



# Delrin® 127UVE 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® 127UVE is a UV-stabilized high viscosity acetal homopolymer with very low VOC emissions, developed for applications in automotive interiors. Processing methods include injection moulding.

### Product information

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

### Rheological properties

Melt volume-flow rate	2.1 cm <sup>3</sup> /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	2.1 %	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	71 MPa	ISO 527-1/-2
Yield strain	25 %	ISO 527-1/-2
Nominal strain at break	45 %	ISO 527-1/-2
Flexural Modulus	2800 MPa	ISO 178
Flexural Stress at 3.5%	77.2 MPa	ISO 178
Charpy impact strength, 23°C	390 kJ/m <sup>2</sup>	ISO 179/1eU
Charpy impact strength, -30°C	340 kJ/m <sup>2</sup>	ISO 179/1eU
Charpy notched impact strength, 23°C	14 kJ/m <sup>2</sup>	ISO 179/1eA
Charpy notched impact strength, -30°C	10 kJ/m <sup>2</sup>	ISO 179/1eA
Izod notched impact strength, 23°C	12 kJ/m <sup>2</sup>	ISO 180/1A
Izod impact strength, -30°C	280 kJ/m <sup>2</sup>	ISO 180/1U
Hardness, Rockwell, M-scale	88.3 -	ISO 2039-2
Hardness, Rockwell, R-scale	120 -	ISO 2039-2
Poisson's ratio	0.37 -	



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### Thermal properties

Melting temperature, 10°C/min	178 °C	ISO 11357-1/-3
Temp. of deflection under load, 1.8 MPa	91 °C	ISO 75-1/-2
Temp. of deflection under load, 0.45 MPa	159 °C	ISO 75-1/-2
Vicat softening temperature, 50°C/h, 50N	160 °C	ISO 306
Vicat softening temperature, 50°C/h 10N	174 °C	ISO 306
Coeff. of linear therm. expansion, parallel	120 E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	110 E-6/K	ISO 11359-1/-2

### Flammability

FMVSS Class	B -	ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	27 mm/min	ISO 3795 (FMVSS 302)

### Other properties

Density	1420 kg/m <sup>3</sup>	ISO 1183
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### VDA Properties

Emissions	<2 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	205 °C
Min. melt temperature	200 °C
Max. melt temperature	210 °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	75 - 85 °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:

