DuPont™ Zytel® FR70G25V0 NC010

NYLON RESIN

Product Information

Common features of Zytel® nylon resin include mechanical and physical properties such as high mechanical strength, excellent balance of stiffness and toughness, good high temperature performance, good electrical and flammability properties, good abrasion and chemical resistance. In addition, Zytel® nylon resins are available in different modified and reinforced grades to create a wide range of products with tailored properties for specific processes and end-uses. Zytel® nylon resin, including most flame retardant grades, offer the ability to be coloured.

The good melt stability of Zytel® 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.

Zytel® nylon resin typically is used in demanding applications in the automotive, furniture, domestic appliances, sporting goods and construction industry.

Zytel® FR70G25V0 NC010 is a 25% glass fiber reinforced, heat stabilized, flame retardant polyamide 66 resin for injection molding.

General information	Value	Unit	Test Standard
Resin Identification	PA66-GF25FR(17)	-	ISO 1043
Part Marking Code	PA66-GF25FR(17)	-	ISO 11469
Rheological properties	**dry / cond**	**Unit**	**Test Standard**
Moulding shrinkage, parallel	0.2 / -	%	ISO 294-4, 2577
Moulding shrinkage, normal	1.0 / -	%	ISO 294-4, 2577
Mechanical properties	**dry / cond**	**Unit**	**Test Standard**
Tensile Modulus	9000 / 7500	MPa	ISO 527-1/-2
Stress at break	130 / 110	MPa	ISO 527-1/-2
Strain at break	2 / 2.6	%	ISO 527-1/-2
Poisson's ratio	0.34 / 0.34	-	ISO 527-1/-2
Charpy impact strength			ISO 179/1eU
23°C	43 / -	kJ/m²	
-30°C	45 / -	kJ/m²	
Charpy notched impact strength			ISO 179/1eA
23°C	10 / -	kJ/m²	
-30°C	9 / -	kJ/m²	
Izod notched impact strength			ISO 180/1A
23°C	6.5 / -	kJ/m²	
-30°C	6 / -	kJ/m²	
Thermal properties	**dry / cond**	**Unit**	**Test Standard**
Melting temperature, 10°C/min	260 / *	°C	ISO 11357-1/-3
Temp. of deflection under load, 1.8 MPa	243 / *	°C	ISO 75-1/-2
Vicat softening temperature, 50°C/h, 50N	235 / *	°C	ISO 306
Coeff. of linear therm. expansion, parallel	26 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	83 / *	E-6/K	ISO 11359-1/-2
Thermal conductivity of melt	0.22	W/(m K)	-
Spec. heat capacity of melt	1910	J/(kg K)	-
RTI, electrical			UL 746B
0.75mm	120 / *	°C	
1.5mm	130 / *	°C	
3mm	130	°C	
RTI, impact			UL 746B
0.75mm	120	°C	
1.5mm	120 / *	°C	
3mm	120	°C	
RTI, strength			UL 746B
0.75mm	130	°C	
1.5mm	130 / *	°C	
3mm	130	°C	

To find out more, visit DuPont Performance Polymers or contact nearest DuPont location.

