1U



Zytel® 70G43L NC010

NYLON RESIN

Hardness, Rockwell, M-scale	105/90	-	ISO 2039-2
Hardness, Rockwell, R-scale	125/118	-	ISO 2039-2
Ball indentation hardness, H 961/30	290/-	MPa	ISO 2039-1
Poisson's ratio	0.33/0.34	-	
Multiaxial Impact, Total Energy, 4.5m/s, 2mm	4.4/-	J	ISO 6603-2

Thermal properties

dry/cond.

Melting temperature, 10°C/min	262/*	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	80/-	°C	ISO 11357-1/-2
Temp. of deflection under load, 1.8 MPa	255/*	°C	ISO 75-1/-2
Temp. of deflection under load, 0.45 MPa	262/*	°C	ISO 75-1/-2
Vicat softening temperature, 50°C/h, 50N	255/*	°C	ISO 306
CLTE, Parallel, -40-23°C	20/*	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, parallel	15/*	E-6/K	ISO 11359-1/-2
CLTE, Parallel, 55-160°C	9/*	E-6/K	ISO 11359-1/-2
CLTE, Normal, -40-23°C	61/*	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	79/*	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, Normal, 55-160°C	130/*	E-6/K	ISO 11359-1/-2
Thermal conductivity of melt	0.25	W/(m K)	
Eff. thermal diffusivity	9.5E-8	m²/s	
Spec. heat capacity of melt	2050	J/(kg K)	
RTI, electrical, 0.75mm	130	°C	UL 746B
RTI, electrical, 1.5mm	130	°C	UL 746B
RTI, electrical, 3mm	130	°C	UL 746B
RTI, impact, 0.75mm	120	°C	UL 746B
RTI, impact, 1.5mm	120	°C	UL 746B
RTI, impact, 3mm	120	°C	UL 746B
RTI, strength, 0.75mm	130	°C	UL 746B
RTI, strength, 1.5mm	130/*	°C	UL 746B
RTI, strength, 3mm	130	°C	UL 746B

Flammability

dry/cond.

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	0.71/*	mm	IEC 60695-11-10
UL recognition	yes/*	-	UL 94
Oxygen index	23/*	%	ISO 4589-1/-2
Glow Wire Flammability Index, 0.75mm	650/-	°C	IEC 60695-2-12
Glow Wire Flammability Index, 1.5mm	650/-	°C	IEC 60695-2-12
Glow Wire Flammability Index, 3mm	825/-	°C	IEC 60695-2-12
Glow Wire Ignition Temperature, 0.75mm	675/-	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 1.5mm	675/-	°C	IEC 60695-2-13

Zytel® 70G43L NC010

NYLON RESIN

Glow Wire Ignition Temperature, 3mm	700/-	°C	IEC 60695-2-13
FMVSS Class	SE/B	-	ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	27	mm/min	ISO 3795 (FMVSS 302)

Electrical properties

	dry/cond.		
Relative permittivity, 100Hz	4.5/-	-	IEC 62631-2-1
Relative permittivity, 1MHz	4.1/4.9	-	IEC 62631-2-1
Dissipation factor, 100Hz	100/-	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	145/600	E-4	IEC 62631-2-1
Volume resistivity	>1E13/1E10	Ohm.m	IEC 62631-3-1
Surface resistivity	*/1E12	Ohm	IEC 62631-3-2
Electric strength	27/-	kV/mm	IEC 60243-1
Electric Strength, Short Time, 2mm	27/-	kV/mm	IEC 60243-1

Other properties

	dry/cond.		
Humidity absorption, 2mm	1.5/*	%	Sim. to ISO 62
Water absorption, 2mm	4.7/*	%	Sim. to ISO 62
Density	1490/-	kg/m ³	ISO 1183
Density of melt	1290	kg/m ³	
Water Absorption, Immersion 24h	0.9/* ^[1]	%	Sim. to ISO 62

[1]: 2mm wall thickness

Injection

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

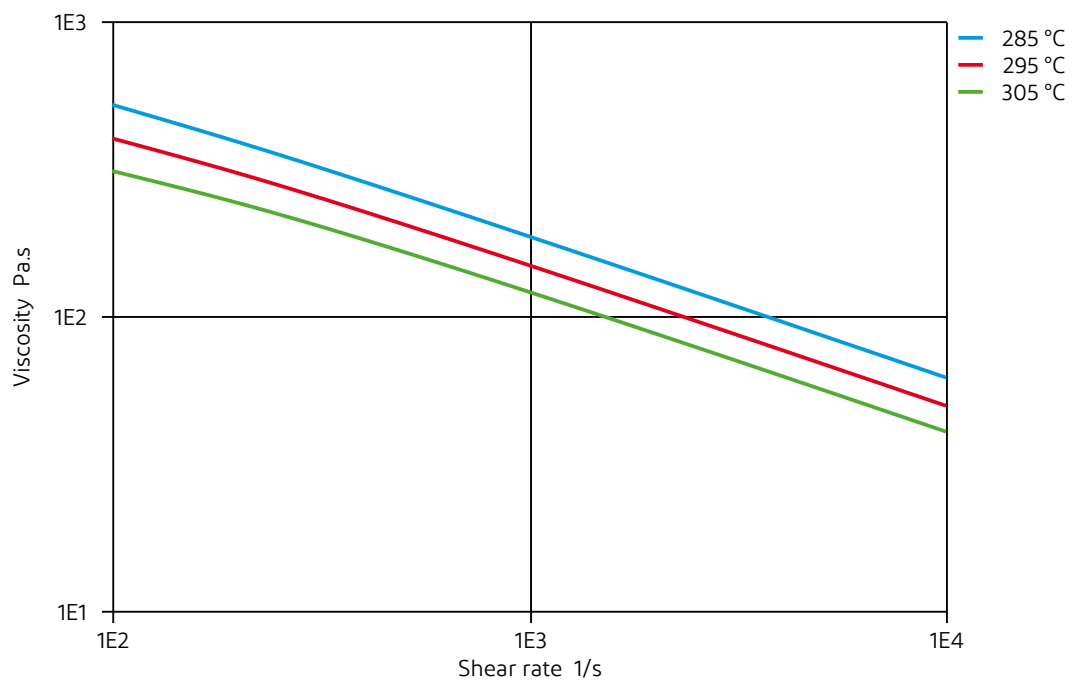
Additives	Release agent
-----------	---------------



