CAMPUS® Datasheet

Delrin® 311DP NC010 - POM
Delrin

Product Texts

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® 311DP is a medium-high viscosity acetal homopolymer with enhanced crystallization for faster cycle times and excellent creep and fatigue resistance. It has improved thermal stability, excellent dimensional stability, low warpage and fewer voids.

Rheological properties	Value	Unit	Test Standard
Melt volume-flow rate, MVR	**6**	cm³/10min	ISO 1133
Temperature	**190**	°C	ISO 1133
Load	**2.16**	kg	ISO 1133
Molding shrinkage, parallel	**1.9**	%	ISO 294-4, 2577
Molding shrinkage, normal	**1.8**	%	ISO 294-4, 2577

Mechanical properties	Value	Unit	Test Standard
Tensile modulus	**3300**	MPa	ISO 527-1/-2
Yield stress	**74**	MPa	ISO 527-1/-2
Yield strain	**15**	%	ISO 527-1/-2
Nominal strain at break	**35**	%	ISO 527-1/-2
Tensile creep modulus, 1h	**2400**	MPa	ISO 899-1
Tensile creep modulus, 1000h	**1200**	MPa	ISO 899-1
Charpy impact strength, +23°C	**300**	kJ/m²	ISO 179/1eU
Charpy impact strength, -30°C	**250**	kJ/m²	ISO 179/1eU
Charpy notched impact strength, +23°C	**9**	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -30°C	**8**	kJ/m²	ISO 179/1eA

Thermal properties	Value	Unit	Test Standard
Melting temperature, 10°C/min	**178**	°C	ISO 11357-1/-3
Temp. of deflection under load, 1.80 MPa	**103**	°C	ISO 75-1/-2
Temp. of deflection under load, 0.45 MPa	**165**	°C	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	**160**	°C	ISO 306
Coeff. of linear therm. expansion, parallel	**110**	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	**110**	E-6/K	ISO 11359-1/-2
Burning behavior at 1.5 mm nominal thickness	**HB**	class	IEC 60695-11-10
Thickness tested (1.5)	**1.5**	mm	IEC 60695-11-10
Yellow Card available	**Yes**	-	-
Burning behavior at thickness h	**HB**	class	IEC 60695-11-10
Thickness tested (h)	**0.8**	mm	IEC 60695-11-10
Yellow Card available	**Yes**	-	-

Electrical properties	Value	Unit	Test Standard
Relative permittivity, 100Hz	**3.8**	-	IEC 62631-2-1
Relative permittivity, 1MHz	**3.8**	-	IEC 62631-2-1
Dissipation factor, 1MHz	**50**	E-4	IEC 62631-2-1
Volume resistivity	**1E13**	Ohm*m	IEC 62631-3-1
Surface resistivity	**>1E15**	Ohm	IEC 62631-3-2

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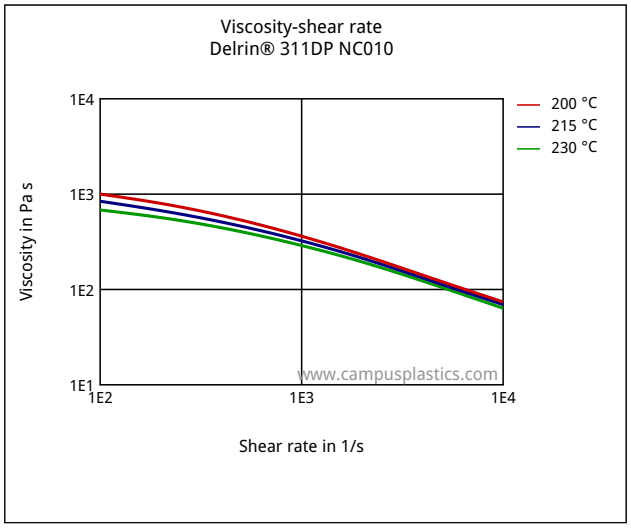
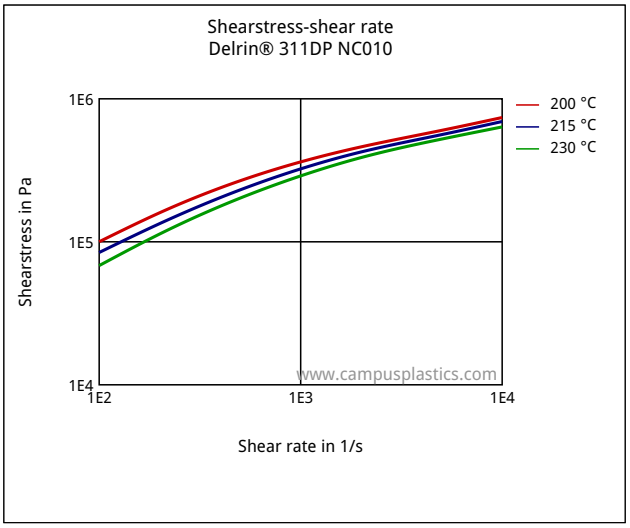
Other properties	Value	Unit	Test Standard
Water absorption	**0.9**	%	Sim. to ISO 62
Humidity absorption	**0.2**	%	Sim. to ISO 62
Density	**1420**	kg/m³	ISO 1183