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Flammability	dry / cond	Unit	Test Standard
Burning Behav. at 1.5mm nom. thickn.	V-0 / *	class	IEC 60695-11-10
Thickness tested	1.5 / *	mm	IEC 60695-11-10
UL recognition	UL / *	-	UL 94
Burning Behav. at thickness h	V-0 / *	class	IEC 60695-11-10
Thickness tested	0.83 / *	mm	IEC 60695-11-10
UL recognition	UL / *	-	UL 94
Burning Behav. 5V at thickness h	5VA / *	class	IEC 60695-11-20
Thickness tested	1.5 / *	mm	IEC 60695-11-20
UL recognition	UL / *	-	UL 94
Glow Wire Flammability Index			IEC 60695-2-12
1.5mm	960 / -	°C	
3mm	850 / -	°C	
Glow Wire Ignition Temperature			IEC 60695-2-13
0.75mm	960 / -	°C	
3mm	960 / -	°C	
Flammability, 3.0mm	V-0 / *	-	IEC 60695-11-10
FMVSS Class	DNI	-	ISO 3795 (FMVSS 302)
Electrical properties	**dry / cond**	**Unit**	**Test Standard**
Surface resistivity	* / 1E13	Ohm	IEC 62631-3-2
Electric strength	37 / 26	kV/mm	IEC 60243-1
Comparative tracking index			
Comparative tracking index	350 / 325	-	IEC 60112
3.0mm	2 / 2	PLC	UL 746A
Other properties	**dry / cond**	**Unit**	**Test Standard**
Humidity absorption, 2mm	0.9 / *	%	Sim. to ISO 62
Water absorption, 2mm	3.4 / *	%	Sim. to ISO 62
Density	1530 / -	kg/m³	ISO 1183
Density of melt	1350	kg/m³	-
VDA Properties	**Value**	**Unit**	**Test Standard**
Emission of organic compounds	4.7	µgC/g	VDA 277
Odour	4.5	class	VDA 270
Injection	**dry / cond**	**Unit**	**Test Standard**
Drying Recommended	yes	-	-
Drying Temperature	≥80	°C	-
Drying Time, Dehumidified Dryer	2 - 4	h	-
Processing Moisture Content	≤0.2	%	-
Melt Temperature Optimum	290	°C	-
Min. melt temperature	280	°C	-
Max. melt temperature	300	°C	-
Max. screw tangential speed	0.2 / *	m/s	-
Mold Temperature Optimum	100	°C	-
Min. mould temperature	50	°C	-
Max. mould temperature	90	°C	-
Hold pressure range	50 - 100	MPa	-
Hold pressure time	3	s/mm	-
Ejection temperature	210	°C	-

Characteristics		
Processing	• Injection Moulding	
Delivery form	• Pellets	
Additives	• Release agent	
Regional Availability	• Europe	• Near East/Africa

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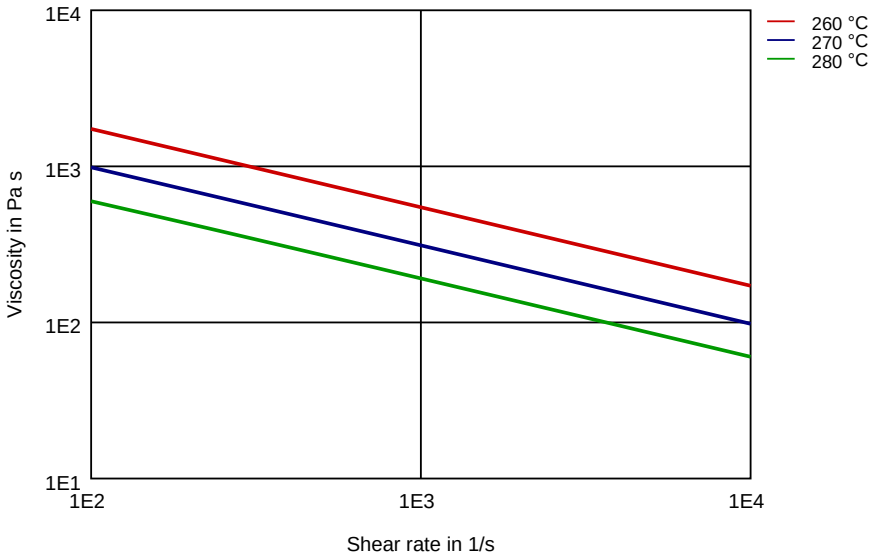
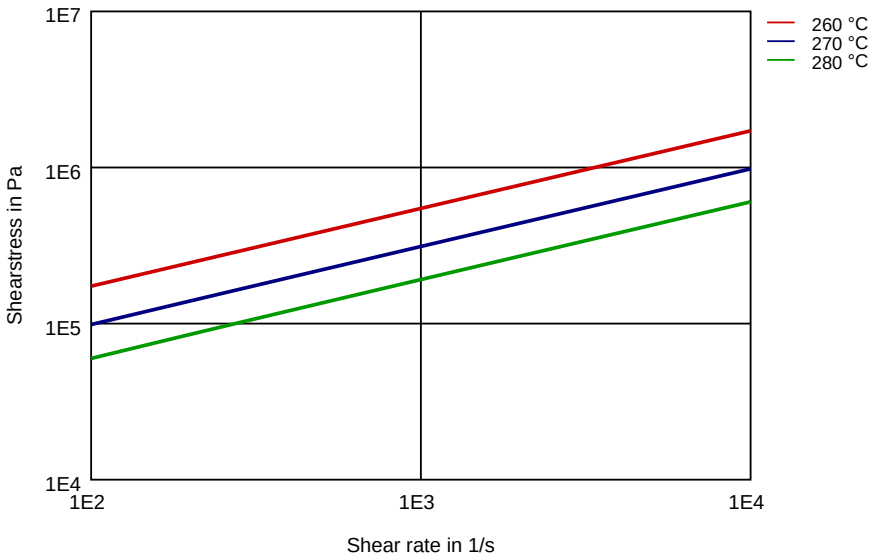
Diagrams