Zytel® 70G43L NC010

NYLON RESIN

Viscosity-shear rate

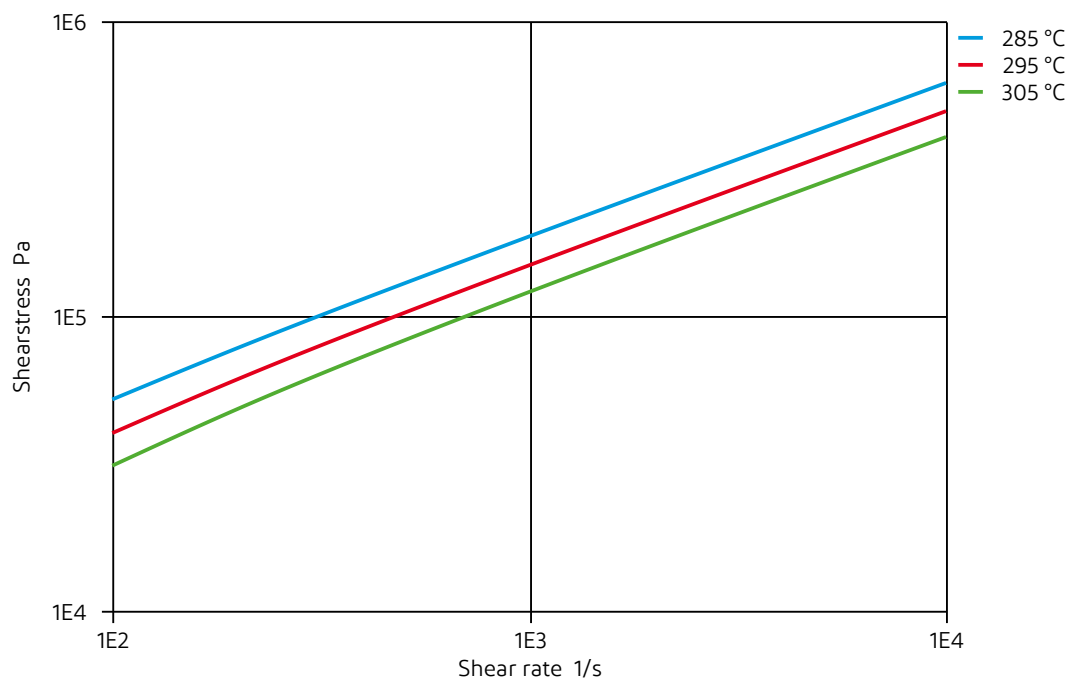




Zytel® 70G43L NC010

NYLON RESIN

Shearstress-shear rate

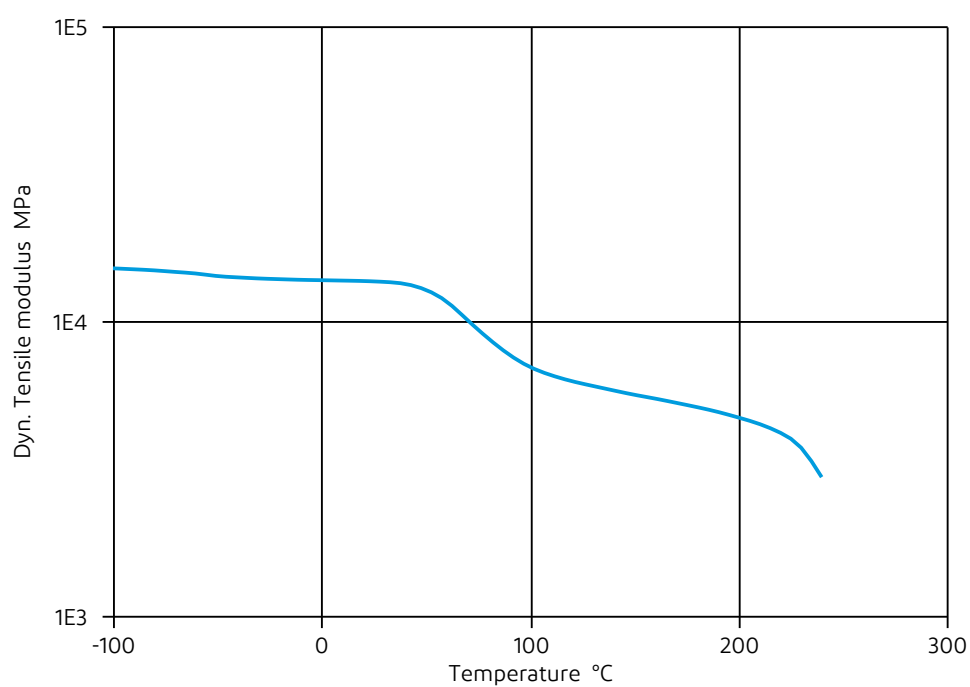




Zytel® 70G43L NC010

NYLON RESIN

Dynamic Tensile modulus-temperature (dry)

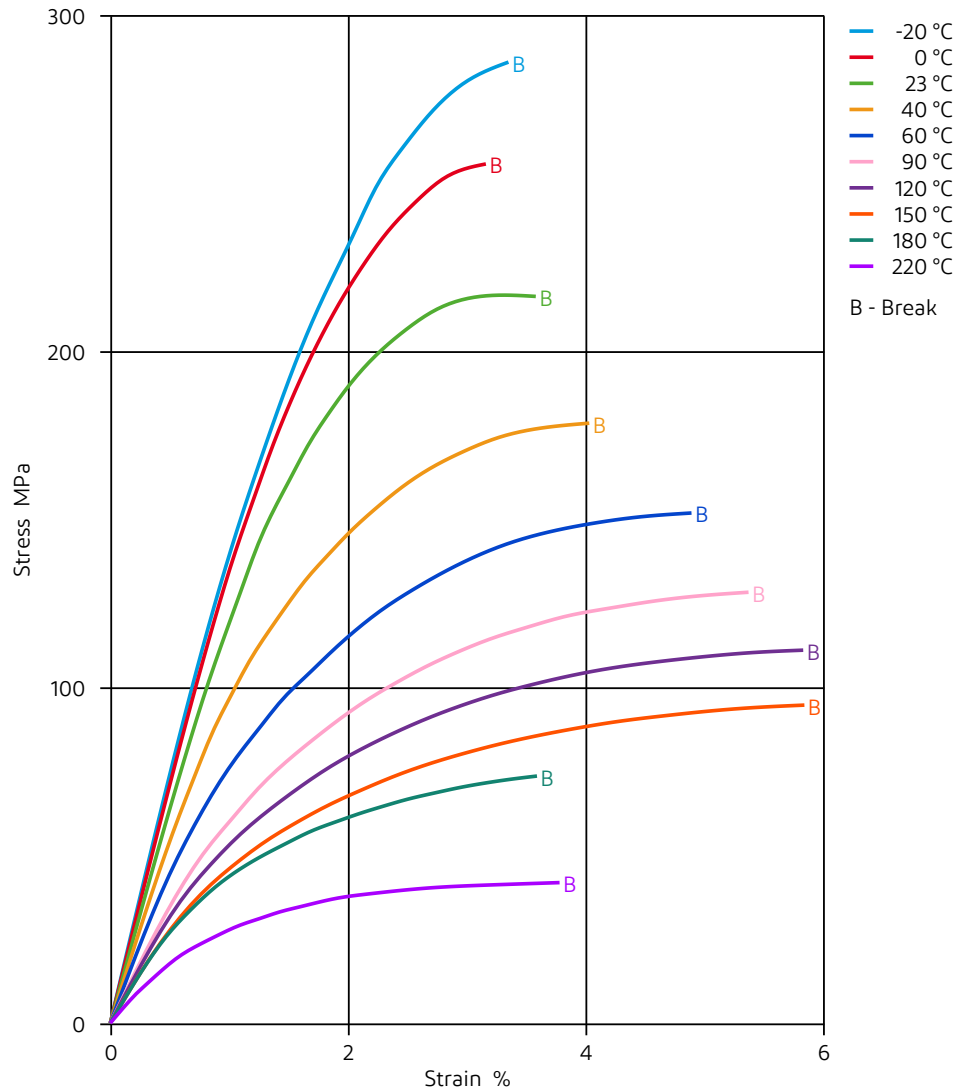




Zytel® 70G43L NC010

NYLON RESIN

Stress-strain (dry)

