

Zytel® 70G25EF NC010 (PRELIMINARY)

NYLON RESIN

Zytel® 70G25EF NC010 is a 25% glass reinforced polyamide 66 developed for electrical and electronics applications.

Product information

Resin Identification	PA66-GF25	ISO 1043
Part Marking Code	>PA66-GF25<	ISO 11469

Rheological properties

	dry/cond.		
Moulding shrinkage, parallel	0.3 / -	%	ISO 294-4, 2577
Moulding shrinkage, normal	1.1 / -	%	ISO 294-4, 2577

Typical mechanical properties

	dry/cond.		
Tensile modulus	8500 / 6000	MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	170 / 110	MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	3 / 5	%	ISO 527-1/-2
Flexural modulus	7000 / 5000	MPa	ISO 178
Flexural strength	260 / 190	MPa	ISO 178
Charpy impact strength, 23°C	60 / 80	kJ/m ²	ISO 179/1eU
Charpy impact strength, -30°C	55 / 55	kJ/m ²	ISO 179/1eU
Charpy impact strength, -40°C	55 / 55	kJ/m ²	ISO 179/1eU
Charpy notched impact strength, 23°C	10 / 12	kJ/m ²	ISO 179/1eA
Charpy notched impact strength, -30°C	9 / 8	kJ/m ²	ISO 179/1eA
Charpy notched impact strength, -40°C	9 / 8	kJ/m ²	ISO 179/1eA
Poisson's ratio	0.34 / 0.35		

Thermal properties

	dry/cond.		
Melting temperature, 10°C/min	260 / *	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	80 / 25	°C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	241 / *	°C	ISO 75-1/-2
Coeff. of linear therm. expansion, parallel, -40-23°C	28 / *	E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), parallel	30 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, parallel, 55-160°C	19 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, -40-23°C	73 / *	E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	90 / *	E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal, 55-160°C	146 / *	E-6/K	ISO 11359-1/-2
TGA curve	available		ISO 11359-1/-2

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Flammability

Burning Behav. at 1.5mm nom. thickn.	dry/cond.		
Thickness tested	HB / * ^[DS]	class	IEC 60695-11-10
Oxygen index	1.5 / *	mm	IEC 60695-11-10
FMVSS Class	22 / *	%	ISO 4589-1/-2
Burning rate, Thickness 1 mm	B		ISO 3795 (FMVSS 302)
	23	mm/min	ISO 3795 (FMVSS 302)

[DS]: Derived from similar grade

Electrical properties

Volume resistivity	dry/cond.		
Comparative tracking index	>1E13 / 1E11 ^[DS]	Ohm.m	IEC 62631-3-1
	500 / -		IEC 60112

[DS]: Derived from similar grade

Physical/Other properties

Humidity absorption, 2mm	dry/cond.		
Water absorption, 2mm	2 / *	%	Sim. to ISO 62
Density	6.4 / *	%	Sim. to ISO 62
	1320 / -	kg/m ³	ISO 1183

Injection

Drying Recommended	yes
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
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