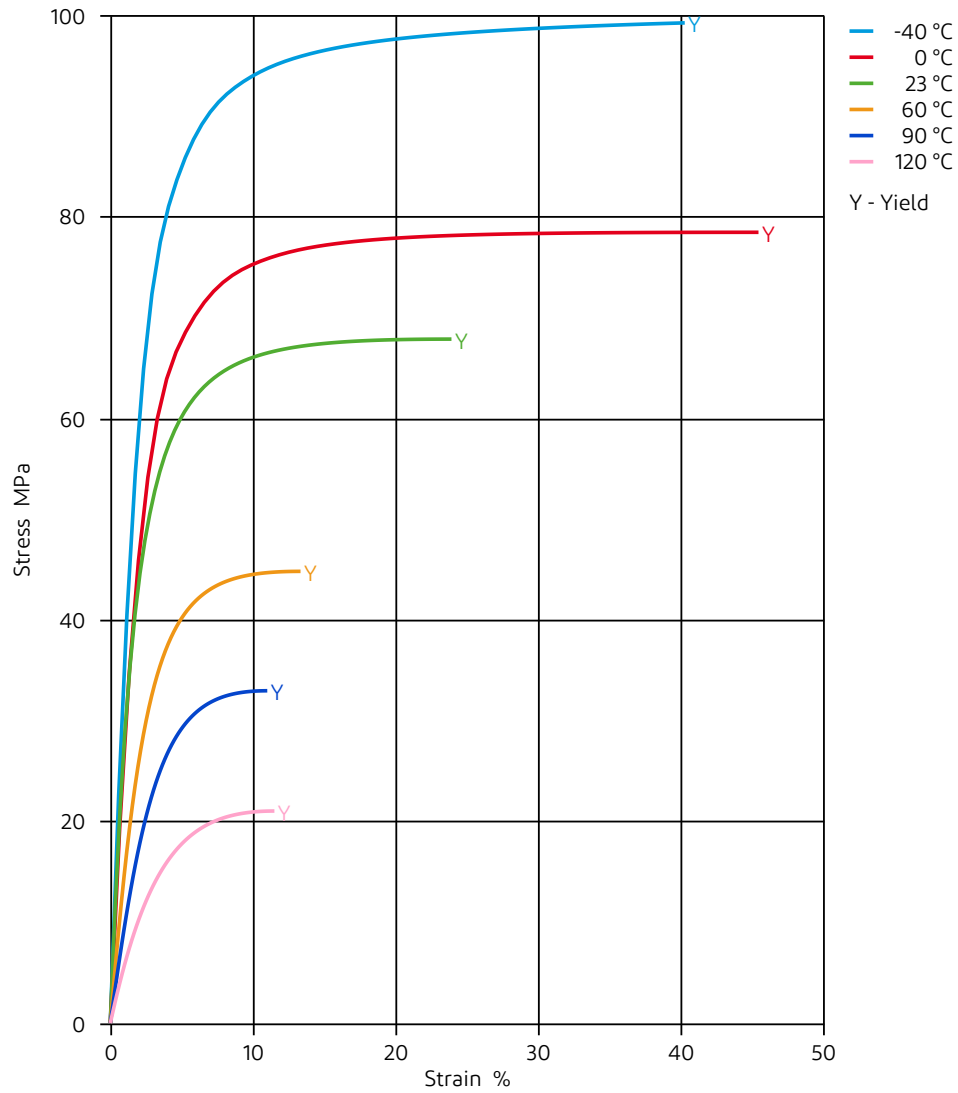
- If moisture is above the Processing Moisture Content recommendation,
- When a resin container is damaged,
- When the material is not properly stored in a dry place at room temperature, or
- When packaging stays open for a significant time.