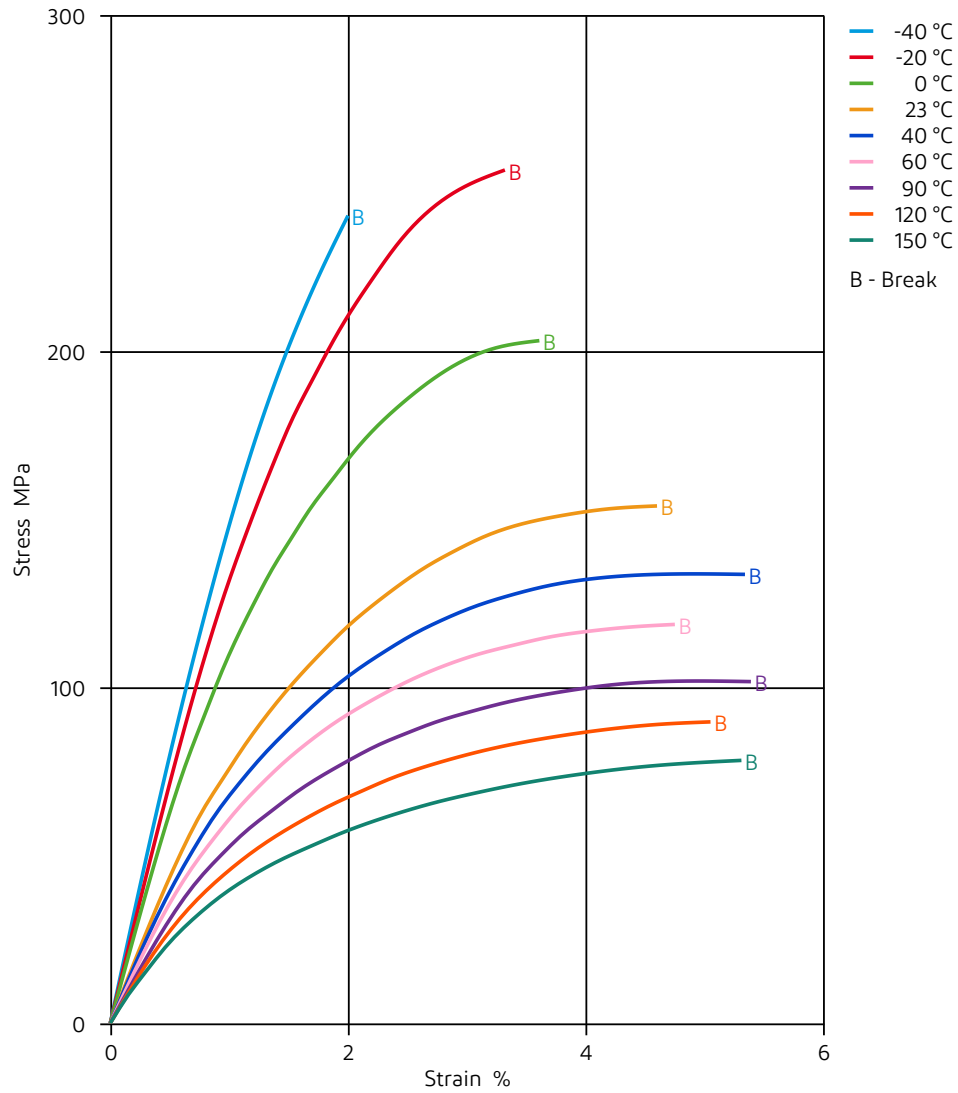




Zytel® 70G43L NC010

NYLON RESIN

Stress-strain (cond.)

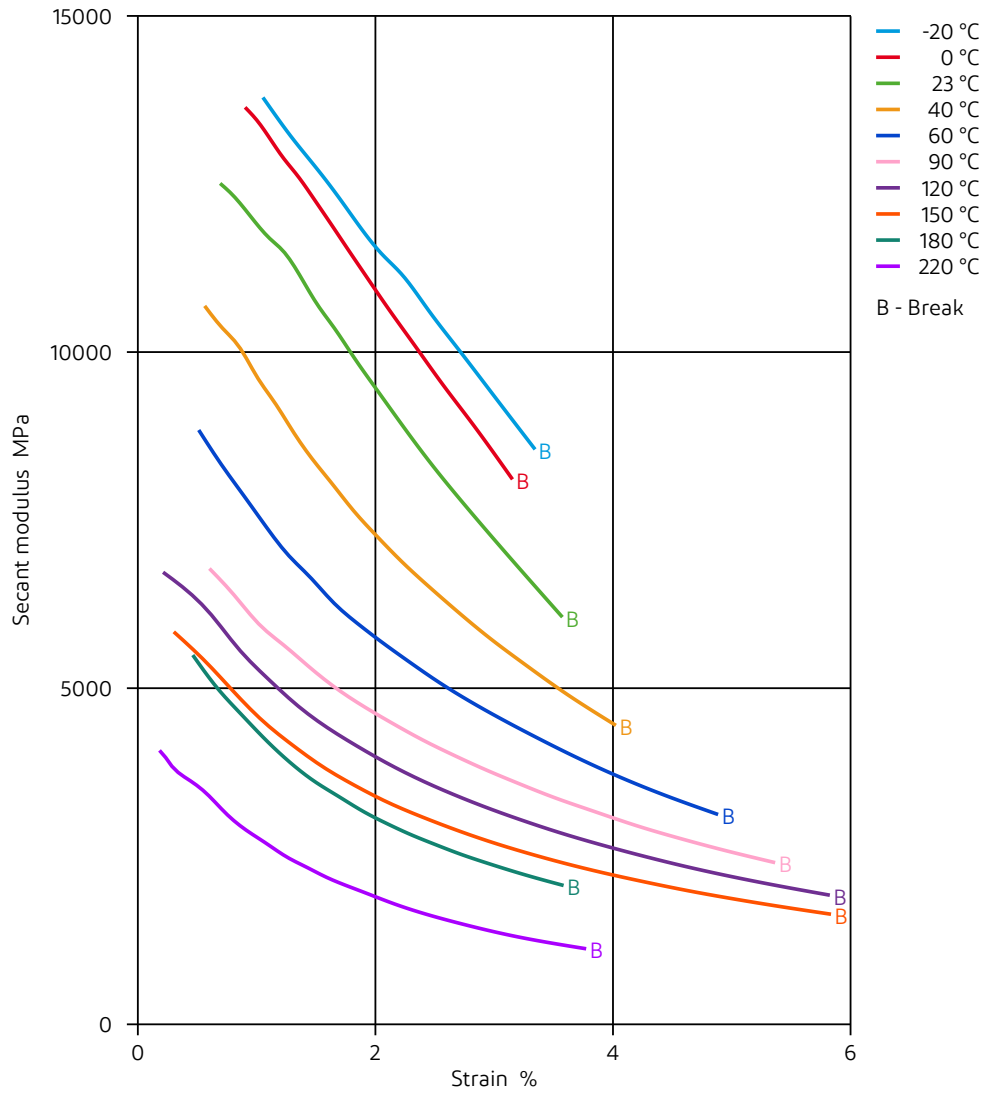




Zytel® 70G43L NC010

NYLON RESIN

Secant modulus-strain (dry)

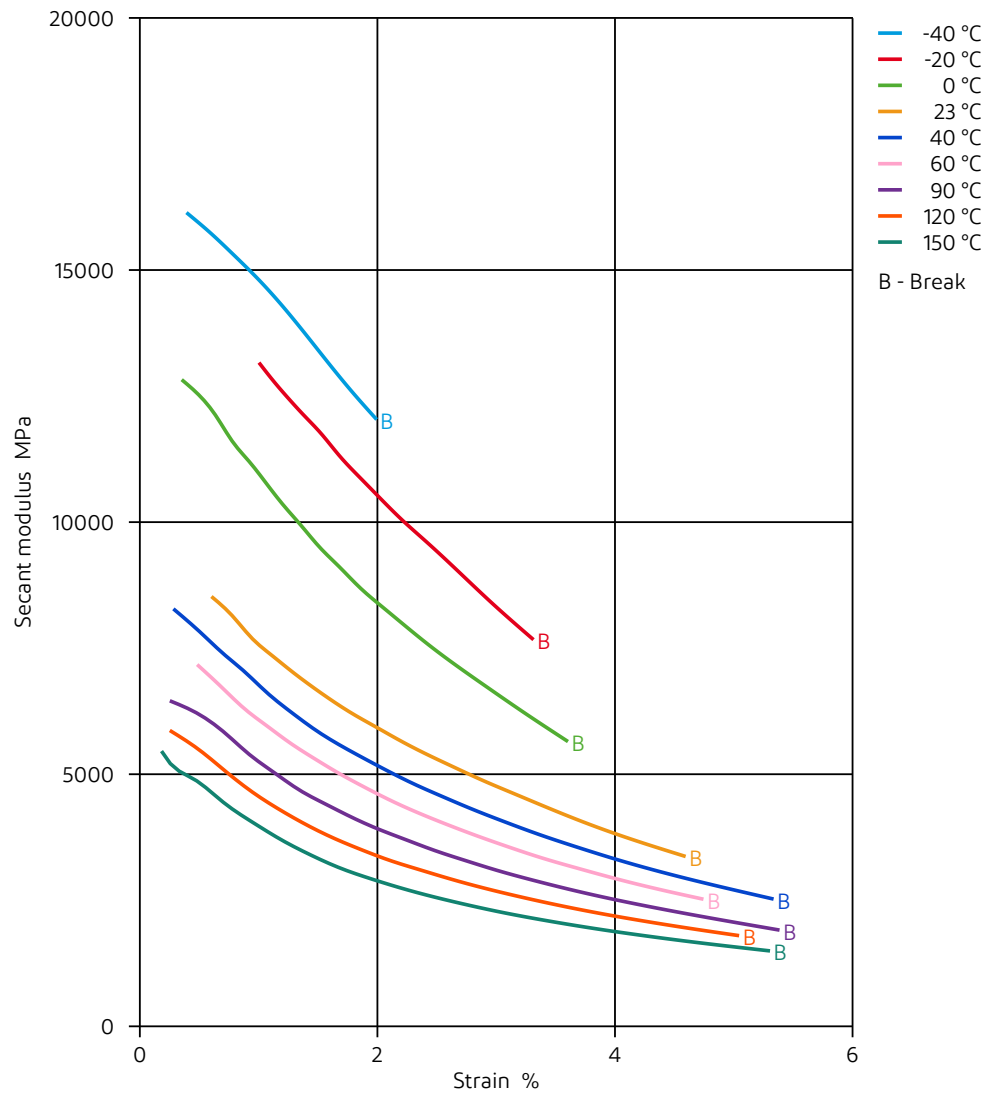




Zytel® 70G43L NC010

NYLON RESIN

Secant modulus-strain (cond.)