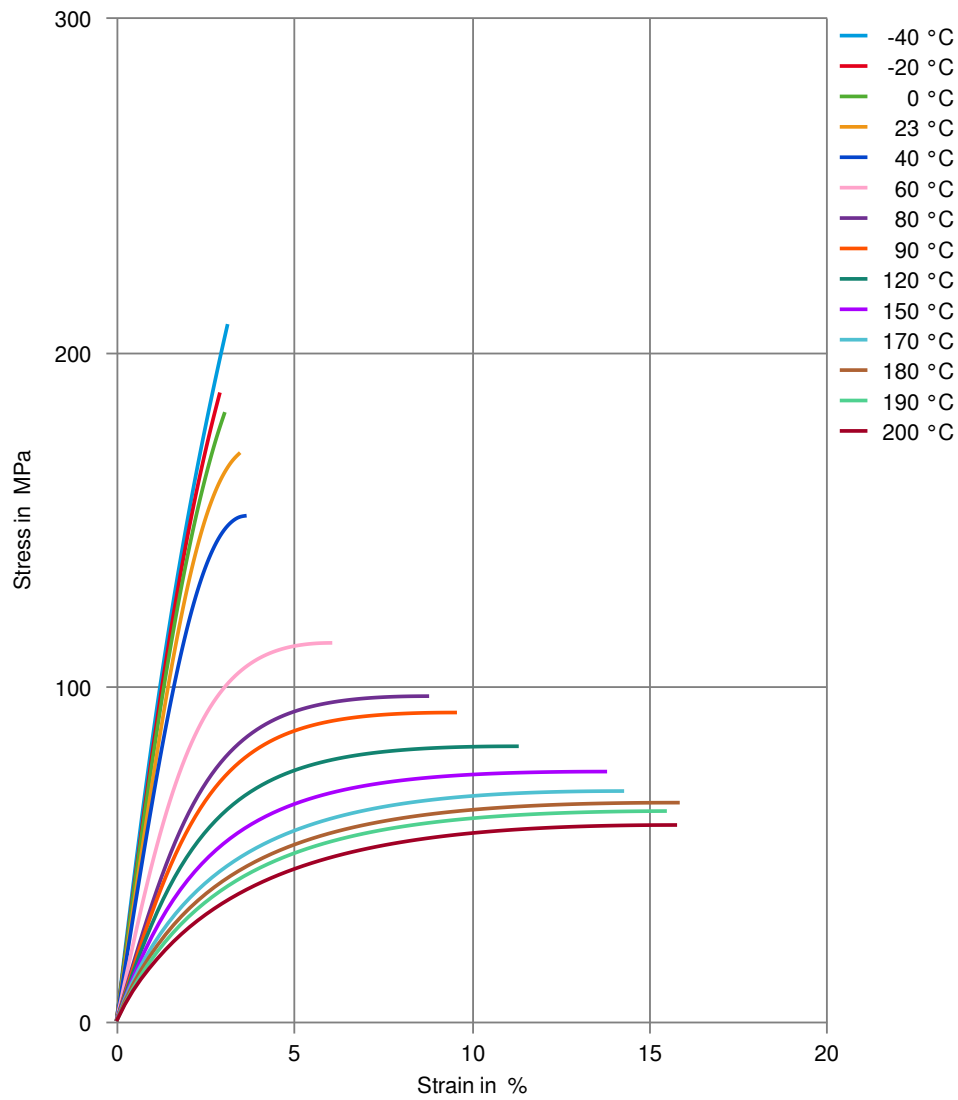
Characteristics

Additives	Release agent, Low halide content
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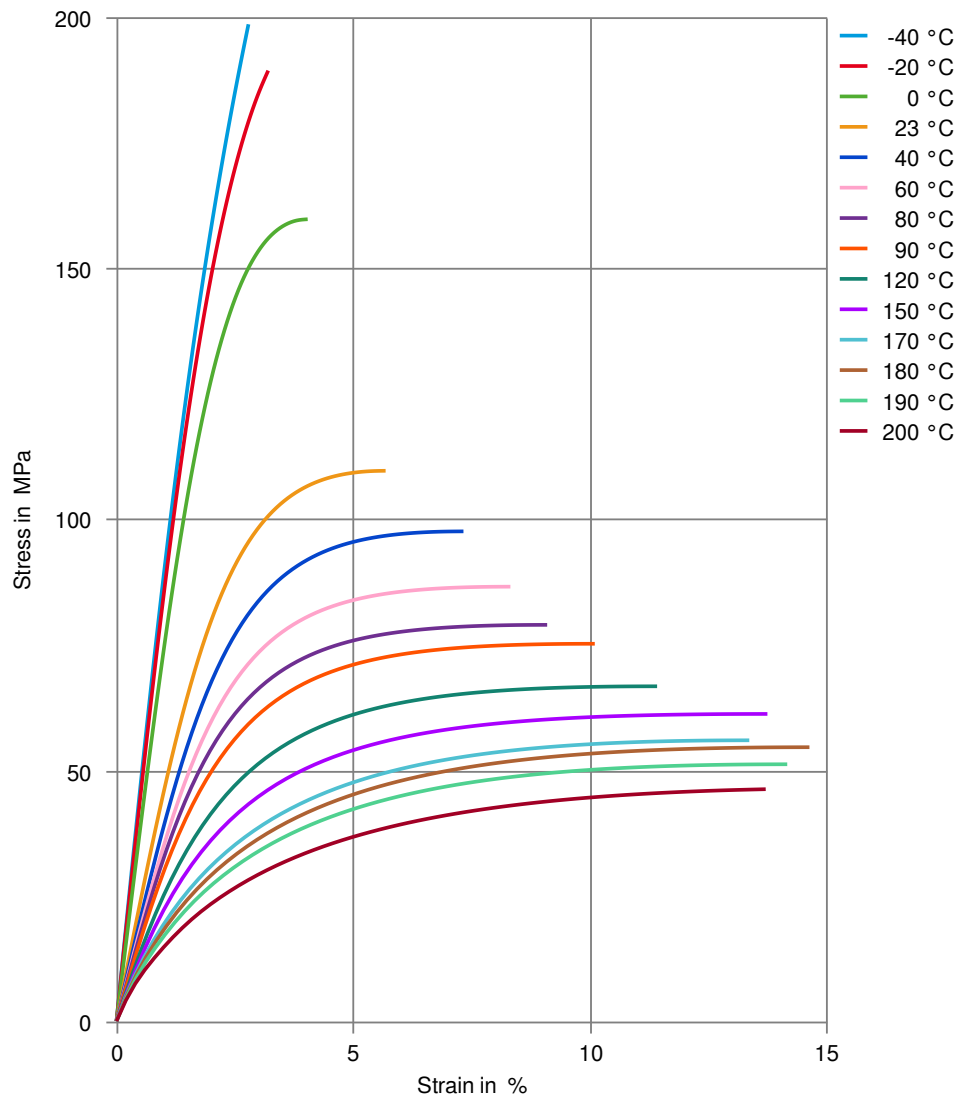
Stress-strain (dry)



