

# DuPont™ Minlon® 10B40 NC010

## MINERAL REINFORCED NYLON RESIN

### Product Information

Common features of Minlon® nylon resin include mechanical and physical properties such as high mechanical strength, excellent balance of stiffness /toughness, good high temperature performance, good chemical resistance, paintability, dimensional stability and low warpage.

Grades with improved electrical and flammability properties are available within the Zytel® nylon resin product line. In addition, Minlon® nylon resin is available in different modified and reinforced grades to create a wide range of products with tailored properties for specific processes and end-uses.

The good melt stability of Minlon® nylon resin normally enables the recycling of properly handled production waste. If recycling is not possible, DuPont recommends, as the preferred option, incineration with energy recovery (-31kJ/g of base polymer) in appropriately equipped installations. For disposal, local regulations have to be observed.

Minlon® nylon resin typically is used in demanding applications in the automotive, electrical, electronic, domestic appliances and construction industries.

**Minlon® 10B40 NC010 is a 40% mineral reinforced polyamide 66 resin for injection molding.**

General information	Value	Unit	Test Standard
Resin Identification	PA66-MD40	-	-
Part Marking Code	>PA66-MD40<	-	ISO 11469
Rheological properties	dry / cond	Unit	Test Standard
Moulding shrinkage, parallel	0.5 / *	%	ISO 294-4, 2577
Moulding shrinkage, normal	0.9 / *	%	ISO 294-4, 2577
Mechanical properties	dry / cond	Unit	Test Standard
Tensile Modulus	9600 / 5400	MPa	ISO 527-1/-2
Stress at break	92 / 58	MPa	ISO 527-1/-2
Strain at break	2.5 / 8	%	ISO 527-1/-2
Flexural Modulus	9000 / 4800	MPa	ISO 178
Tensile creep modulus			ISO 899-1
1h	* / 2500	MPa	
1000h	* / 1600	MPa	
Charpy impact strength			ISO 179/1eU
23°C	25 / 40	kJ/m <sup>2</sup>	
-30°C	18 / 17	kJ/m <sup>2</sup>	
Charpy notched impact strength			ISO 179/1eA
23°C	3 / 3	kJ/m <sup>2</sup>	
-30°C	2 / 2	kJ/m <sup>2</sup>	
-40°C	2 / 2	kJ/m <sup>2</sup>	
Izod notched impact strength			ISO 180/1A
23°C	3.5 / 4	kJ/m <sup>2</sup>	
-30°C	2.5 / 2	kJ/m <sup>2</sup>	
-40°C	2.5 / 2	kJ/m <sup>2</sup>	
Izod impact strength			ISO 180/1U
23°C	25 / 40	kJ/m <sup>2</sup>	
-30°C	18 / 18	kJ/m <sup>2</sup>	
Thermal properties	dry / cond	Unit	Test Standard
Melting temperature, 10°C/min	263 / *	°C	ISO 11357-1/-3
Temp. of deflection under load			ISO 75-1/-2
1.8 MPa	205 / *	°C	
0.45 MPa	245 / *	°C	
Coeff. of linear therm. expansion, parallel	36 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	66 / *	E-6/K	ISO 11359-1/-2
RTI, electrical			UL 746B
0.8mm	105 / *	°C	
1.5mm	120 / *	°C	

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™ Minlon® 10B40 NC010

## MINERAL REINFORCED NYLON RESIN

RTI, impact			UL 746B
0.8mm	65	°C	
1.5mm	105 / *	°C	
3mm	115	°C	
RTI, strength			UL 746B
0.8mm	65	°C	
1.5mm	115 / *	°C	
<b>Flammability</b>	<b>dry / cond</b>	<b>Unit</b>	<b>Test Standard</b>
Burning Behav. at thickness h	HB / *	class	IEC 60695-11-10
Thickness tested	0.7 / *	mm	IEC 60695-11-10
Oxygen index	23 / *	%	ISO 4589-1/-2
<b>Electrical properties</b>	<b>dry / cond</b>	<b>Unit</b>	<b>Test Standard</b>
Dissipation factor			IEC 60250
100Hz	20 / -	E-4	
1MHz	200 / -	E-4	
Volume resistivity	>1E13 / -	Ohm*m	IEC 60093
Surface resistivity	* / 1E15	Ohm	IEC 60093
Electric strength	30 / -	kV/mm	IEC 60243-1
<b>Other properties</b>	<b>dry / cond</b>	<b>Unit</b>	<b>Test Standard</b>
Humidity absorption, 2mm	0.18 / *	%	Sim. to ISO 62
Water absorption, 2mm	0.45 / *	%	Sim. to ISO 62
Density	1510 / -	kg/m <sup>3</sup>	ISO 1183