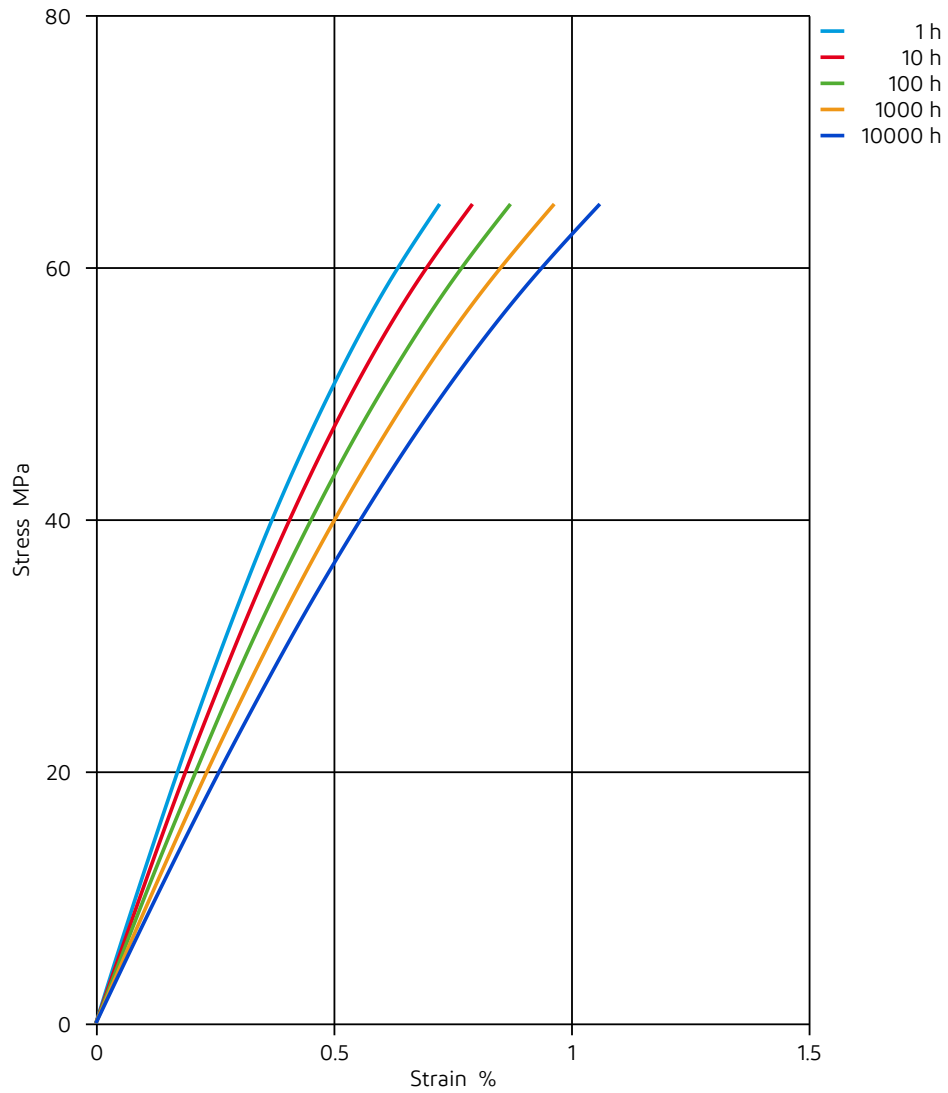




Zytel® 70G43L NC010

NYLON RESIN

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

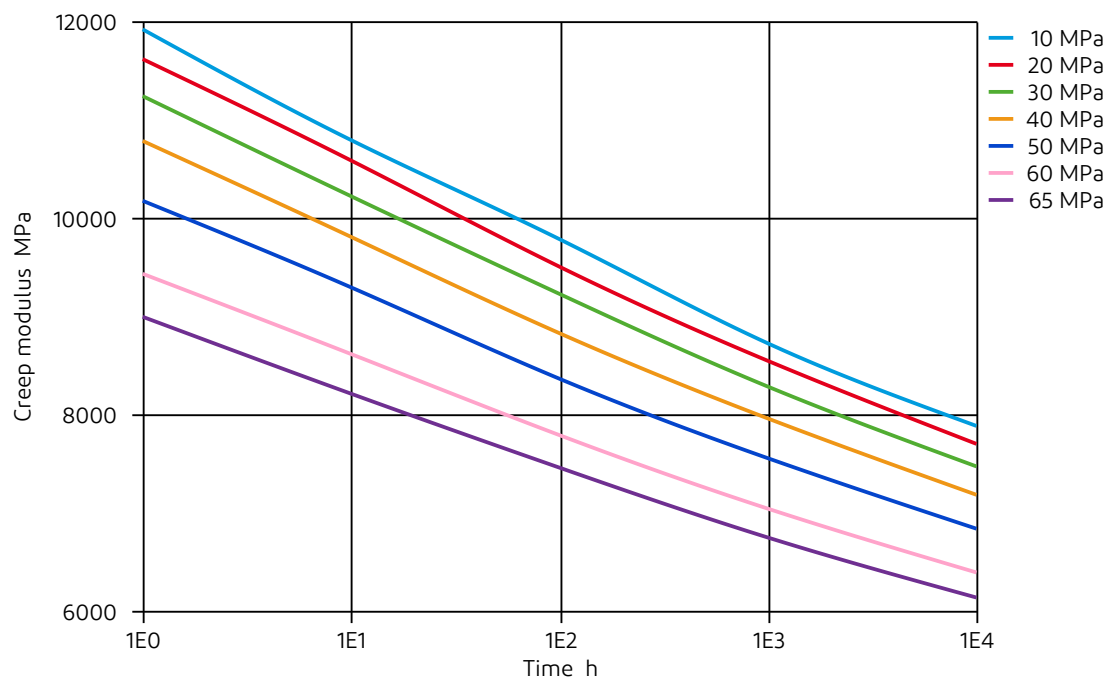




Zytel® 70G43L NC010

NYLON RESIN

Creep modulus-time 23°C (cond.)

