Delrin® 520MP 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® 520MP is a medium viscosity acetal homopolymer containing 20% Teflon® PTFE Micropowder lubricant. It is designed for applications requiring low wear and friction against steel, itself, or other plastics.

Characteristics

Processing	Injection Molding
Delivery form	Pellets
Additives	Lubricants, Release agent
Special characteristics	Low wear / Low friction

Processing Texts

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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Product information

Resin Identification	POM-SD20	ISO 1043
Part Marking Code	>POM-SD20<	ISO 11469

Rheological properties

Melt mass-flow rate	8	g/10min	ISO 1133
Melt mass-flow rate, Temperature	190	°C	ISO 1133
Melt mass-flow rate, Load	2.16	kg	ISO 1133
Molding shrinkage, parallel	1.9	%	ISO 2944, 2577
Molding shrinkage, normal	1.5	%	ISO 2944, 2577

Mechanical properties

Tensile Modulus	2900	MPa	ISO 5271/2
Yield stress	53	MPa	ISO 5271/2
Yield strain	13	%	ISO 5271/2
Nominal strain at break	10	%	ISO 5271/2
Flexural Modulus	2700	MPa	ISO 178
Tensile creep modulus, 1h	1500	MPa	ISO 8991
Tensile creep modulus, 1000h	800	MPa	ISO 8991
Charpy impact strength, 73°F	50	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 73°F	3	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -22°F	4	kJ/m²	ISO 179/1eA
Izod notched impact strength, 73°F	4	kJ/m²	ISO 180/1A
Hardness, Rockwell, M-scale	85	-	ISO 20392
Hardness, Rockwell, R-scale	121	-	ISO 20392
Poisson's ratio	0.37	-	

Thermal properties

Melting temperature, 18°F/min	178	°C	ISO 113571/3
Temp. of deflection under load, 260 psi	94	°C	ISO 751/2
Temp. of deflection under load, 65 psi	160	°C	ISO 751/2
Coeff. of linear therm. expansion, parallel	100	E-6/K	ISO 113591/2
Coeff. of linear therm. expansion, normal	100	E-6/K	ISO 113591/2
Coeff. of linear therm. expansion, Normal, -40-23°C	90	E-6/K	ISO 113591/2
Coeff. of linear therm. expansion, Parallel, -40-23°C	90	E-6/K	ISO 113591/2
RTI, electrical, 60mil	105	°C	UL 746B

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RTI, electrical, 120mil	105	°C	UL 746B
RTI, impact, 60mil	85	°C	UL 746B
RTI, impact, 120mil	85	°C	UL 746B
RTI, strength, 60mil	90	°C	UL 746B
RTI, strength, 120mil	90	°C	UL 746B

Flammability

Burning Behav. at 60mil nom. thickn.	HB	class	IEC 606951110
Thickness tested	1.5	mm	IEC 606951110
UL recognition	yes	-	UL 94
Burning Behav. at thickness h	HB	class	IEC 606951110
Thickness tested	3	mm	IEC 606951110
UL recognition	yes	-	UL 94
FMVSS Class	B	-	ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	37	mm/min	ISO 3795 (FMVSS 302)

Other properties

Density	1540	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	215	°C
Min. melt temperature	210	°C
Max. melt temperature	220	°C
Mold Temperature Optimum	90	°C
Min. mold temperature	80	°C
Max. mold temperature	100	°C
Hold pressure range	80 - 100	MPa
Hold pressure time	8	s/mm
Annealing time, optional	30	min/mm
Annealing temperature	160	°C

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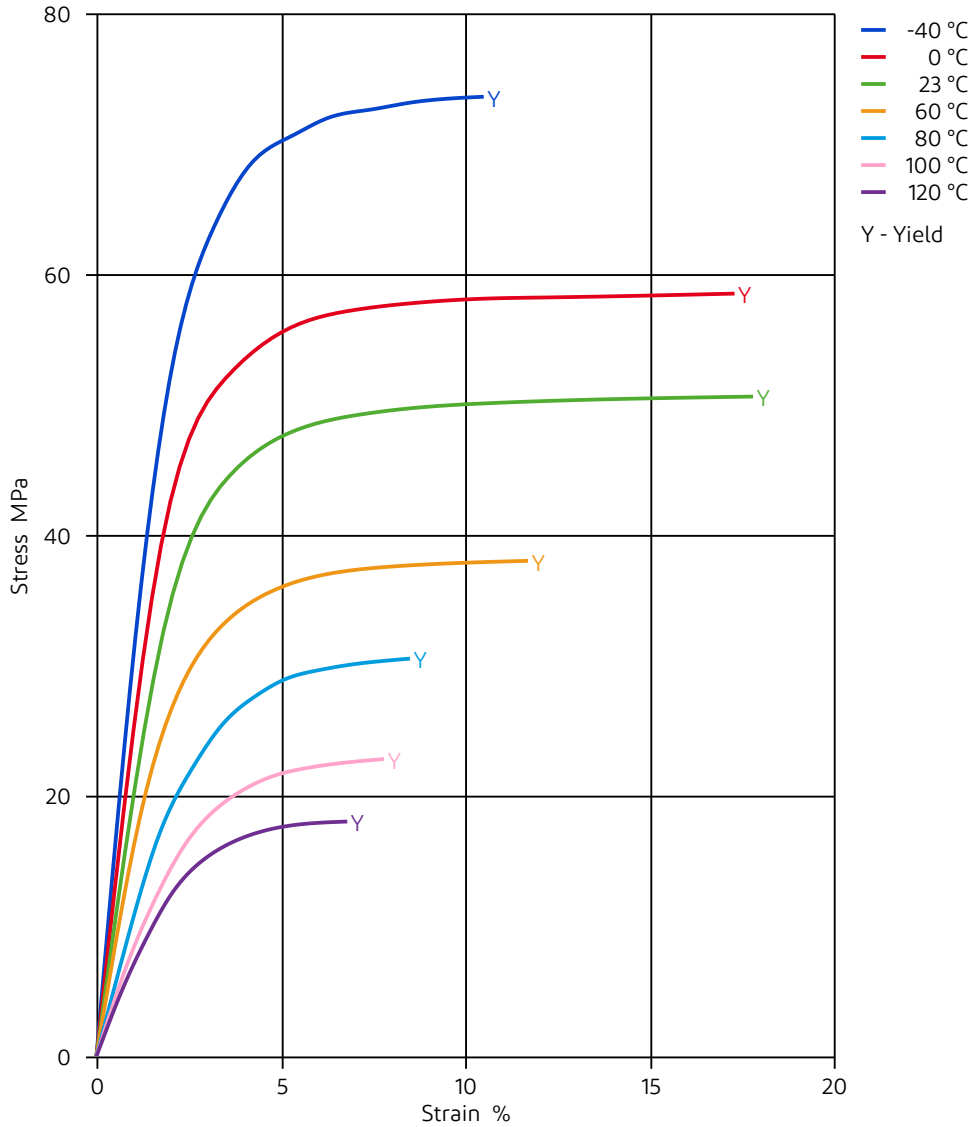
Stress-strain