### Characteristics

Processing	• Injection Moulding		
Regional Availability	• North America	• Asia Pacific	• South and Central America

### Processing Texts

#### Injection molding

##### PREPROCESSING

Drying recommended = Yes, if moisture content of resin exceeds recommended level

Drying temperature = 80°C

Drying time, dehumidified dryer = 2-4 h

Processing moisture content = <0.2 %

##### PROCESSING

Melt temperature optimum = 295°C

Melt temperature range = 285-305°C

Mould temperature optimum = 100°C

Mould temperature range = 70-120°C

Maximum Screw tangential Speed : 0.15 m/s

Flow front speed : 100 mm/s

Hold pressure optimum : 70 MPa

Hold pressure range : 40-100 MPa

Back pressure : low

Hold pressure time : 3 s/mm

Maximum hold-up time : 12 min

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

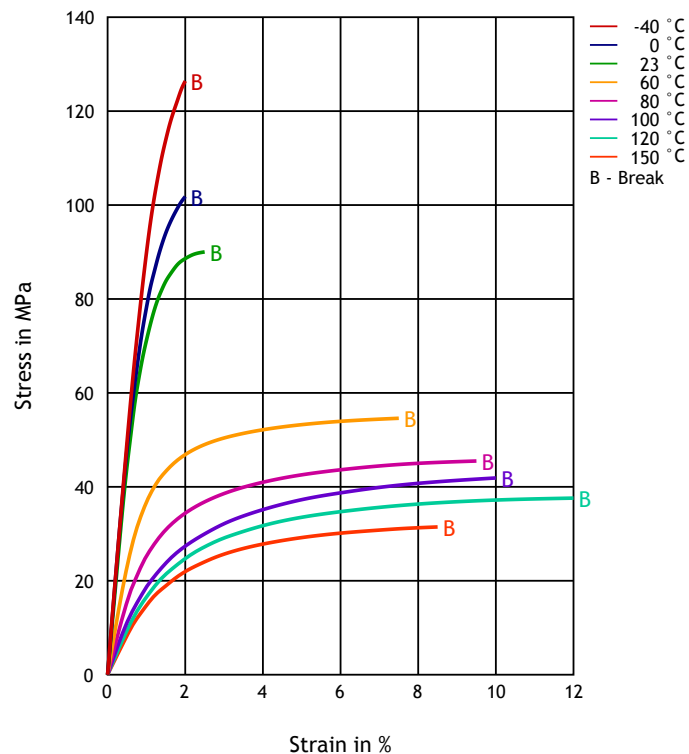


# DuPont™ Minlon® 10B40 NC010

## MINERAL REINFORCED NYLON RESIN

Diagrams

Stress-strain (dry)



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

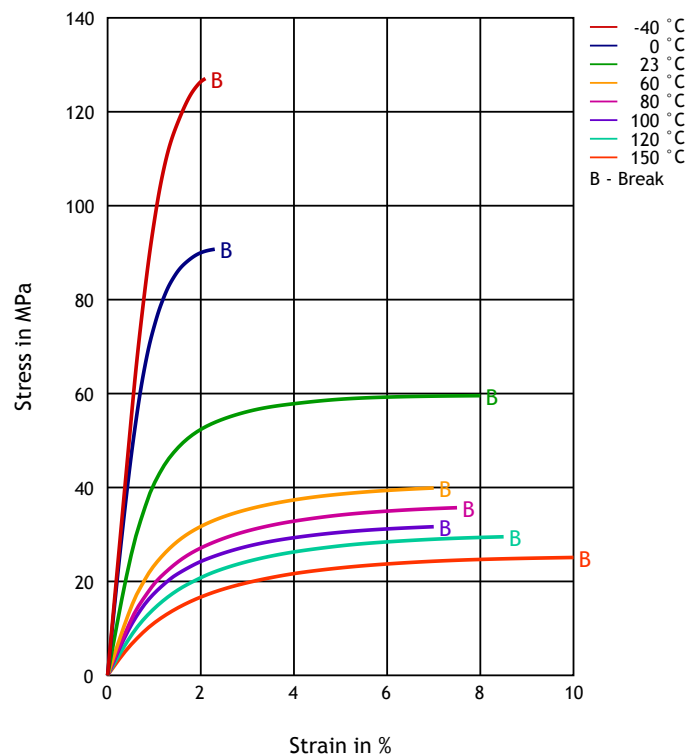
Tel: +41 22 717 51 11



# DuPont™ Minlon® 10B40 NC010

## MINERAL REINFORCED NYLON RESIN

Stress-strain (cond.)