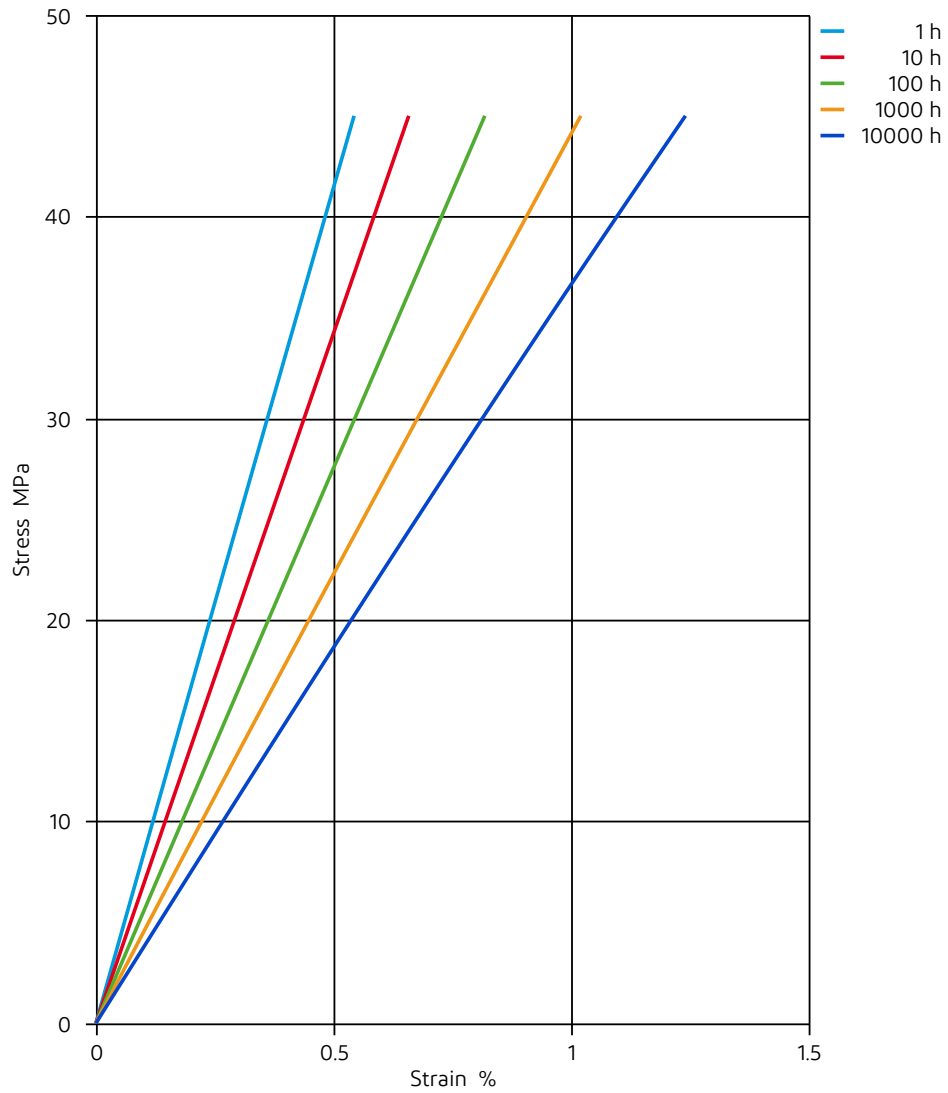




Zytel® 70G43L NC010

NYLON RESIN

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

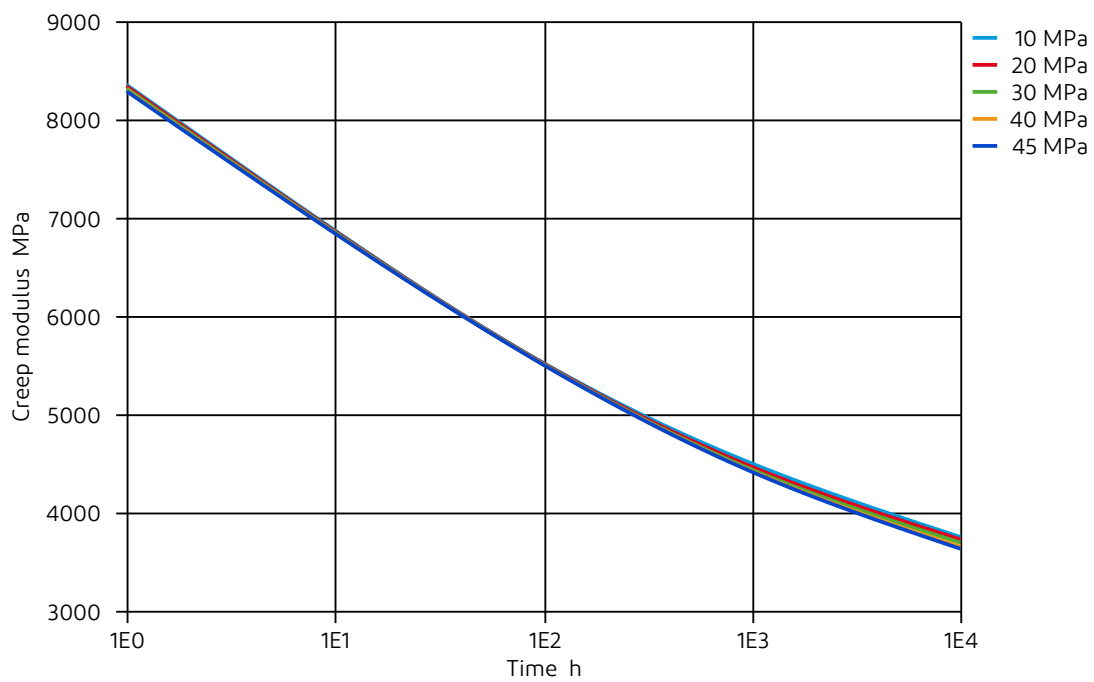




Zytel® 70G43L NC010

NYLON RESIN

Creep modulus-time 60°C (cond.)