Viscosity-shear rate



Shearstress-shear rate



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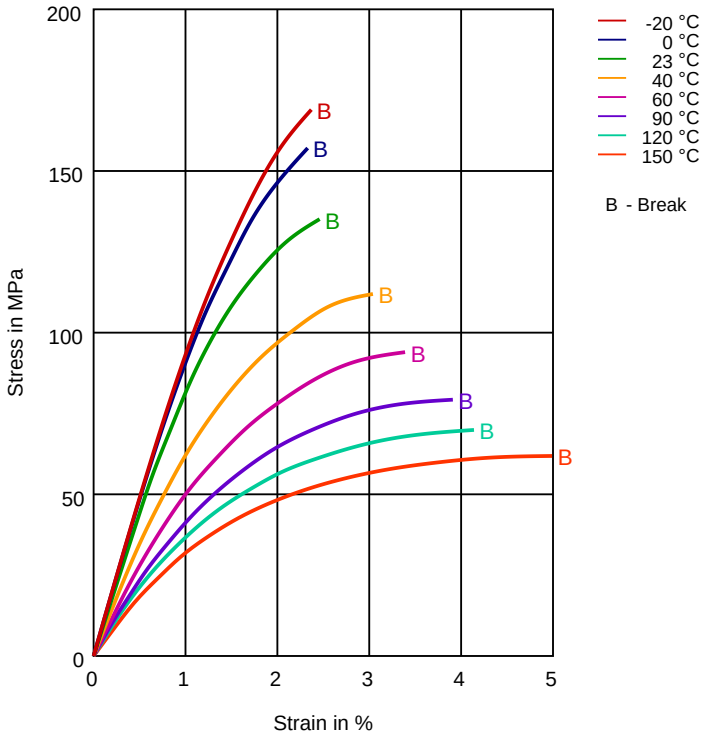
Stress-strain (dry)



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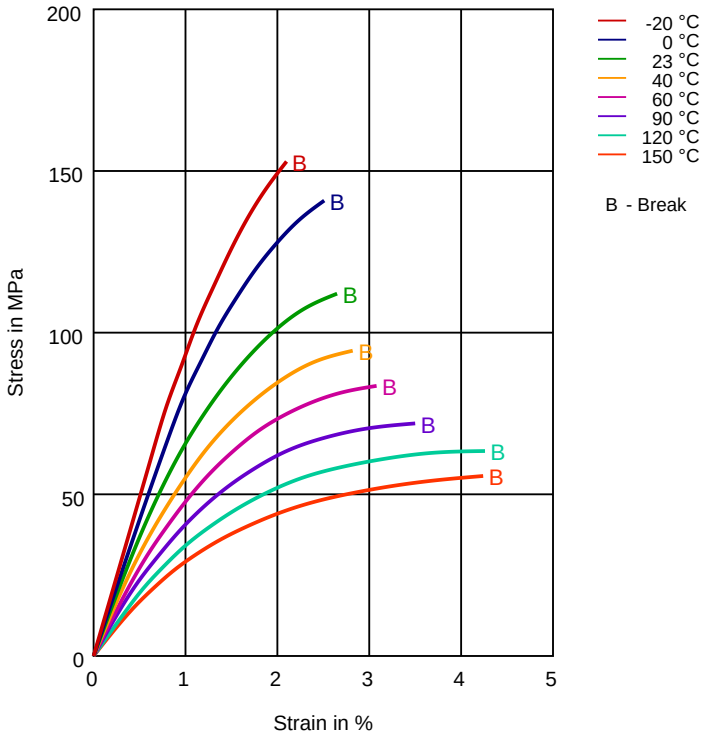
Stress-strain (cond.)