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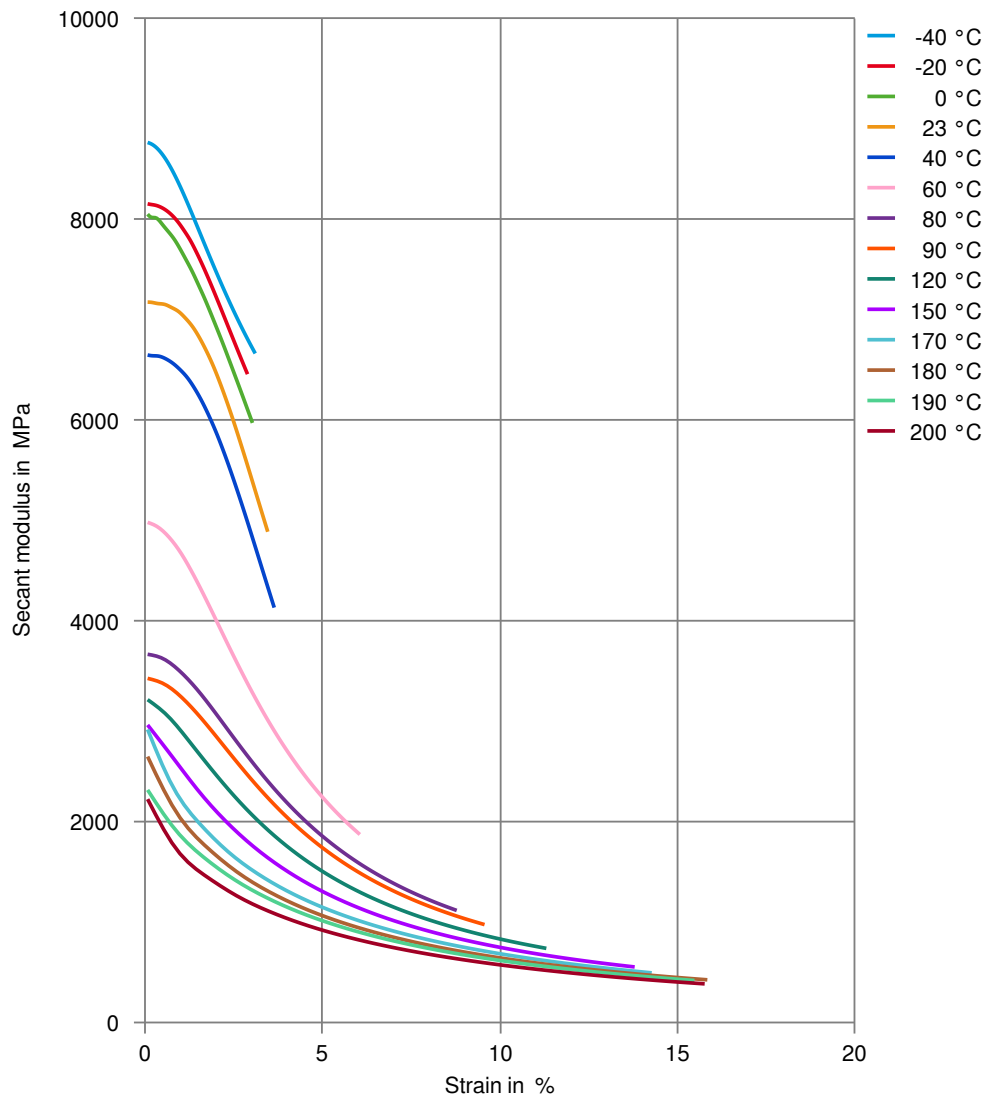
Stress-strain (cond.)



