

# DuPont™ Crastin® T843FR NC010

## THERMOPLASTIC POLYESTER RESIN

Product Information

Crastin® T843FR NC010 is a 20% Glass Reinforced, Toughened, Flame Retardant, Polybutylene Terephthalate with Improved Impact Resistance

General information	Value	Unit	Test Standard
Resin Identification	PBTC-GF20FR(17)	-	ISO 1043
Part Marking Code	PBTC-GF20FR(17)	-	ISO 11469
Rheological properties	Value	Unit	Test Standard
Melt volume-flow rate	10	cm <sup>3</sup> /10min	ISO 1133
Temperature	250	°C	ISO 1133
Load	2.16	kg	ISO 1133
Molding shrinkage, parallel	0.4	%	ISO 294-4, 2577
Molding shrinkage, normal	1.0	%	ISO 294-4, 2577
Mechanical properties	Value	Unit	Test Standard
Tensile Modulus	5800	MPa	ISO 527-1/-2
Stress at break	90	MPa	ISO 527-1/-2
Strain at break	4.2	%	ISO 527-1/-2
Tensile creep modulus			ISO 899-1
1h	5400	MPa	
1000h	3500	MPa	
Charpy impact strength			ISO 179/1eU
73°F	55	kJ/m <sup>2</sup>	
-22°F	60	kJ/m <sup>2</sup>	
Charpy notched impact strength			ISO 179/1eA
73°F	10	kJ/m <sup>2</sup>	
-22°F	8.4	kJ/m <sup>2</sup>	
Thermal properties	Value	Unit	Test Standard
Melting temperature, 18°F/min	205	°C	ISO 11357-1/-3
Temp. of deflection under load			ISO 75-1/-2
260 psi	180	°C	
1200 psi	120	°C	
Vicat softening temperature, 90°F/h, 11 lbf	185	°C	ISO 306
Thermal conductivity of melt	0.25	W/(m K)	-
Spec. heat capacity of melt	1850	J/(kg K)	-
RTI, electrical			UL 746B
60mil	130	°C	
120mil	130	°C	
240mil	130	°C	
RTI, impact			UL 746B
60mil	120	°C	
120mil	130	°C	
240mil	130	°C	
RTI, strength			UL 746B
60mil	130	°C	
120mil	130	°C	
240mil	130	°C	
Flammability	Value	Unit	Test Standard
Burning Behav. at 60mil nom. thickn.	V-0	class	IEC 60695-11-10
Thickness tested	1.5	mm	IEC 60695-11-10
UL recognition	yes	-	UL 94
Burning Behav. at thickness h	V-0	class	IEC 60695-11-10
Thickness tested	3	mm	IEC 60695-11-10
UL recognition	yes	-	UL 94
Oxygen index	30	%	ISO 4589-1/-2

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Glow Wire Flammability Index, 120mil	960	°C	IEC 60695-2-1/2
Glow Wire Ignition Temperature, 120mil	875	°C	IEC 60695-2-1/3
FMVSS Class	DNI	-	ISO 3795 (FMVSS 302)
<b>Electrical properties</b>	<b>Value</b>	<b>Unit</b>	<b>Test Standard</b>
Relative permittivity			IEC 60250
100Hz	4.1	-	
1MHz	3.9	-	
Dissipation factor			IEC 60250
100Hz	115	E-4	
1MHz	170	E-4	
Volume resistivity	>1E13	Ohm*m	IEC 60093
Surface resistivity	1E14	Ohm	IEC 60093
Electric strength	27	kV/mm	IEC 60243-1
Comparative tracking index	275	-	IEC 60112
<b>Other properties</b>	<b>Value</b>	<b>Unit</b>	<b>Test Standard</b>
Humidity absorption, 80mil	0.15	%	Sim. to ISO 62
Water absorption, 80mil	0.3	%	Sim. to ISO 62
Density	1600	kg/m <sup>3</sup>	ISO 1183
Density of melt	1320	kg/m <sup>3</sup>	-
<b>Injection</b>	<b>Value</b>	<b>Unit</b>	<b>Test Standard</b>
Drying Recommended	yes	-	-
Drying Temperature	120	°C	-
Drying Time, Dehumidified Dryer	2 - 4	h	-
Processing Moisture Content	≤0.04	%	-
Melt Temperature Optimum	250	°C	-
Min. melt temperature	240	°C	-
Max. melt temperature	260	°C	-
Mold Temperature Optimum	80	°C	-
Min. mold temperature	30	°C	-
Max. mold temperature	130	°C	-
Hold pressure range	≥60	MPa	-
Hold pressure time	3	s/mm	-
Back pressure	As low as possible		-
Ejection temperature	150	°C	-
<b>Characteristics</b>			
Processing	• Injection Molding	• Profile Extrusion	• Sheet Extrusion
Delivery form	• Pellets		
Additives	• Release agent		
Regional Availability	• North America • Europe	• Asia Pacific • South and Central America	• Near East/Africa • Global