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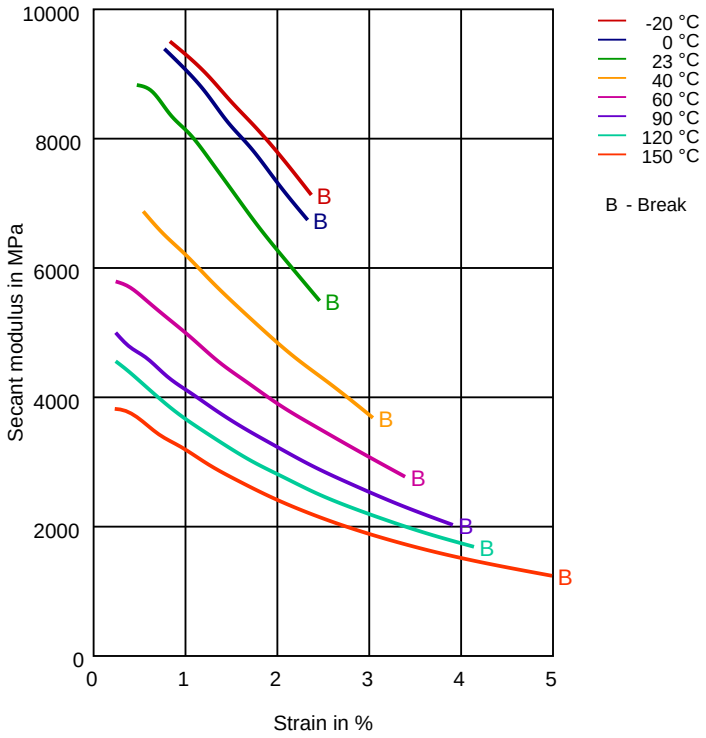
Secant modulus-strain (dry)



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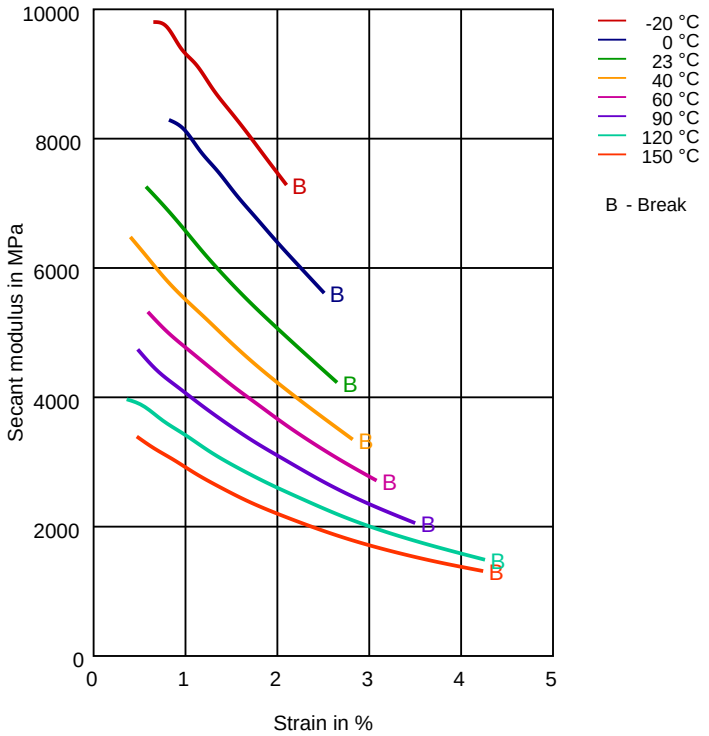
Secant modulus-strain (cond.)