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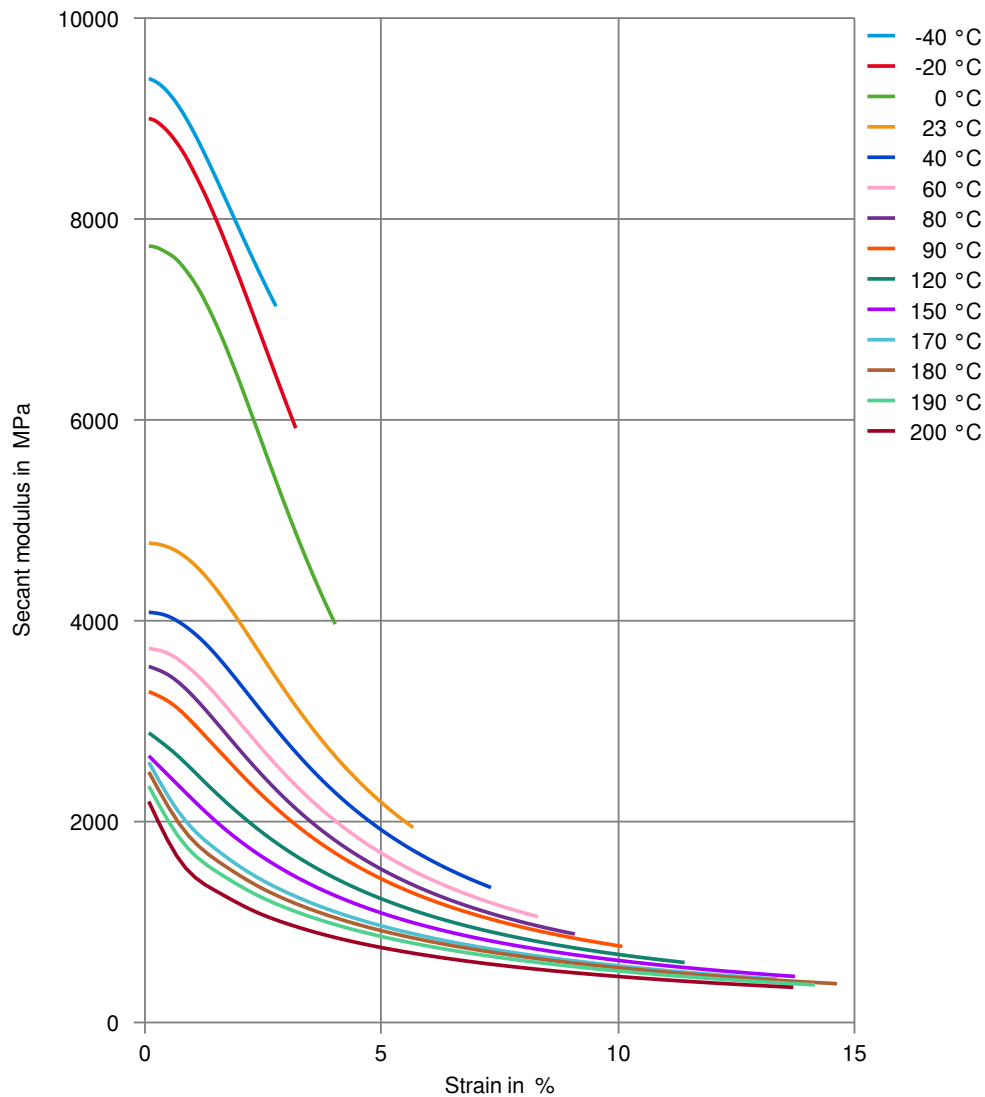
Secant modulus-strain (dry)