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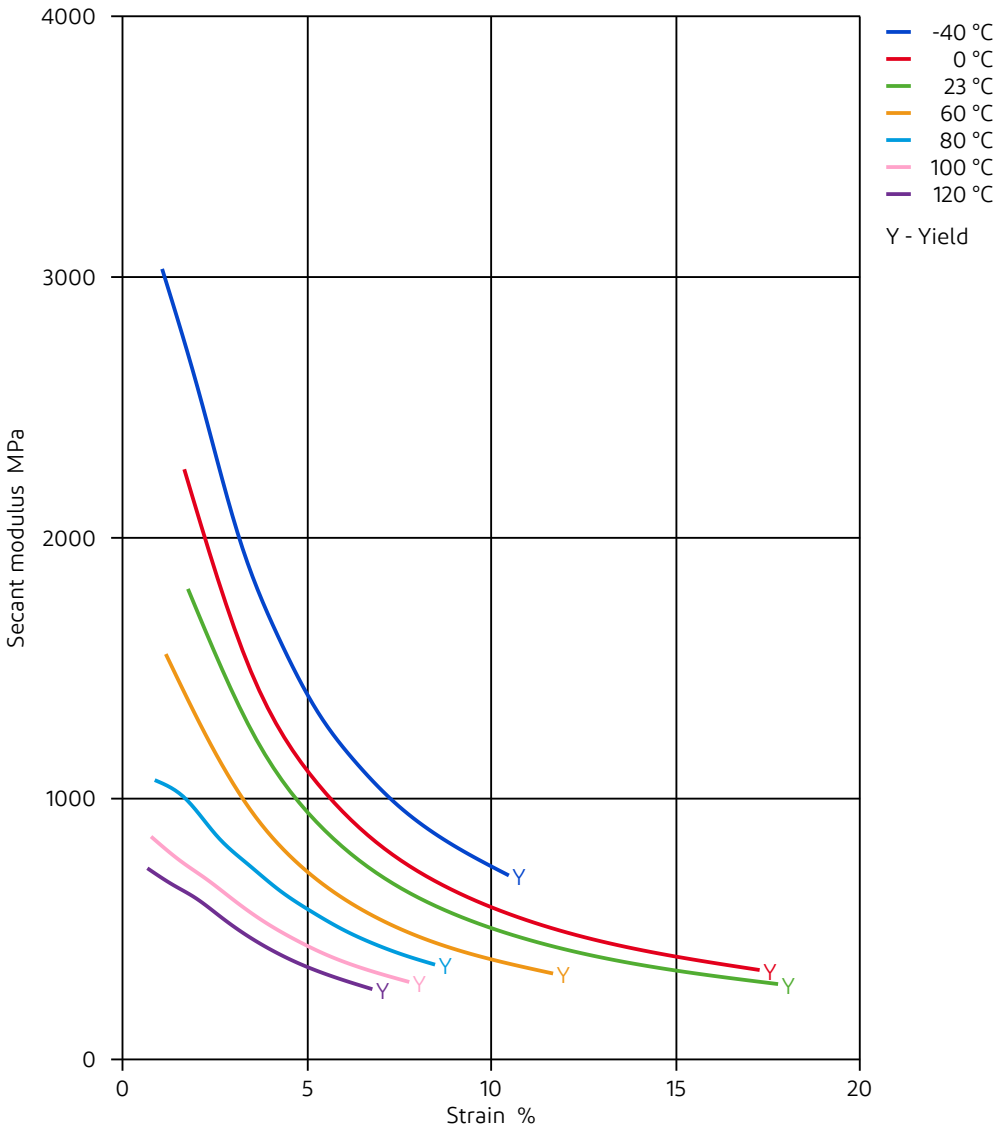
Secant modulus-strain



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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

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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
- ✘ 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).