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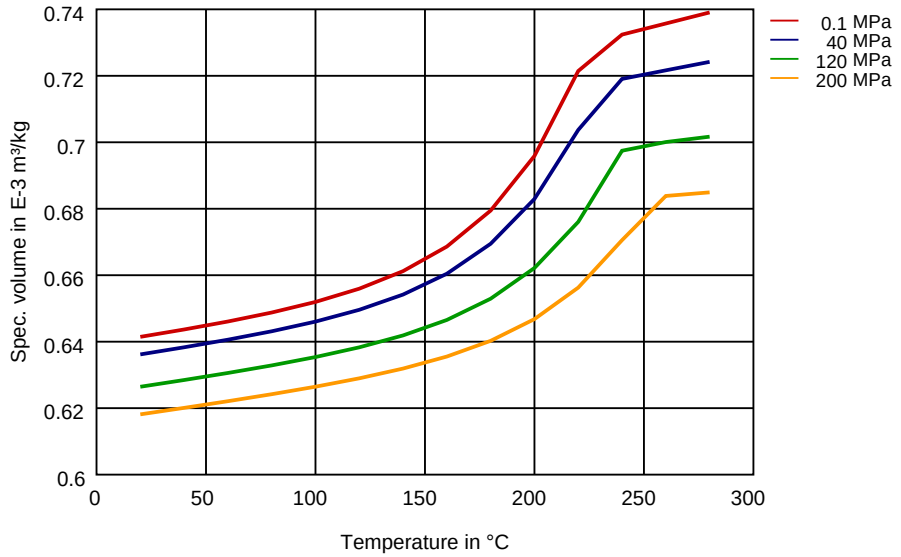
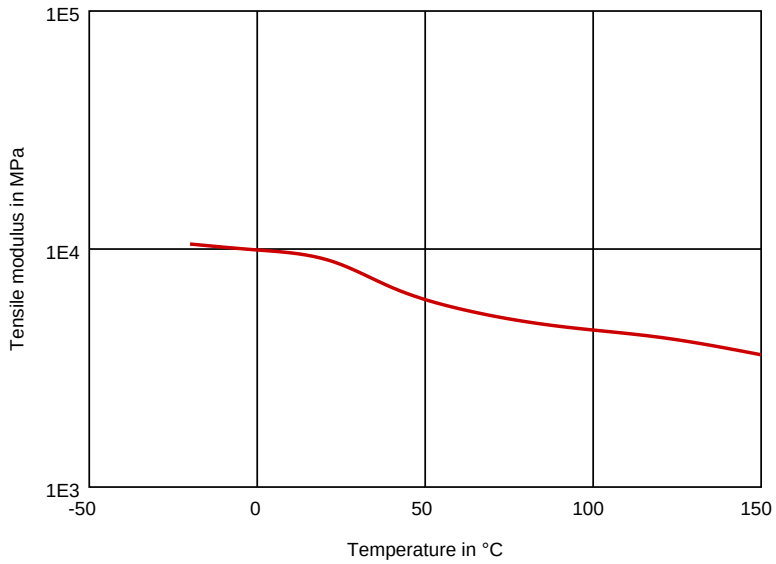
Specific volume-temperature (pvT)



Tensile modulus-temperature (dry)



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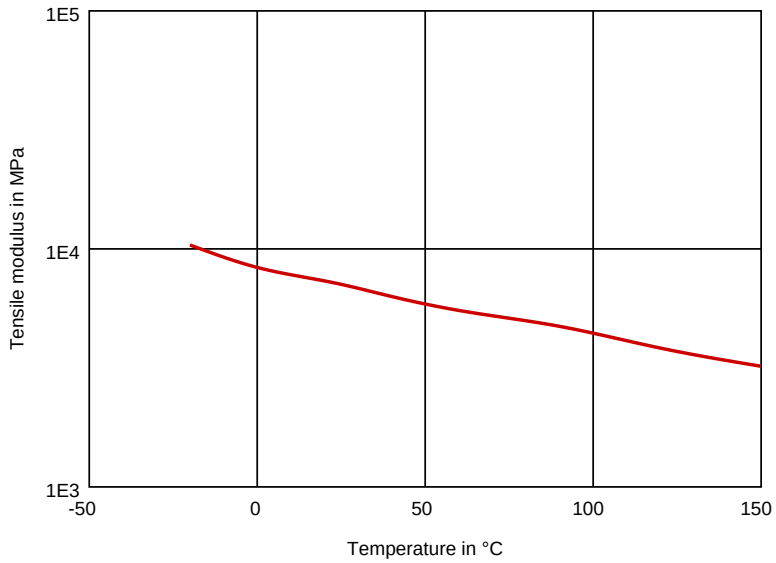
Tensile modulus-temperature (cond.)



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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 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.

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