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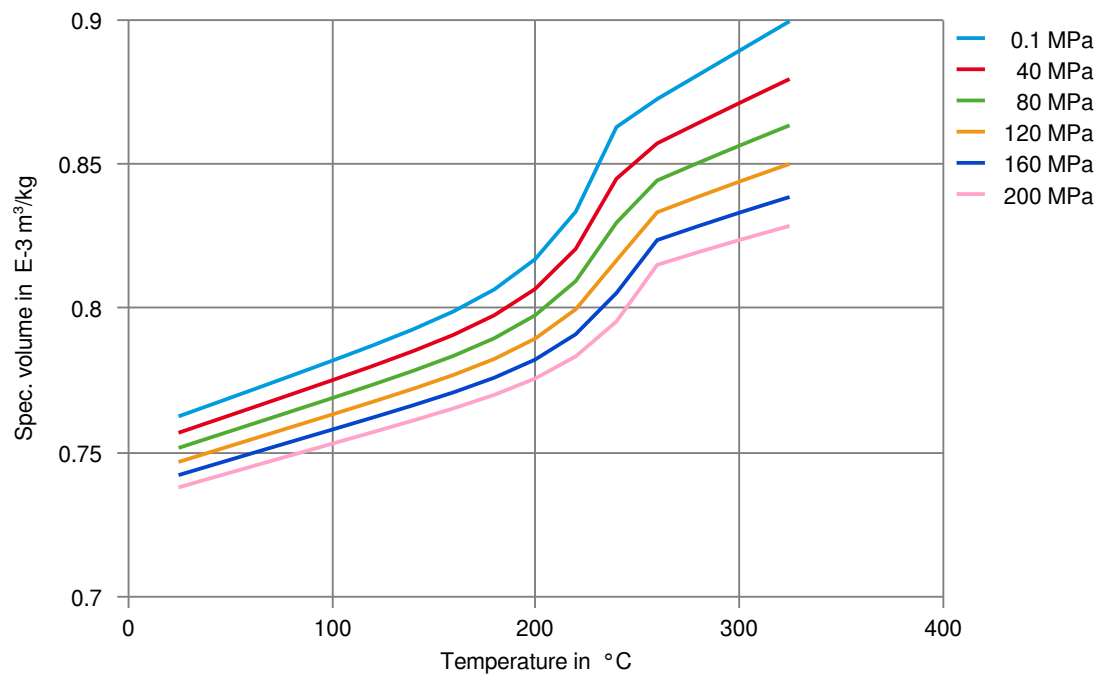
Secant modulus-strain (cond.)



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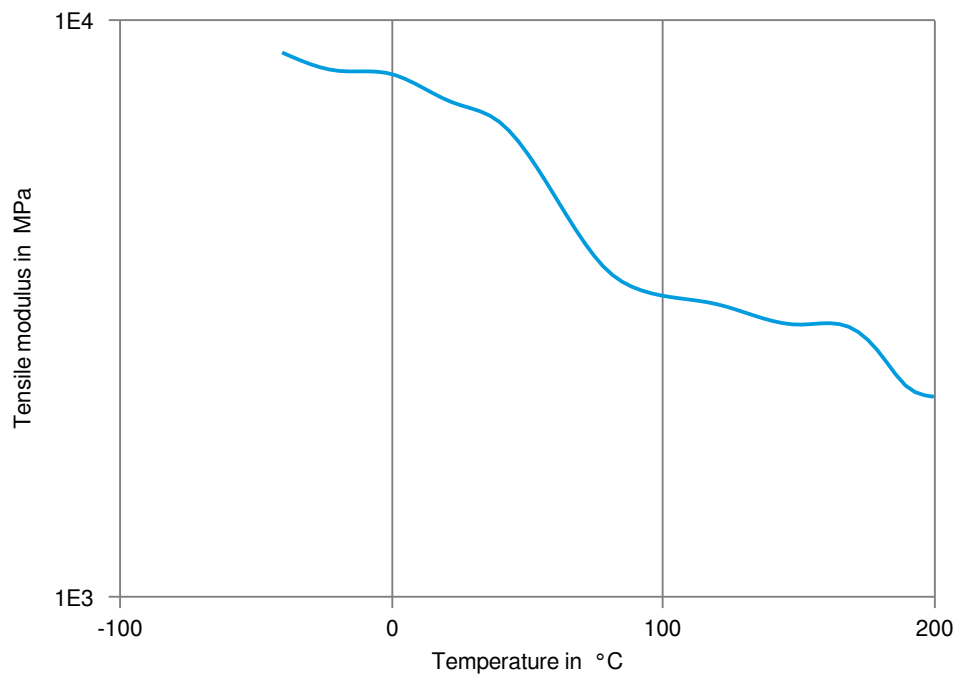
Specific volume-temperature (pvT)



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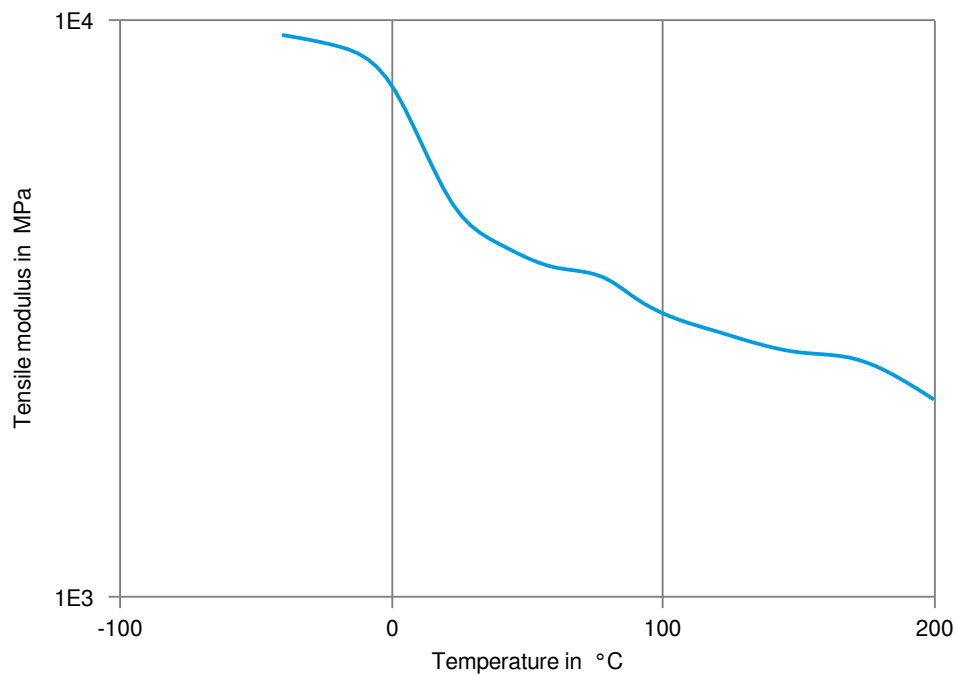
Tensile modulus-temperature (dry)



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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
- ✓ Hydraulic oil Pentosin CHF 202, 125°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
- ✗ Diesel EN 590, 100°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

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 above data are preliminary and are subject to change as additional data are developed on subsequent lots.

NOTICE TO USERS: Values shown are based on testing of laboratory test specimens and represent data that fall within the standard range of properties for natural material. These values alone do not represent a sufficient basis for any part design and are not intended for use in establishing maximum, minimum, or ranges of values for specification purposes. Colourants or other additives may cause significant variations in data values. Properties of moulded parts can be influenced by a wide variety of factors including, but not limited to, material selection, additives, part design, processing conditions and environmental exposure. Other than those products expressly identified as medical grade (including by MT® product designation or otherwise), Celanese's products are not intended for use in medical or dental implants. Regardless of any such product designation, any determination of the suitability of a particular material and part design for any use contemplated by the users and the manner of such use is the sole responsibility of the users, who must assure themselves that the material as subsequently processed meets the needs of their particular product or use. To the best of our knowledge, the information contained in this publication is accurate; however, we do not assume any liability whatsoever for the accuracy and completeness of such information. The information contained in this publication should not be construed as a promise or guarantee of specific properties of our products. It is the sole responsibility of the users to investigate whether any existing patents are infringed by the use of the materials mentioned in this publication. Moreover, there is a need to reduce human exposure to many materials to the lowest practical limits in view of possible adverse effects. To the extent that any hazards may have been mentioned in this publication, we neither suggest nor guarantee that such hazards are the only ones that exist. We recommend that persons intending to rely on any recommendation or to use any equipment, processing technique or material mentioned in this publication should satisfy themselves that they can meet all applicable safety and health standards. We strongly recommend that users seek and adhere to the manufacturer's current instructions for handling each material they use, and entrust the handling of such material to adequately trained personnel only. Please call the telephone numbers listed for additional technical information. Call Customer Services for the appropriate Materials Safety Data Sheets (MSDS) before attempting to process our products.

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