# Delrin<sup>®</sup> 127UVE NC010

ACETAL RESIN

## Stress-strain

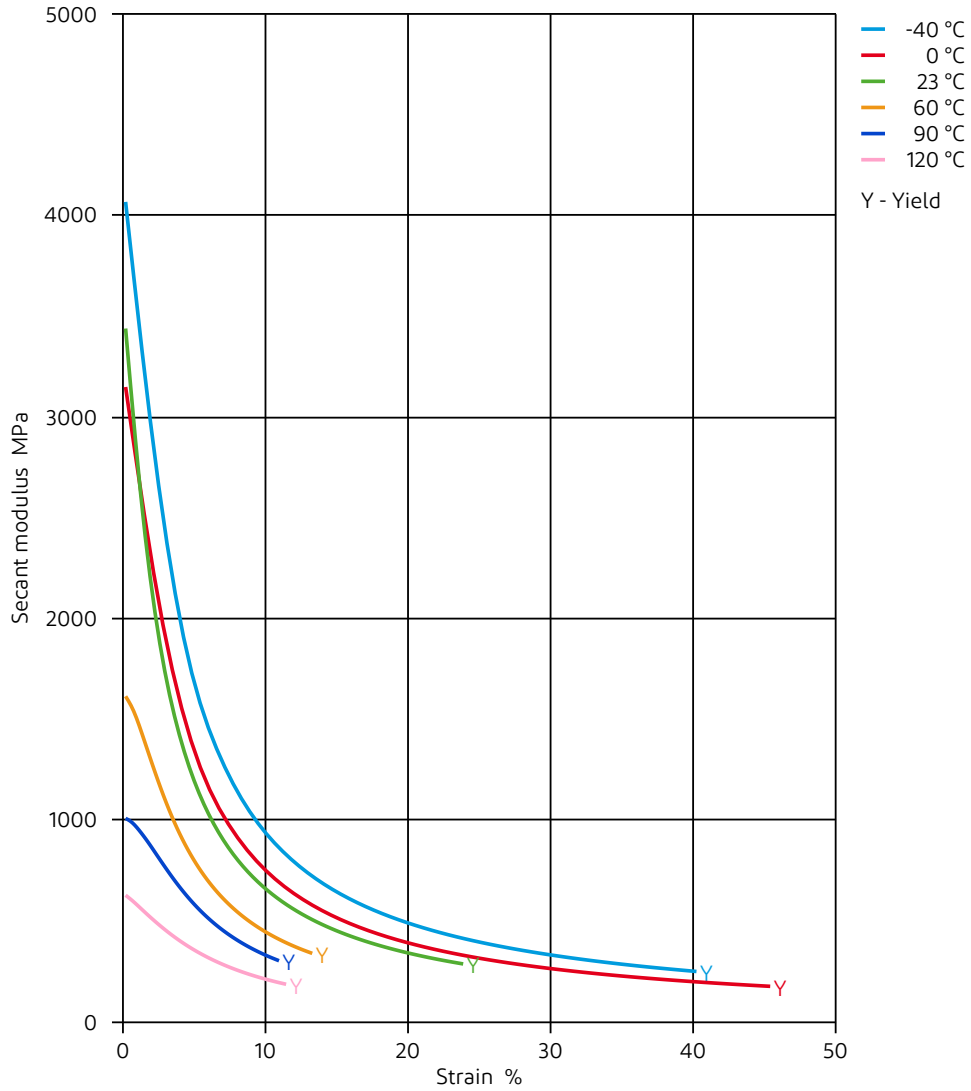




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ACETAL RESIN

## Secant modulus-strain

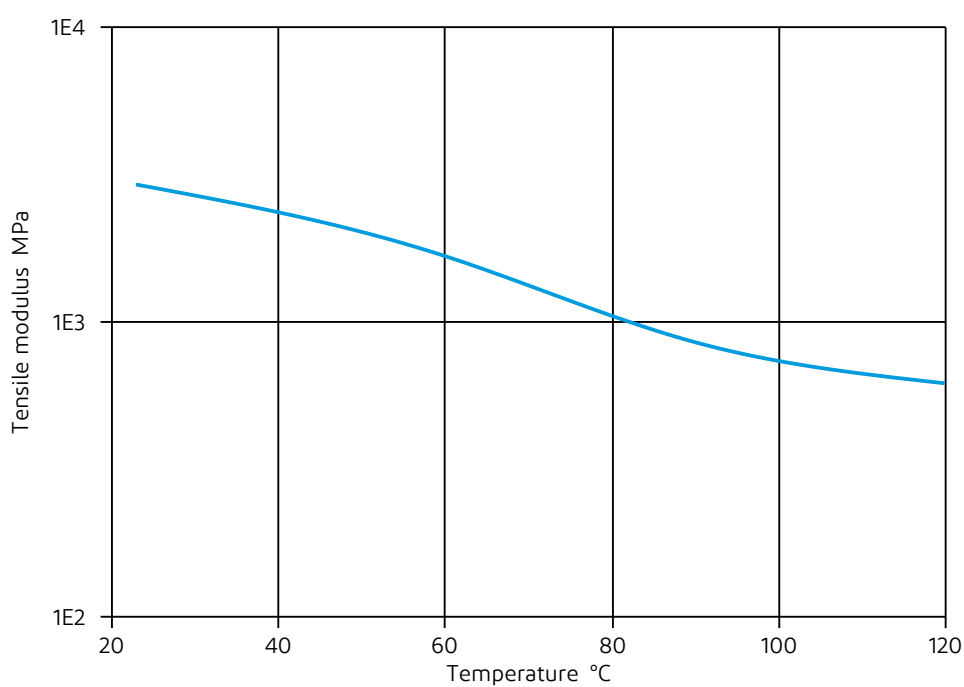




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ACETAL RESIN

Tensile modulus-temperature



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## ACETAL 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
- ✗ Motor oil OS206 304 Ref.Eng.Oil, ISP, 135°C
- ✗ Automatic hypoid-gear oil Shell Donax TX, 135°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

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- ✓ 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

### 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
- ✗ Coolant Glysantin G48, 1:1 in water, 125°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).

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