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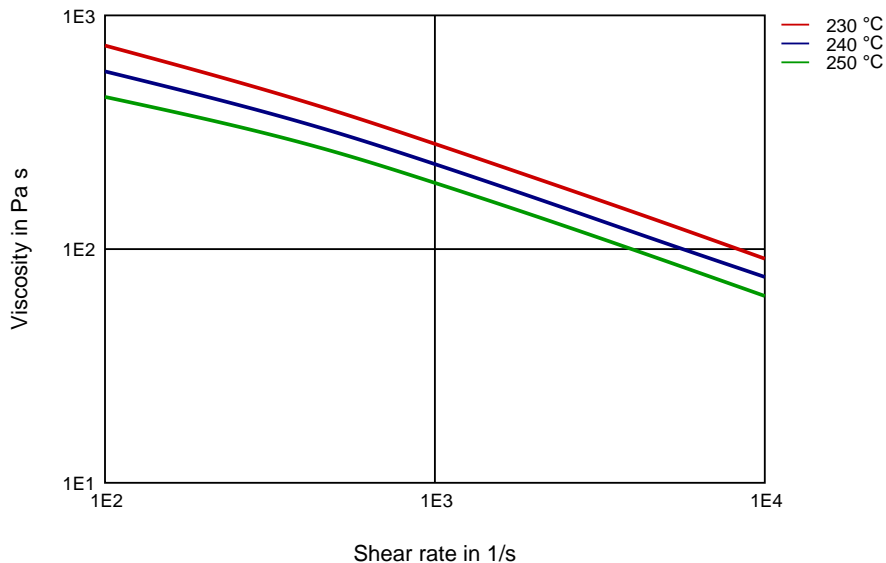


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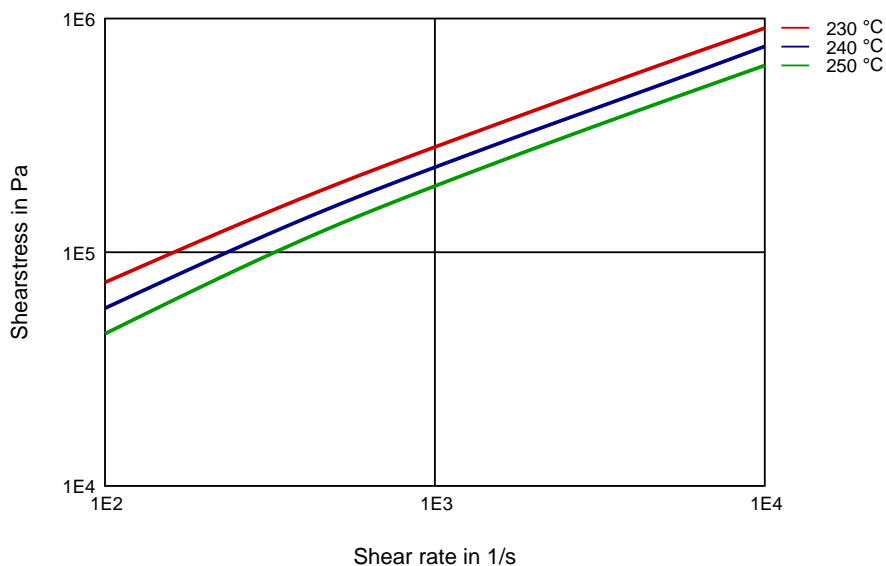
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### Diagrams