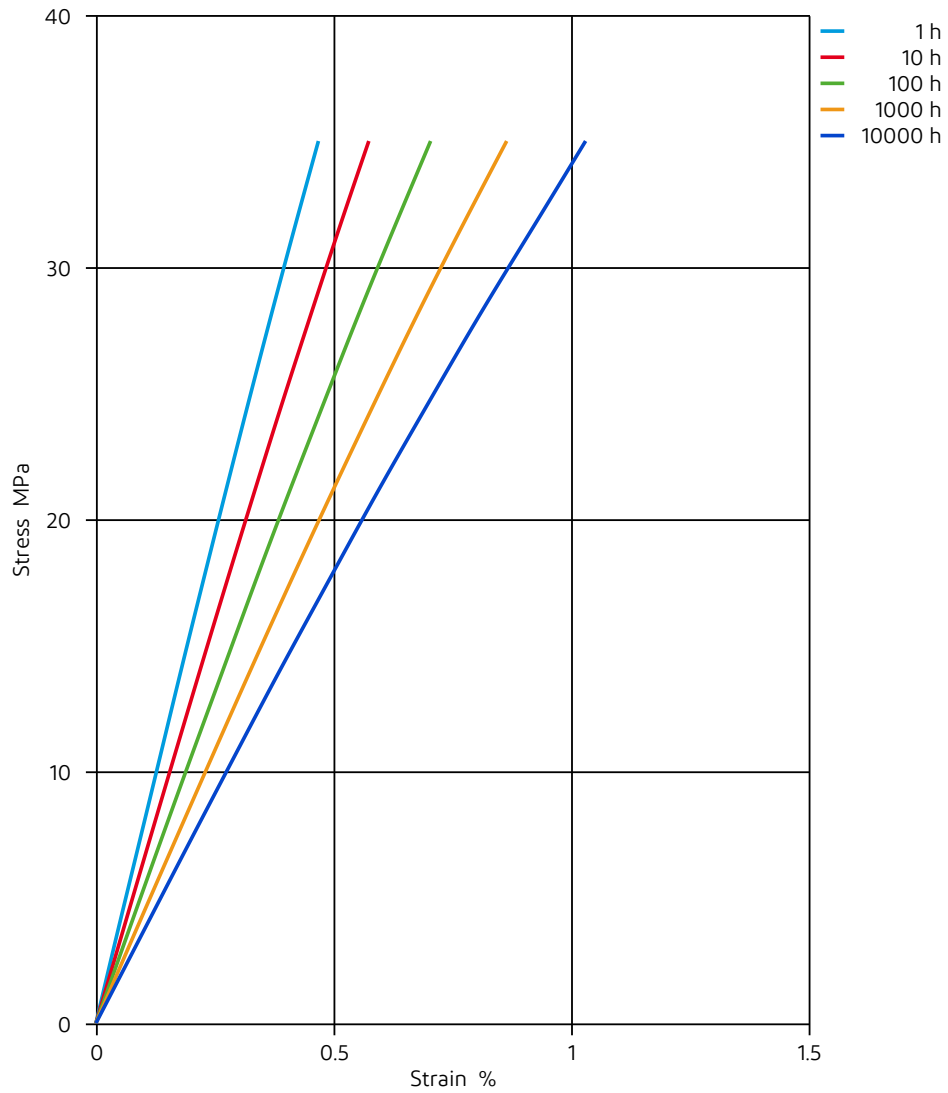




Zytel® 70G43L NC010

NYLON RESIN

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

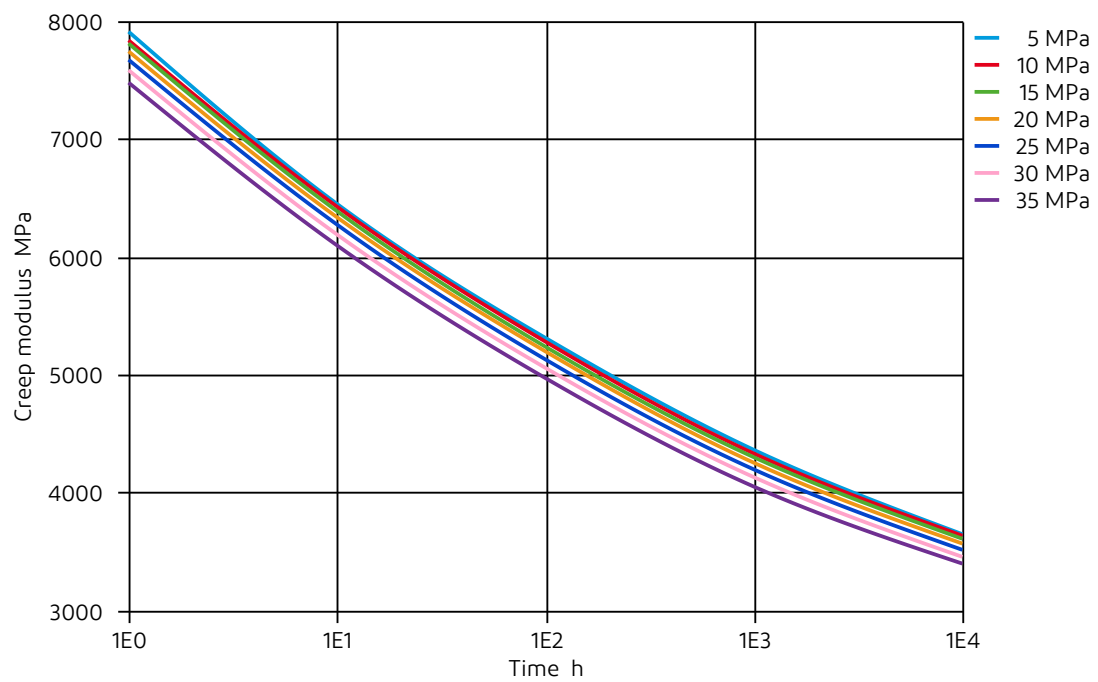




Zytel® 70G43L NC010

NYLON RESIN

Creep modulus-time 90°C (cond.)

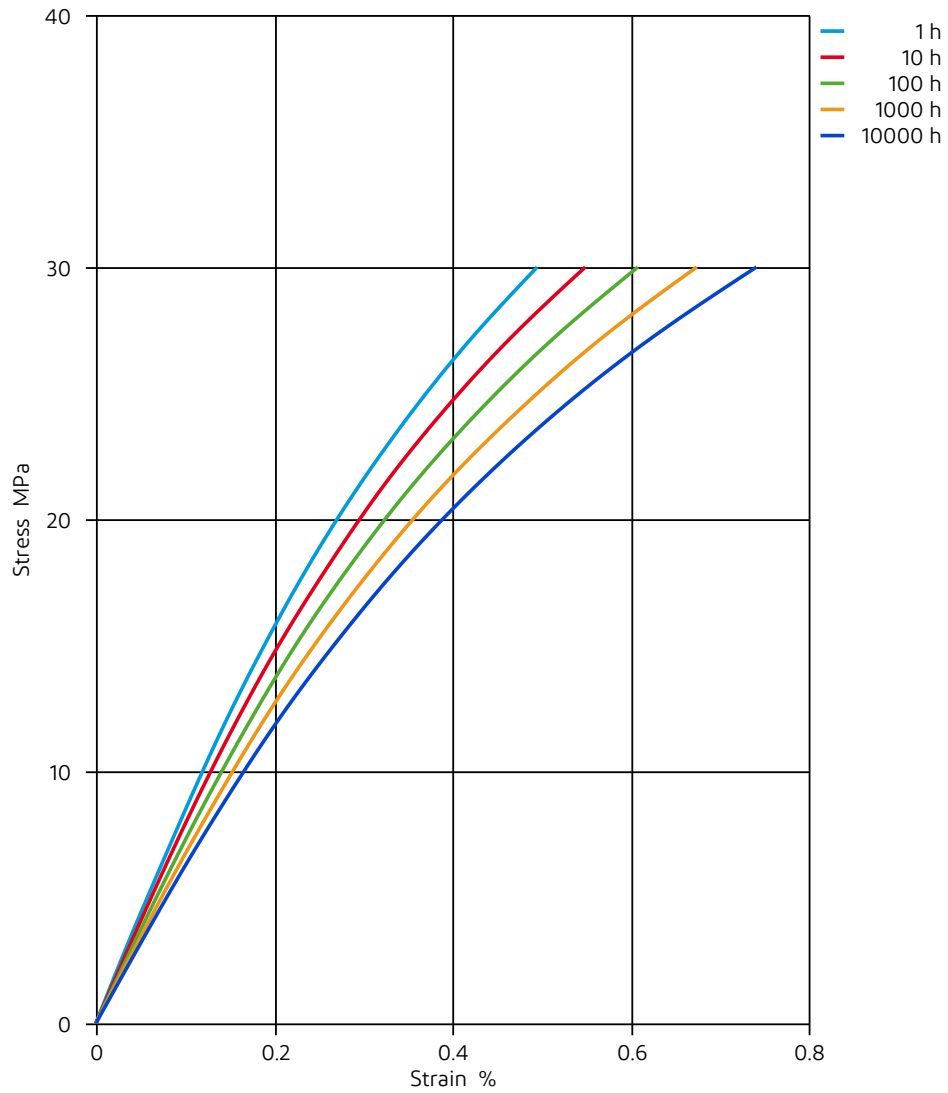




Zytel® 70G43L NC010

NYLON RESIN

Stress-strain (isochronous) 100°C (cond.)

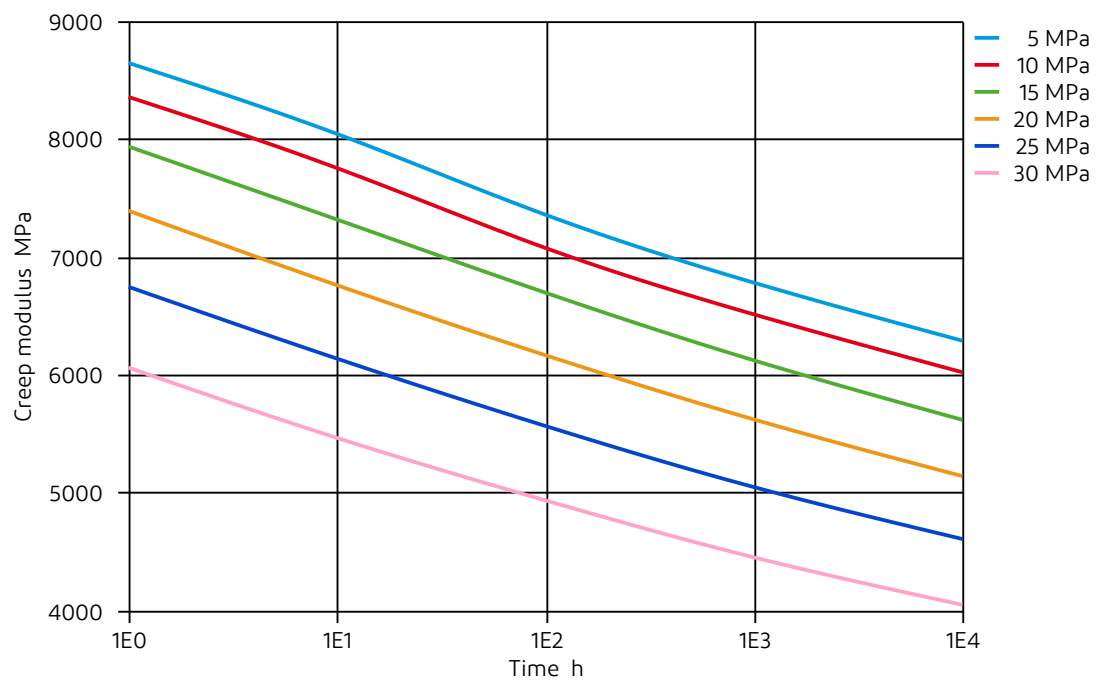




Zytel® 70G43L NC010

NYLON RESIN

Creep modulus-time 100°C (cond.)