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

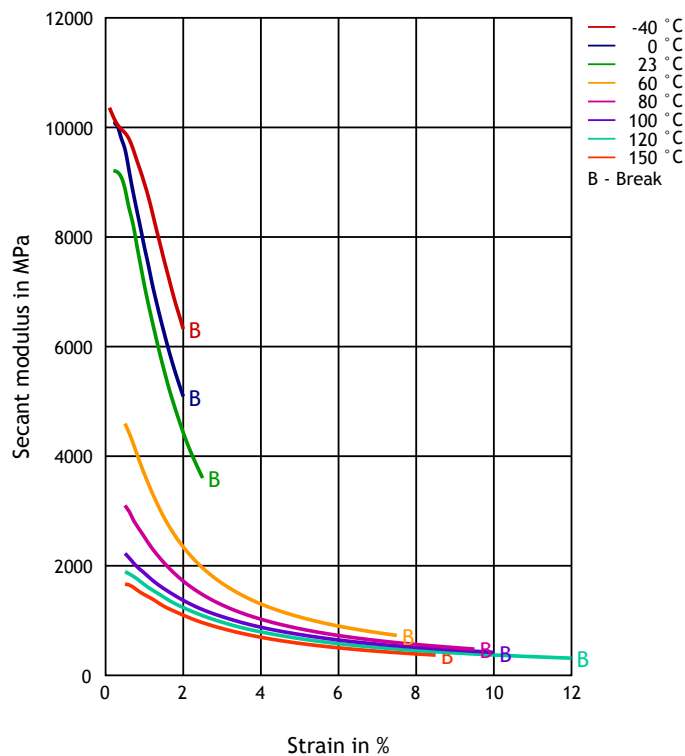
Tel: +41 22 717 51 11



# DuPont™ Minlon® 10B40 NC010

## MINERAL REINFORCED NYLON RESIN

Secant modulus-strain (dry)



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

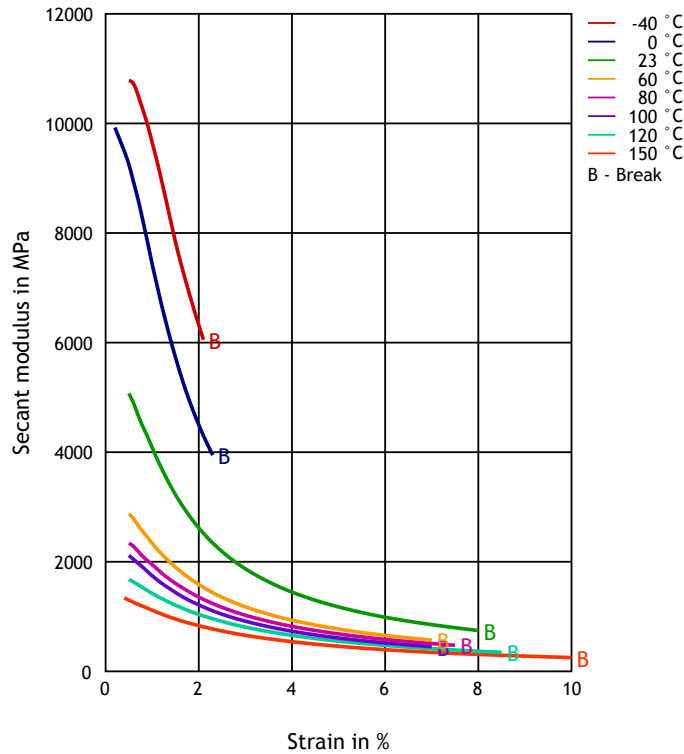
Tel: +41 22 717 51 11



# DuPont™ Minlon® 10B40 NC010

## MINERAL REINFORCED NYLON RESIN

### Secant modulus-strain (cond.)



### 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)

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™ Minlon® 10B40 NC010

## MINERAL REINFORCED NYLON RESIN

- ✓ 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)

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™ Minlon® 10B40 NC010

## MINERAL REINFORCED NYLON RESIN

-  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 4.0mm (Hytrel® measured at 2 mm), IEC Electrical properties measured at 2.0mm, 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-50103-4.

Copyright © 2014 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.

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

