

# DuPont™ Delrin® 520MP NC010

## ACETAL RESIN

### Product Information

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.**

General information	Value	Unit	Test Standard
Resin Identification	POM-SD20	-	ISO 1043
Part Marking Code	POM-SD20	-	ISO 11469
Rheological properties	Value	Unit	Test Standard
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
Moulding shrinkage, parallel	1.9	%	ISO 294-4, 2577
Moulding shrinkage, normal	1.5	%	ISO 294-4, 2577
Mechanical properties	Value	Unit	Test Standard
Tensile Modulus	2800	MPa	ISO 527-1/-2
Yield stress	53	MPa	ISO 527-1/-2
Yield strain	13	%	ISO 527-1/-2
Nominal strain at break	15	%	ISO 527-1/-2
Flexural Modulus	2700	MPa	ISO 178
Tensile creep modulus			ISO 899-1
1h	1500	MPa	
1000h	800	MPa	
Charpy impact strength, 23°C	70	kJ/m <sup>2</sup>	ISO 179/1eU
Charpy notched impact strength			ISO 179/1eA
23°C	4	kJ/m <sup>2</sup>	
-30°C	4	kJ/m <sup>2</sup>	
Izod notched impact strength, 23°C	4	kJ/m <sup>2</sup>	ISO 180/1A
Thermal properties	Value	Unit	Test Standard
Melting temperature, 10°C/min	178	°C	ISO 11357-1/-3
Temp. of deflection under load			ISO 75-1/-2
1.8 MPa	94	°C	
0.45 MPa	160	°C	
Coeff. of linear therm. expansion, parallel	100	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion			ISO 11359-1/-2
normal	100	E-6/K	
Normal, -40-23°C	90	E-6/K	
Parallel, -40-23°C	90	E-6/K	
RTI, electrical			UL 746B
1.5mm	105	°C	
3mm	105	°C	
RTI, impact			UL 746B
1.5mm	85	°C	
3mm	85	°C	
RTI, strength			UL 746B
1.5mm	90	°C	
3mm	90	°C	
Flammability	Value	Unit	Test Standard
Burning Behav. at 1.5mm nom. thckn.	HB	class	IEC 60695-11-10
Thickness tested	1.5	mm	IEC 60695-11-10

To find out more, visit [DuPont Performance Polymers](#) or contact nearest DuPont location.

#### North America

Tel: +1 302 999-4592

Toll-Free (USA): 800 441-0575

#### Asia Pacific

Tel: +81 3 5521 8600

#### Europe/Middle East/Africa

Tel: +41 22 717 51 11



# DuPont™ Delrin® 520MP NC010

## ACETAL RESIN

UL recognition	yes	-	UL 94
Burning Behav. at thickness h	HB	class	IEC 60695-11-10
Thickness tested	3	mm	IEC 60695-11-10
UL recognition	yes	-	UL 94
FMVSS Class	B	-	ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	37	mm/min	ISO 3795 (FMVSS 302)
<b>Other properties</b>	<b>Value</b>	<b>Unit</b>	<b>Test Standard</b>
Density	1540	kg/m <sup>3</sup>	ISO 1183
<b>VDA Properties</b>	<b>Value</b>	<b>Unit</b>	<b>Test Standard</b>
Emissions	<8	mg/kg	VDA 275
<b>Injection</b>	<b>Value</b>	<b>Unit</b>	<b>Test Standard</b>
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. mould temperature	80	°C	-
Max. mould 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	-

### Characteristics

Processing	• Injection Moulding		
Delivery form	• Pellets		
Additives	• Lubricants	• Release agent	
Regional Availability	• North America	• Asia Pacific	• Near East/Africa
	• Europe	• South and Central America	• Global

### 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.

To find out more, visit [DuPont Performance Polymers](#) or contact nearest DuPont location.

#### North America

Tel: +1 302 999-4592

Toll-Free (USA): 800 441-0575

#### Asia Pacific

Tel: +81 3 5521 8600

#### Europe/Middle East/Africa

Tel: +41 22 717 51 11

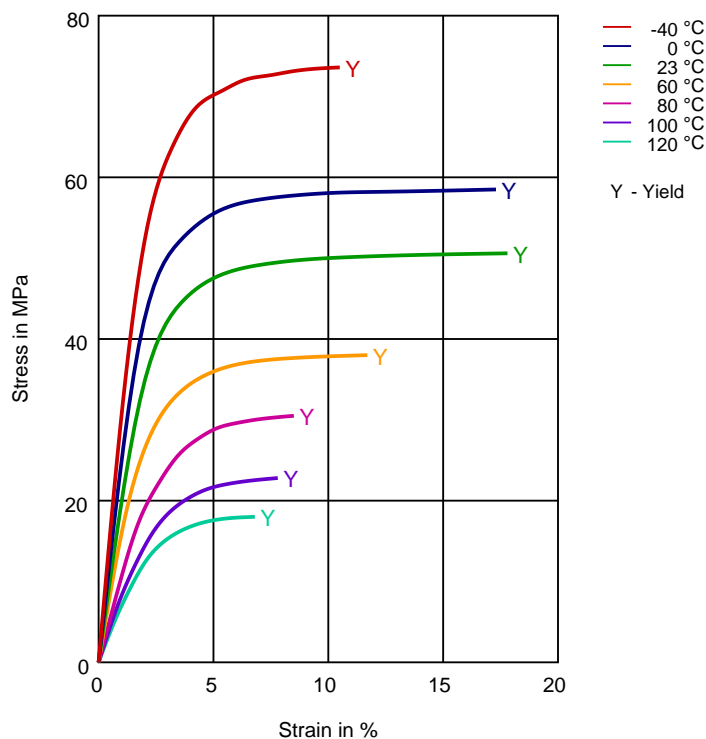


# DuPont™ Delrin® 520MP NC010

## ACETAL RESIN

Diagrams

Stress-strain



Revised: 2018-03-23

Page: 3 of 6

To find out more, visit [DuPont Performance Polymers](#) or contact nearest DuPont location.

### North America

Tel: +1 302 999-4592

Toll-Free (USA): 800 441-0575

### Asia Pacific

Tel: +81 3 5521 8600

### Europe/Middle East/Africa

Tel: +41 22 717 51 11

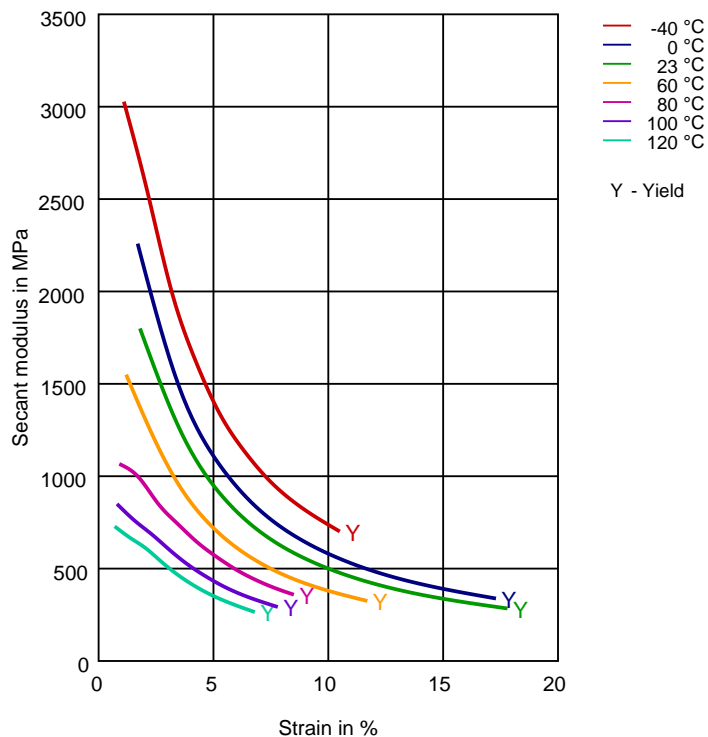
Copyright 2017 DuPont. The DuPont Oval Logo is a trademark or registered trademark of E.I. du Pont de Nemours and Company or its affiliates. All rights reserved.



# DuPont™ Delrin® 520MP NC010

## ACETAL RESIN

Secant modulus-strain



To find out more, visit [DuPont Performance Polymers](#) or contact nearest DuPont location.

**North America**

Tel: +1 302 999-4592

Toll-Free (USA): 800 441-0575

**Asia Pacific**

Tel: +81 3 5521 8600

**Europe/Middle East/Africa**

Tel: +41 22 717 51 11



# DuPont™ Delrin® 520MP NC010

## 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)

#### 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)

Revised: 2018-03-23

Page: 5 of 6

To find out more, visit [DuPont Performance Polymers](#) or contact nearest DuPont location.

#### North America

Tel: +1 302 999-4592

Toll-Free (USA): 800 441-0575

#### Asia Pacific

Tel: +81 3 5521 8600

#### Europe/Middle East/Africa

Tel: +41 22 717 51 11



Copyright 2017 DuPont. The DuPont Oval Logo is a trademark or registered trademark of E.I. du Pont de Nemours and Company or its affiliates. All rights reserved.

# DuPont™ Delrin® 520MP NC010

## ACETAL RESIN

- ✓ 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).

Contact DuPont for Material Safety Data Sheet, general guides and/or additional information about ventilation, handling, purging, drying, etc. ISO Mechanical properties measured at 4mm (Hytrel® measured at 2 mm), IEC Electrical properties measured at 2mm, all ASTM properties measured at 3.2mm, and test temperatures are 23°C unless otherwise stated.

The information set forth herein is furnished free of charge and is based on technical data that DuPont believes to be reliable and falls within the normal range of properties. It is intended for use by persons having technical skill, at their own discretion and risk. This data should not be used to establish specification limits nor used alone as the basis of design. Handling precaution information is given with the understanding that those using it will satisfy themselves that their particular conditions of use present no health or safety hazards. Since conditions of product use and disposal are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information. As with any product, evaluation under end-use conditions prior to specification is essential. Nothing herein is to be taken as a license to operate or a recommendation to infringe on patents. Caution: Do not use in medical applications involving permanent implantation in the human body. For other medical applications, discuss with your DuPont customer representative and read Medical Caution H-50103-5.

Copyright © 2017 DuPont or its affiliates. All Rights Reserved. The DuPont Oval Logo, DuPont™, The miracles of science™ and all products denoted with ® or ™ are registered trademarks or trademarks of E.I. du Pont de Nemours and Company or its affiliates.

Revised: 2018-03-23

Page: 6 of 6

To find out more, visit [DuPont Performance Polymers](#) or contact nearest DuPont location.

#### North America

Tel: +1 302 999-4592

Toll-Free (USA): 800 441-0575

#### Asia Pacific

Tel: +81 3 5521 8600

#### Europe/Middle East/Africa

Tel: +41 22 717 51 11



Copyright 2017 DuPont. The DuPont Oval Logo is a trademark or registered trademark of E.I. du Pont de Nemours and Company or its affiliates. All rights reserved.