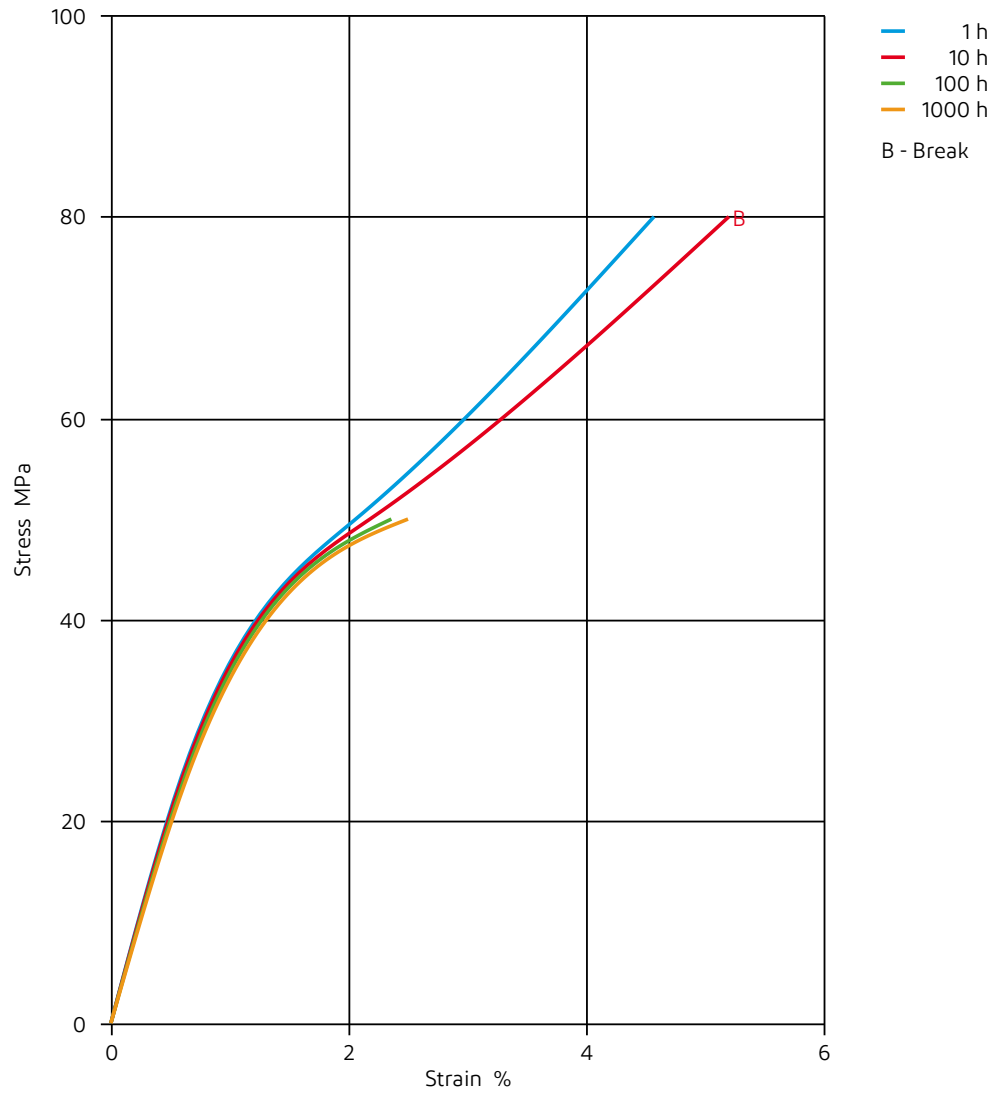




Zytel® 70G43L NC010

NYLON RESIN

Stress-strain (isochronous) 150°C (cond.)

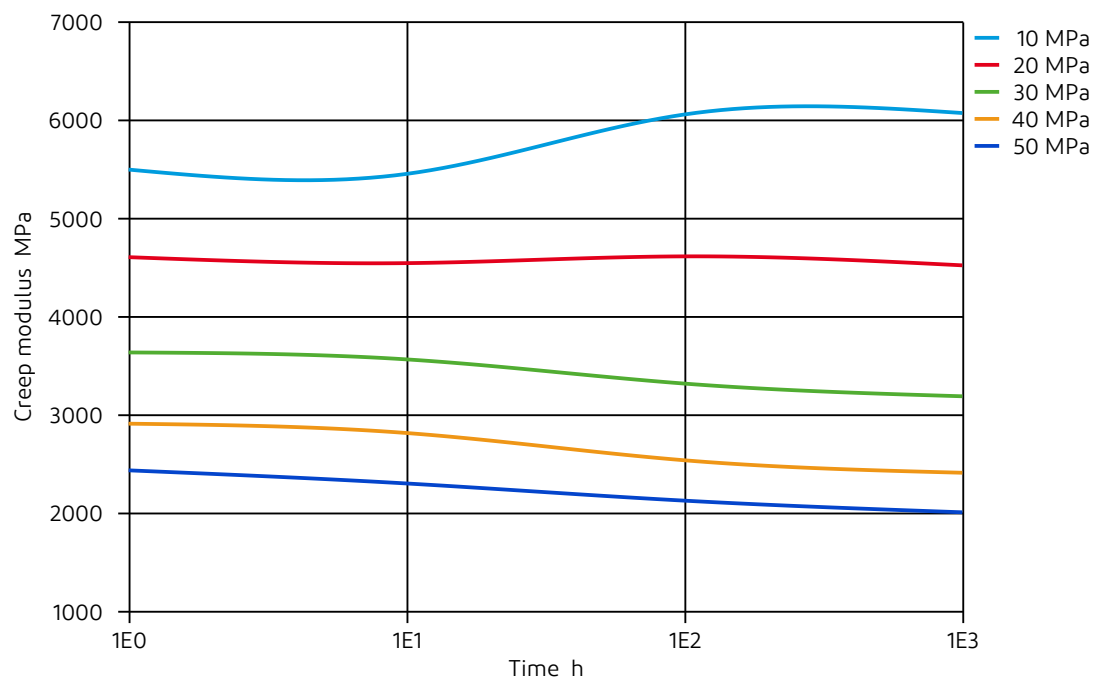




Zytel® 70G43L NC010

NYLON RESIN

Creep modulus-time 150°C (cond.)

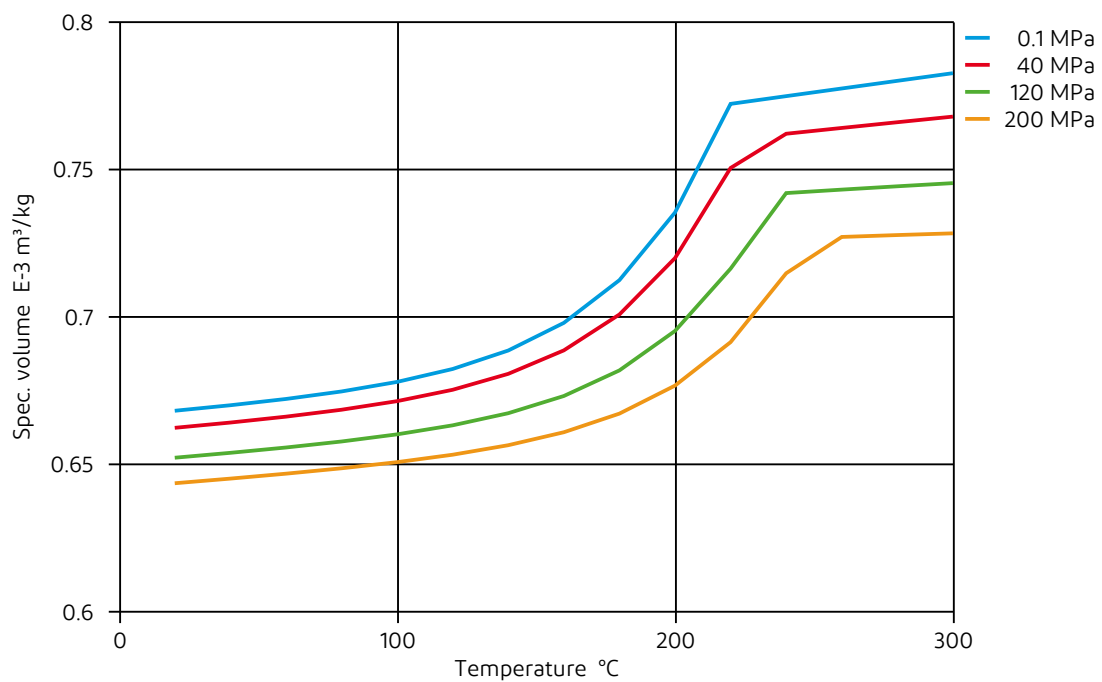




Zytel® 70G43L NC010

NYLON RESIN

Specific volume-temperature (pvT)