#### Viscosity-shear rate



#### Shearstress-shear rate



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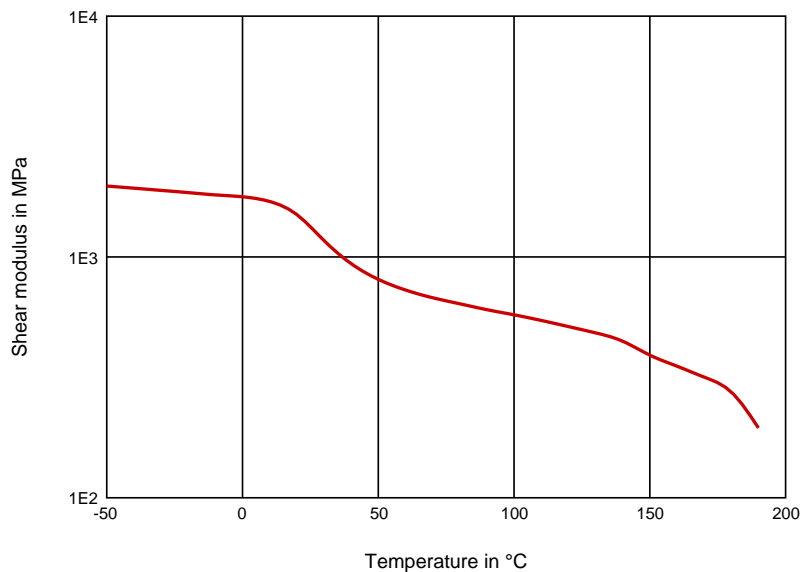
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## THERMOPLASTIC POLYESTER RESIN

Dynamic Shear modulus-temperature



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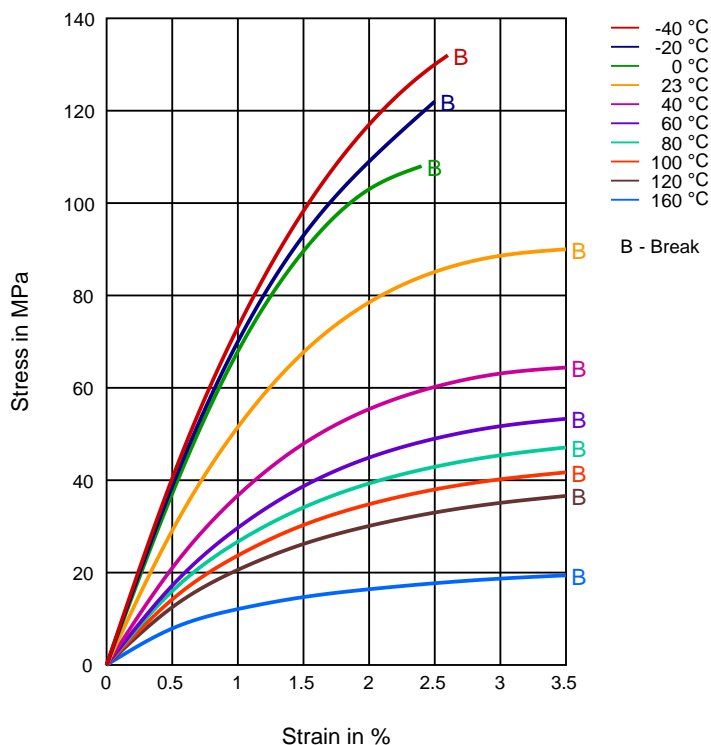
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## THERMOPLASTIC POLYESTER RESIN

Stress-strain



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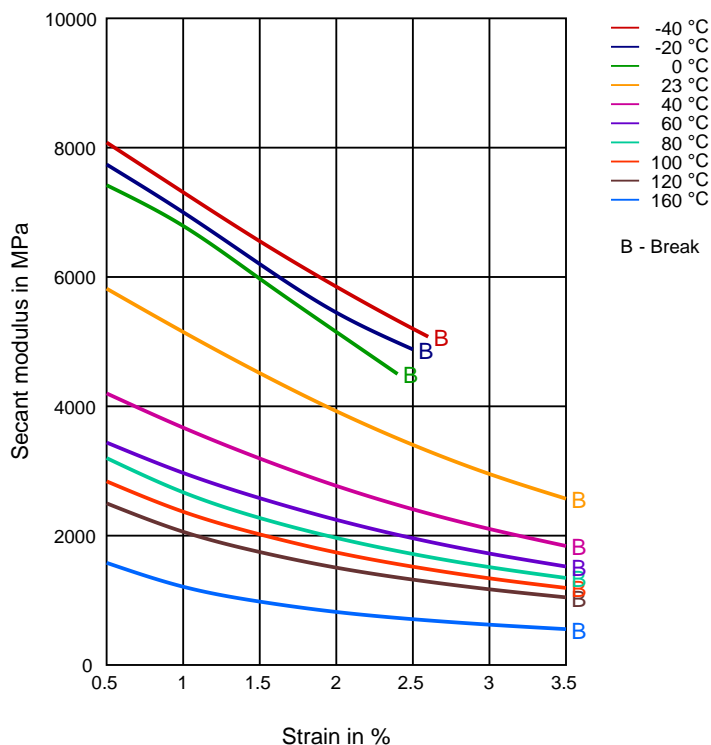
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## THERMOPLASTIC POLYESTER RESIN

Secant modulus-strain



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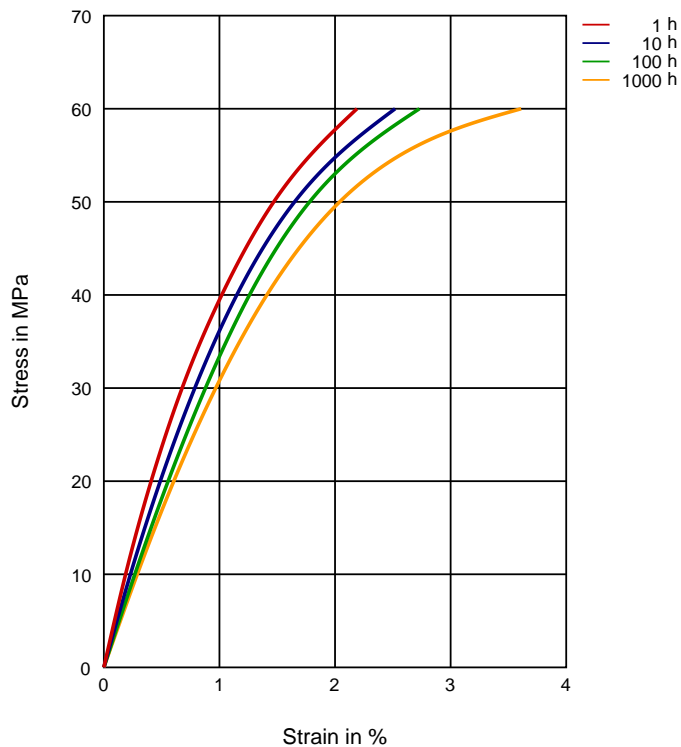
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## THERMOPLASTIC POLYESTER RESIN

Stress-strain (isochronous) 23°C



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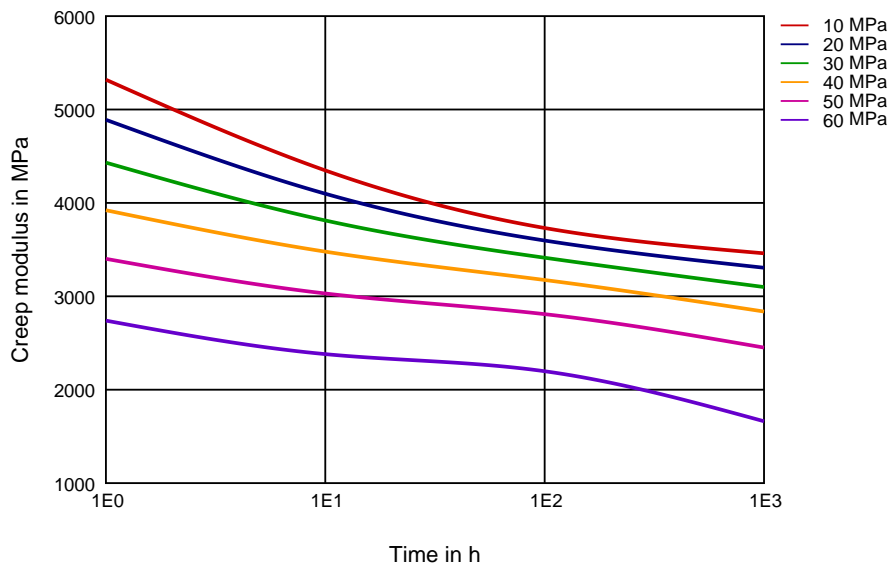
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## THERMOPLASTIC POLYESTER RESIN