Diagrams

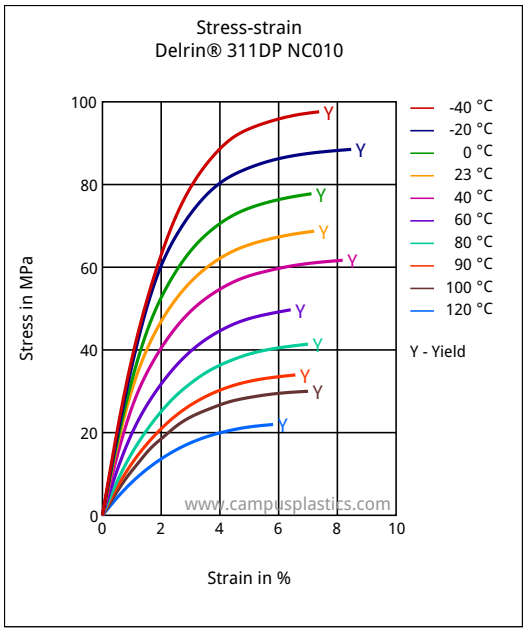
Viscosity-shear rate



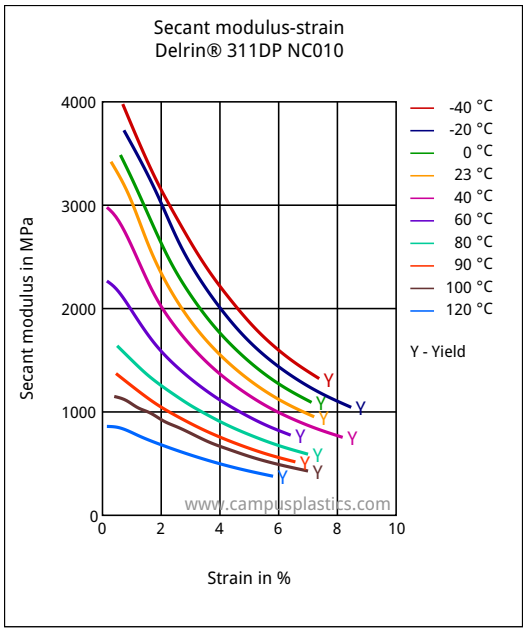
Shearstress-shear rate



Stress-strain



Secant modulus-strain



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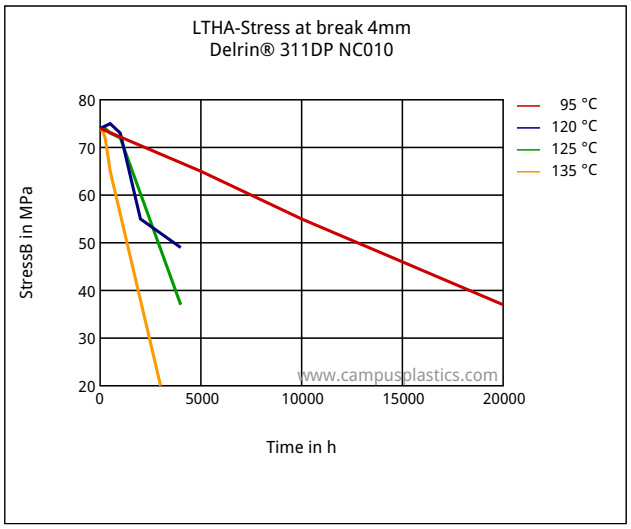
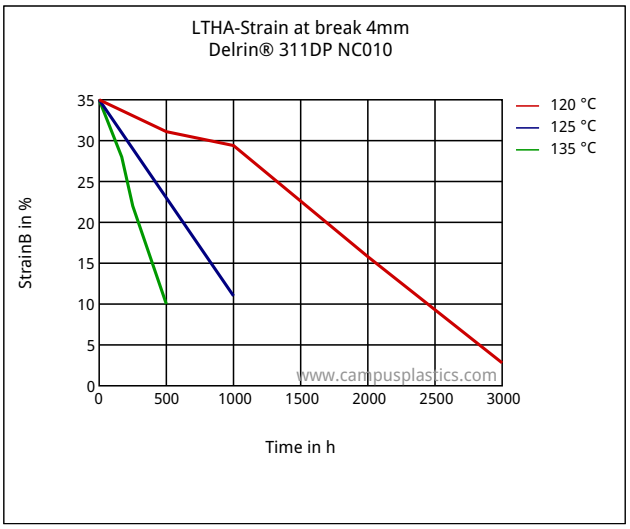
LTHA-Stress at break 4mm



LTHA-Strain at break 4mm



Characteristics

Processing
Injection Molding, Profile Extrusion, Sheet Extrusion, Other Extrusion

Delivery form
Pellets

Additives
Lubricants, Release agent

Regional Availability
North America, Europe, Asia Pacific, South and Central America

Other text 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.

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 (60°C)
- ISO 1817 Liquid 2 (60°C)
- ISO 1817 Liquid 3 (60°C)
- ISO 1817 Liquid 4 (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)

- Deionized water (90°C)
- Phenol solution (5% by mass) (23°C)

The information provided in this data sheet corresponds to our knowledge on the subject at the date of its publication.
This information may be subject to revision as new knowledge and experience becomes available.
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