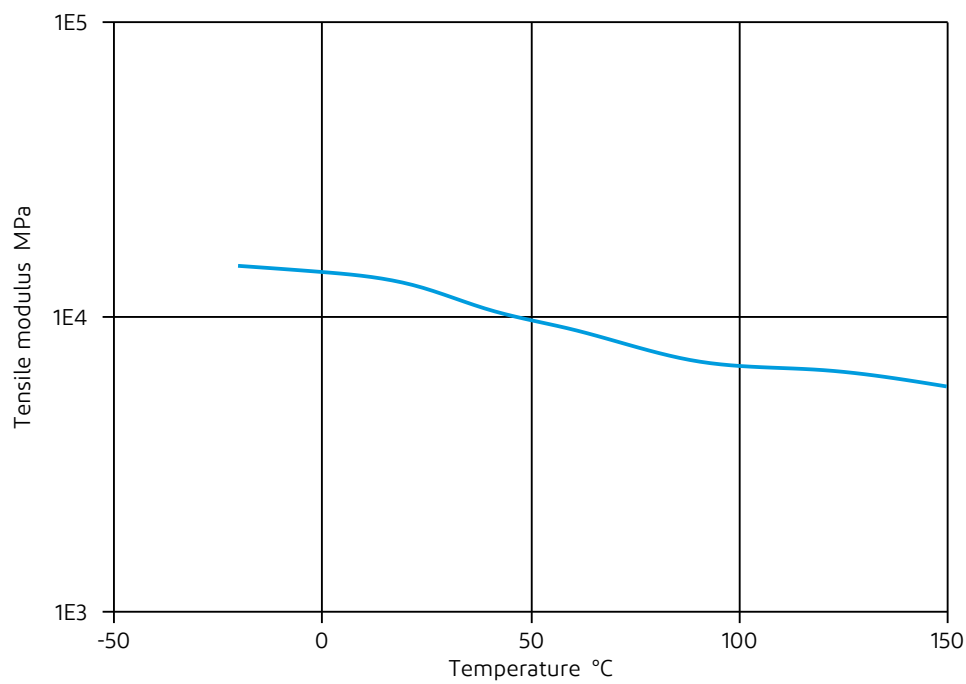




Zytel® 70G43L NC010

NYLON RESIN

Tensile modulus-temperature (dry)

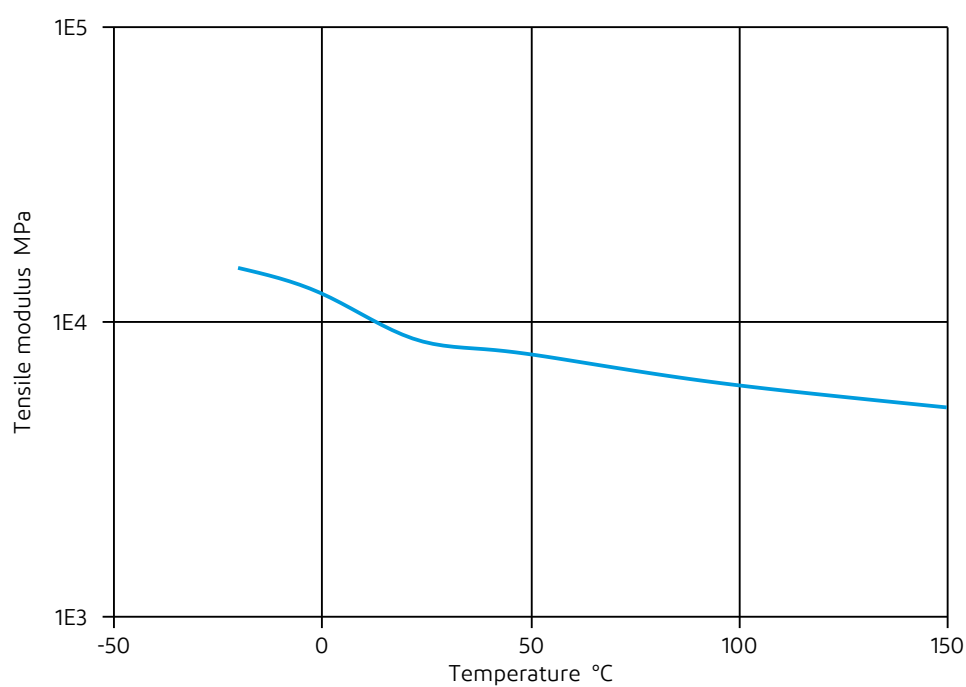




Zytel® 70G43L NC010

NYLON RESIN

Tensile modulus-temperature (cond.)

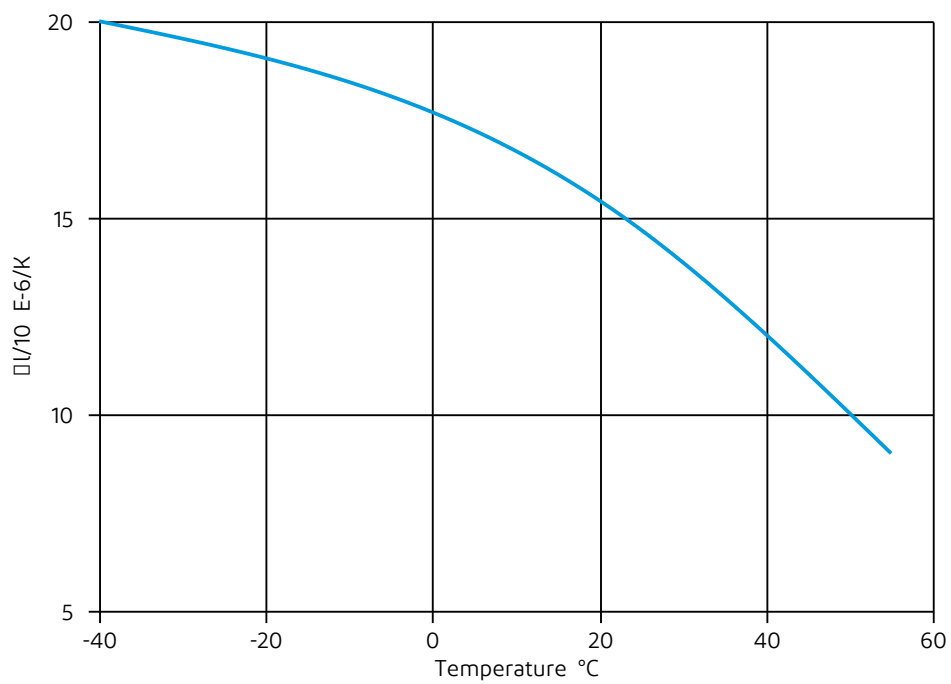




Zytel[®] 70G43L NC010

NYLON RESIN

Coeff. of linear thermal expansion



Zytel® 70G43L NC010

NYLON RESIN

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



Zytel® 70G43L NC010

NYLON RESIN

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).

The information set forth herein is furnished free of charge, is based on technical data that DuPont believes to be reliable, and represents typical values that fall within the normal range of properties. This information relates only to the specific material designated and may not be valid for such material used in combination with other materials or in other processes. It is intended for use by persons having technical skill, at their own discretion and risk. This information should not be used to establish specification limits nor used alone as the basis of design. Handling precaution information is given with the understanding that those using it will satisfy themselves that their particular conditions of use present no health or safety hazards and comply with applicable law. Since conditions of product use and disposal are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information. As with any product, evaluation under end-use conditions prior to specification is essential. Nothing herein is to be taken as a license to operate or a recommendation to infringe on patents.

CAUTION: Do not use DuPont materials in medical applications involving implantation in the human body or contact with internal body fluids or tissues unless the material has been provided from DuPont under a written contract or other acknowledgement that is consistent with the DuPont policy regarding medical applications and expressly acknowledges the contemplated use. For further information, please contact your DuPont representative.

DuPont's sole warranty is that our products will meet our standard sales specifications in effect at the time of shipment. Your exclusive remedy for breach of such warranty is limited to refund of purchase price or replacement of any product shown to be other than as warranted. TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, DUPONT SPECIFICALLY DISCLAIMS ANY OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, OR NON-INFRINGEMENT. DUPONT DISCLAIMS LIABILITY FOR ANY SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES.