

Delrin® 100P NC010

ACETAL RESIN

Common features of Delrin® acetal resins include mechanical and physical properties such as high mechanical strength and rigidity, excellent fatigue and impact resistance, as well as resistance to moisture, gasoline, lubricants, solvents, and many other neutral chemicals. Delrin® acetal resins also have excellent dimensional stability and good electrical insulating characteristics. They are naturally resilient, self-lubricating, and available in a variety of colors and speciality grades.

Delrin® acetal resin typically is used in demanding applications in the automotive, domestic appliances, sports, industrial engineering, electronics, and consumer goods industries.

Delrin® 100P is a high viscosity acetal homopolymer for use in easy-to-fill molds. Delrin® 100P provides a great combination of toughness and strength, improved processing thermal stability and productivity for injection moulding, and low VOC emissions.

Product information

Resin Identification	POM	ISO 1043
Part Marking Code	>POM<	ISO 11469

Rheological properties

Melt volume-flow rate	2.1 cm ³ /10min	ISO 1133
Melt mass-flow rate	2.5 g/10min	ISO 1133
Temperature	190 °C	ISO 1133
Load	2.16 kg	ISO 1133
Melt mass-flow rate, Temperature	190 °C	ISO 1133
Melt mass-flow rate, Load	2.16 kg	ISO 1133
Moulding shrinkage, parallel	2.2 %	ISO 294-4, 2577
Moulding shrinkage, normal	1.9 %	ISO 294-4, 2577

Typical mechanical properties

Tensile Modulus	2900 MPa	ISO 527-1/-2
Yield stress	70 MPa	ISO 527-1/-2
Yield strain	26 %	ISO 527-1/-2
Nominal strain at break	45 %	ISO 527-1/-2
Flexural Modulus	2800 MPa	ISO 178
Flexural Stress at 3.5%	75 MPa	ISO 178
Tensile creep modulus, 1h	2700 MPa	ISO 899-1
Tensile creep modulus, 1000h	1500 MPa	ISO 899-1
Charpy impact strength, 23°C	N kJ/m ²	ISO 179/1eU
Charpy impact strength, -30°C	400 kJ/m ²	ISO 179/1eU
Charpy notched impact strength, 23°C	14 kJ/m ²	ISO 179/1eA
Charpy notched impact strength, -30°C	13 kJ/m ²	ISO 179/1eA
Izod notched impact strength, 23°C	14 kJ/m ²	ISO 180/1A
Izod notched impact strength, -40°C	12 kJ/m ²	ISO 180/1A
Hardness, Rockwell, M-scale	88	ISO 2039-2
Hardness, Rockwell, R-scale	119	ISO 2039-2

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Ball indentation hardness, H 358/30
Poisson's ratio

173 MPa
0.37

ISO 2039-1

Thermal properties

Melting temperature, 10°C/min
Temp. of deflection under load, 1.8 MPa
Temp. of deflection under load, 1.8 MPa, annealed
Temp. of deflection under load, 0.45 MPa
Vicat softening temperature, 50°C/h, 50N
Vicat softening temperature, 50°C/h 10N
Coeff. of linear therm. expansion, parallel, -40-23°C
Coeff. of linear therm. expansion, parallel
Coeff. of linear therm. expansion, normal, -40-23°C
Coeff. of linear therm. expansion, normal
Thermal conductivity of melt
Spec. heat capacity of melt
RTI, electrical, 0.75mm
RTI, electrical, 1.5mm
RTI, electrical, 3mm
RTI, impact, 0.75mm
RTI, impact, 1.5mm
RTI, impact, 3mm
RTI, strength, 0.75mm
RTI, strength, 1.5mm
RTI, strength, 3mm

178 °C
95 °C
110 °C
155 °C
160 °C
175 °C
100 E-6/K
110 E-6/K
100 E-6/K
110 E-6/K
0.22 W/(m K)
3000 J/(kg K)
50 °C
110 °C
110 °C
50 °C
85 °C
90 °C
50 °C
90 °C
95 °C
ISO 11357-1/-3
ISO 75-1/-2
ISO 75-1/-2
ISO 75-1/-2
ISO 306
ISO 306
ISO 11359-1/-2
ISO 11359-1/-2
ISO 11359-1/-2
ISO 11359-1/-2
ISO 22007-2
UL 746B
UL 746B
UL 746B
UL 746B
UL 746B
UL 746B
UL 746B
UL 746B
UL 746B

Flammability

Burning Behav. at 1.5mm nom. thickn.
Thickness tested
UL recognition
Burning Behav. at thickness h
Thickness tested
UL recognition
Glow Wire Flammability Index, 1mm
Glow Wire Flammability Index, 2mm
Glow Wire Flammability Index, 3mm
FMVSS Class

HB class
1.5 mm
yes
HB class
0.8 mm
yes
550 °C
550 °C
550 °C
B
22 mm/min
IEC 60695-11-10
IEC 60695-11-10
UL 94
IEC 60695-11-10
IEC 60695-11-10
UL 94
IEC 60695-2-12
IEC 60695-2-12
IEC 60695-2-12
ISO 3795 (FMVSS 302)
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Electrical properties

Relative permittivity, 100Hz	3.9	IEC 62631-2-1
Relative permittivity, 1MHz	3.9	IEC 62631-2-1
Dissipation factor, 100Hz	35 E-4	IEC 62631-2-1
Dissipation factor, 1MHz	55 E-4	IEC 62631-2-1
Volume resistivity	1E12 Ohm.m	IEC 62631-3-1
Surface resistivity	2E13 Ohm	IEC 62631-3-2
Electric strength	41 kV/mm	IEC 60243-1
Comparative tracking index	600	IEC 60112

Other properties

Humidity absorption, 2mm	0.3 %	Sim. to ISO 62
Water absorption, 2mm	1.4 %	Sim. to ISO 62
Water absorption, Immersion 24h	0.4 %	Sim. to ISO 62
Density	1420 kg/m ³	ISO 1183
Density of melt	1190 kg/m ³	

VDA Properties

Emissions	<8 mg/kg	VDA 275
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Injection

Drying Recommended	yes
Drying Temperature	80 °C
Drying Time, Dehumidified Dryer	2 - 4 h
Processing Moisture Content	≤0.2 %
Melt Temperature Optimum	215 °C
Min. melt temperature	210 °C
Max. melt temperature	220 °C
Max. screw tangential speed	0.2 m/s
Mold Temperature Optimum	90 °C
Min. mould temperature	80 °C
Max. mould temperature	100 °C
Hold pressure range	90 - 110 MPa
Hold pressure time	8 s/mm
Annealing time, optional	30 min/mm
Annealing temperature	160 °C

Extrusion

Drying Temperature	80 °C
Drying Time, Dehumidified Dryer	2 - 4 h
Processing Moisture Content	≤0.2 %
Melt Temperature Optimum	200 °C
Melt Temperature Range	195 - 205 °C

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Characteristics

Additives

Release agent

Additional information

Injection molding

Drying is recommended, but not necessary for newly opened packaging stored in a dry location.

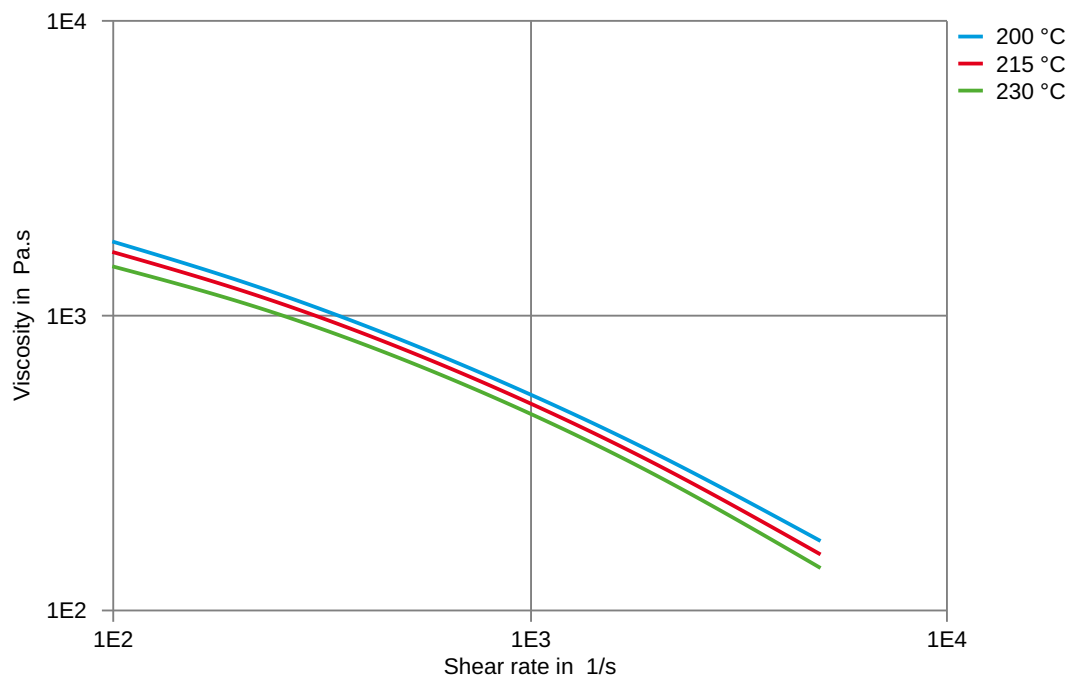
Follow the drying guidelines above in the following cases:

- If moisture is above the Processing Moisture Content recommendation,
- When a resin container is damaged,
- When the material is not properly stored in a dry place at room temperature, or
- When packaging stays open for a significant time.

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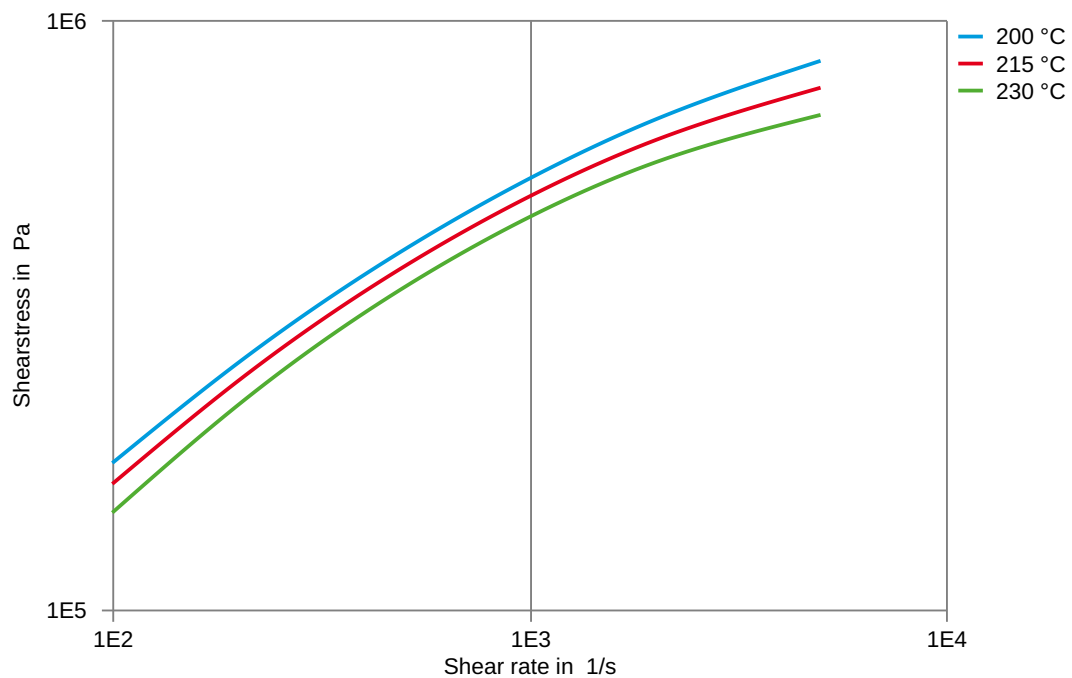
Viscosity-shear rate



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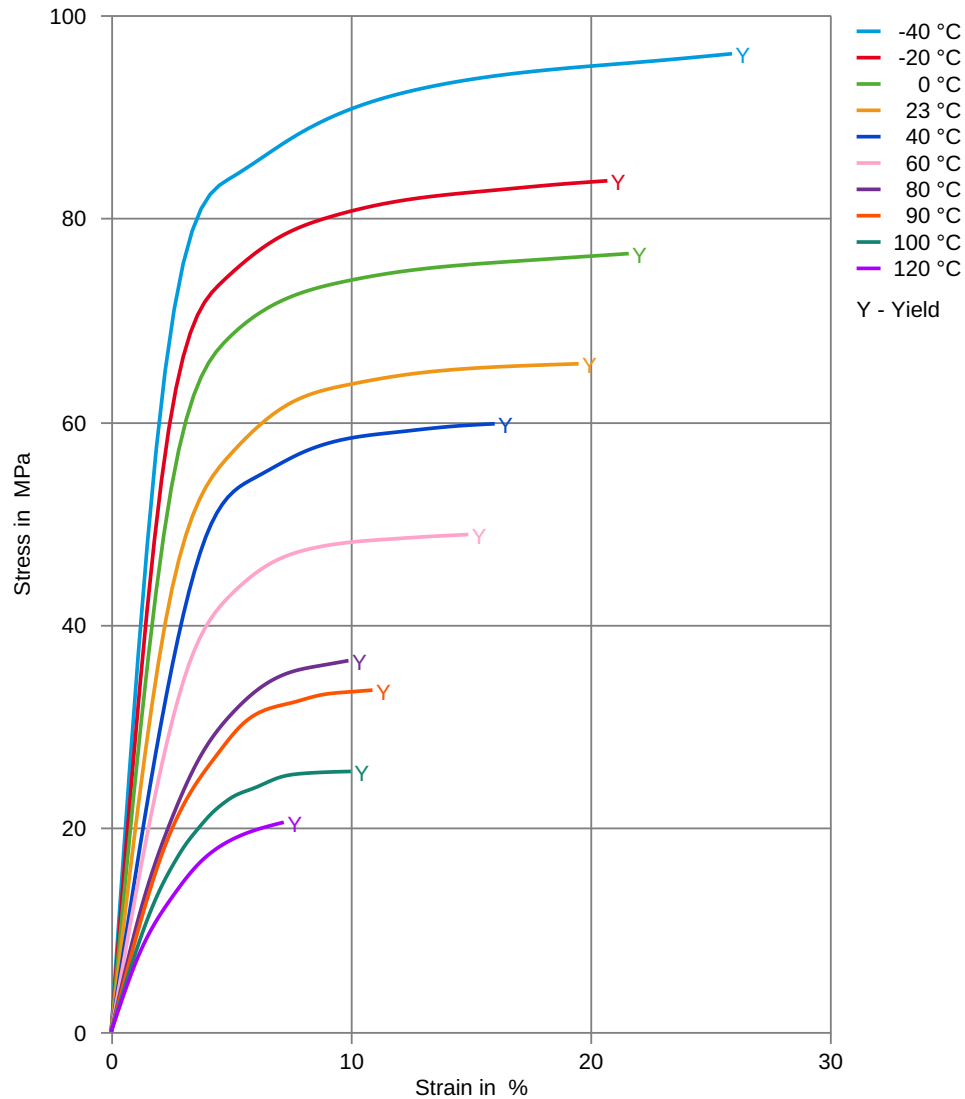
Shearstress-shear rate



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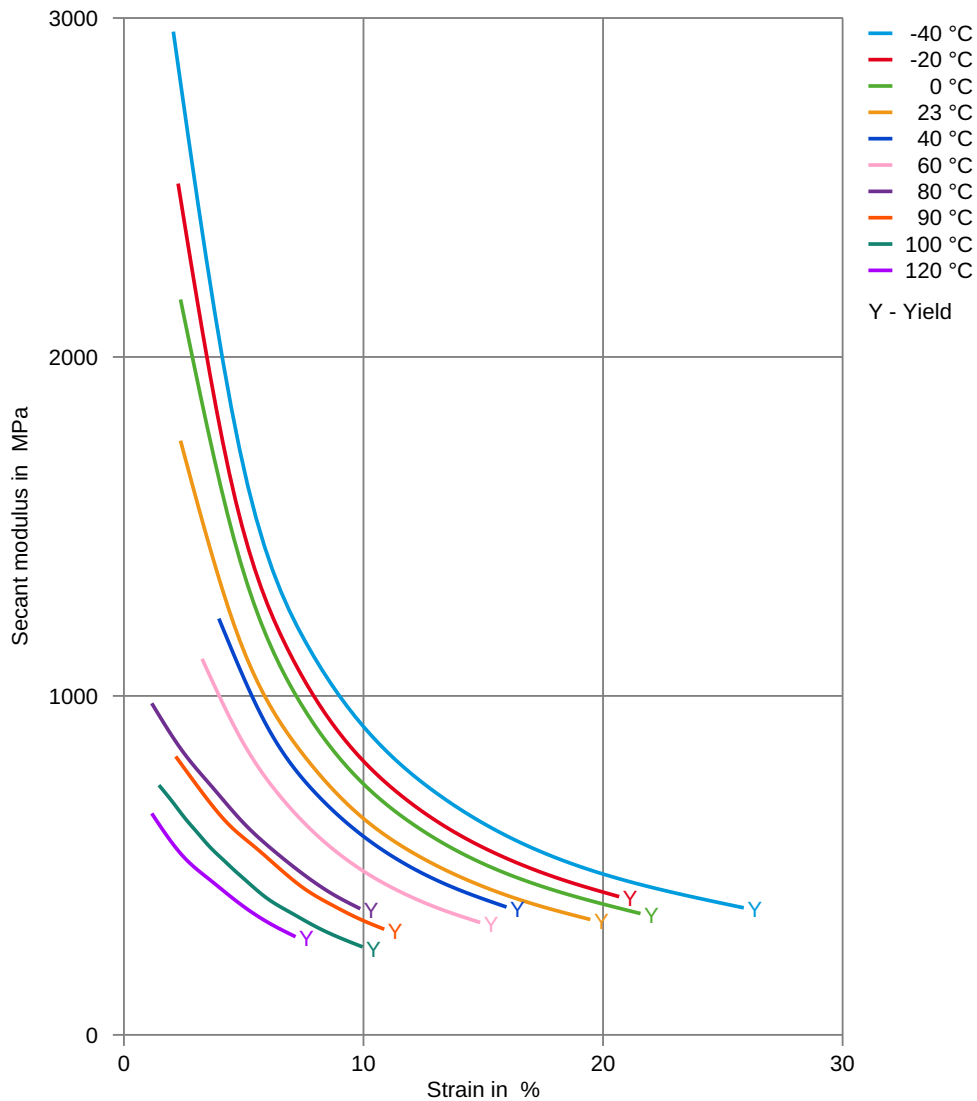
Stress-strain



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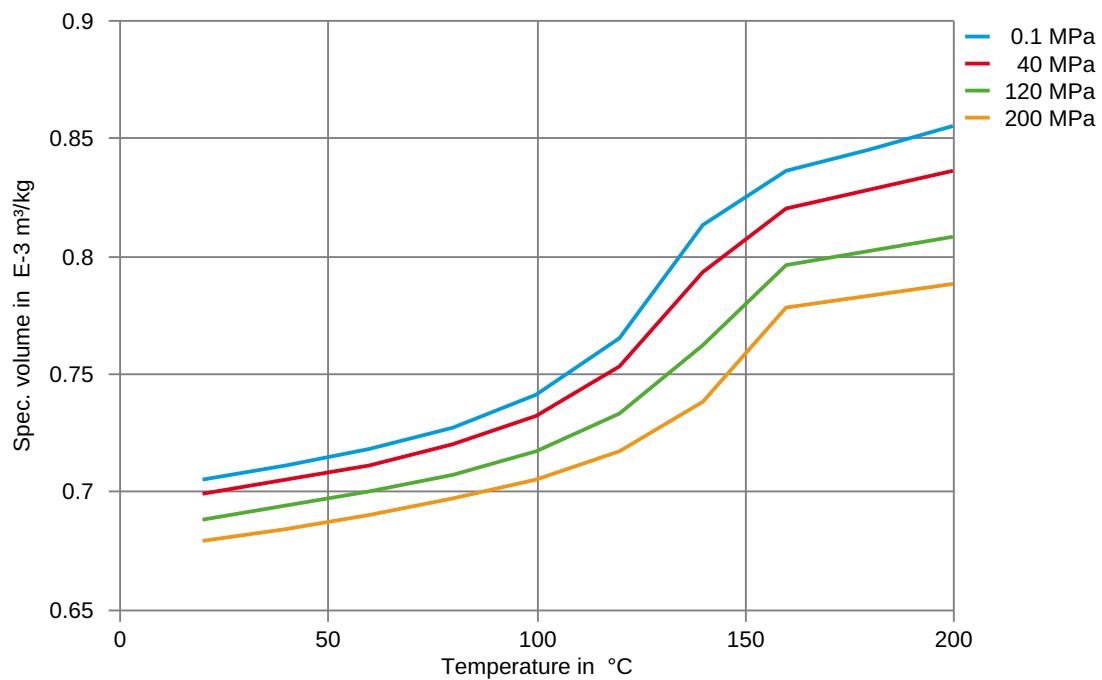
Secant modulus-strain



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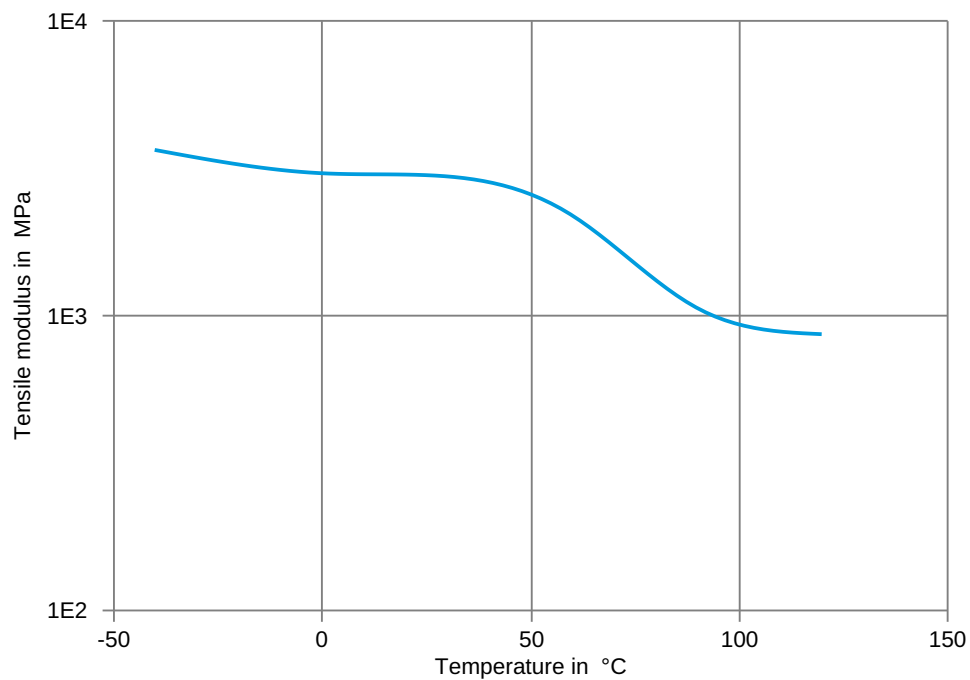
Specific volume-temperature (pvT)



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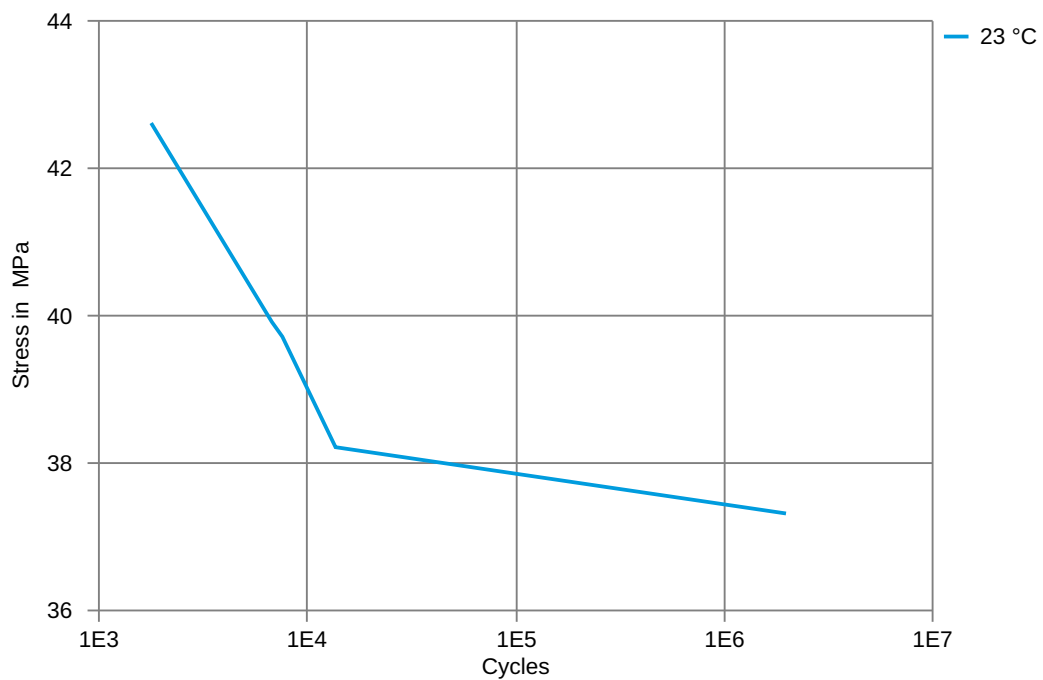
Tensile modulus-temperature



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Tensile Fatigue, 10Hz, R=0.1 @ mm



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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
- ✗ 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).

Delrin

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