Creep modulus-time 23 °C



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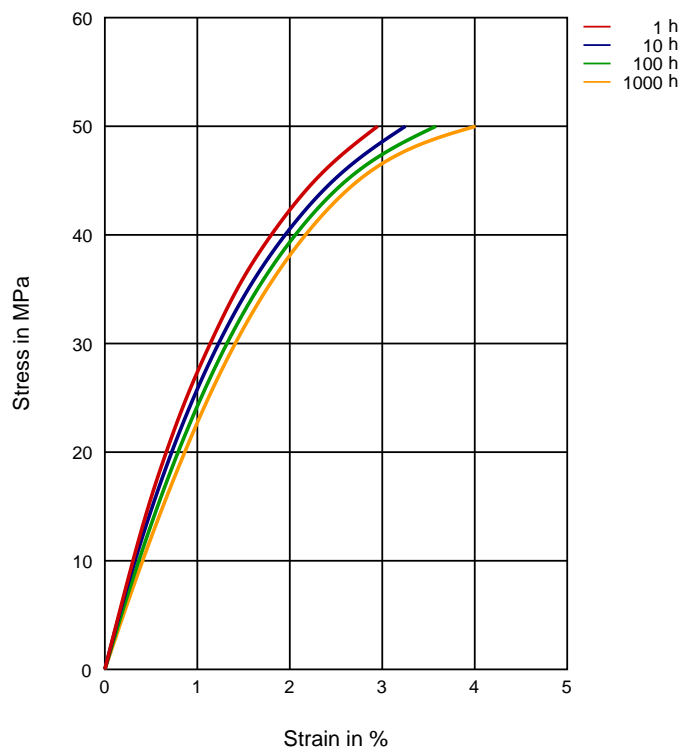




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## THERMOPLASTIC POLYESTER RESIN

Stress-strain (isochronous) 60°C



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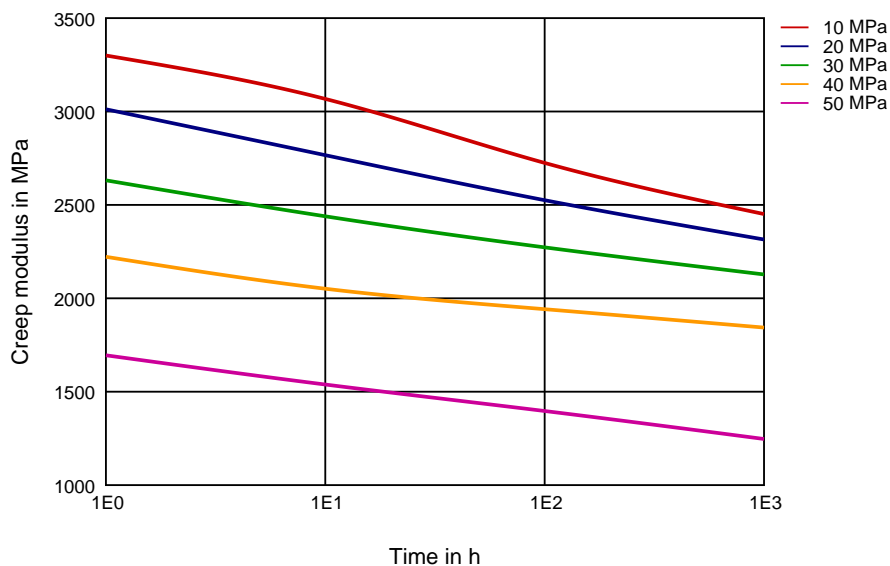


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## THERMOPLASTIC POLYESTER RESIN

Creep modulus-time 60 °C



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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)

#### 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)

### 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 160 mil (Hytrel® measured at 80 mil), IEC Electrical properties measured at 80 mil, all ASTM properties measured at 120 mil, and test temperatures are 73°F unless otherwise stated.

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