

DuPont™ Zytel® 70G30HSL BK039B

NYLON RESIN

Product Information

ASTM D6779 PA012G30 A53480

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® 70G30HSL BK039B is a 30% glass reinforced, heat stabilized, black nylon 66 resin for injection molding.

General information	Value	Unit	Test Standard
Resin Identification	PA66-GF30	-	ISO 1043
Part Marking Code	PA66-GF30	-	ISO 11469
Rheological properties	dry / cond	Unit	Test Standard
Moulding shrinkage, parallel	0.3 / -	%	ISO 294-4, 2577
Moulding shrinkage, normal	1.1 / -	%	ISO 294-4, 2577
Mechanical properties	dry / cond	Unit	Test Standard
Tensile Modulus	10000 / 7000	MPa	ISO 527-1/-2
Stress at break	190 / 120	MPa	ISO 527-1/-2
Strain at break	3 / 4.5	%	ISO 527-1/-2
Flexural Modulus	9000 / -	MPa	ISO 178
Poisson's ratio	0.34 / 0.35	-	ISO 527-1/-2
Tensile creep modulus			ISO 899-1
1h	* / 6800	MPa	
1000h	* / 5100	MPa	
Charpy impact strength			ISO 179/1eU
23°C	75 / 80	kJ/m²	
-30°C	70 / 70	kJ/m²	
Charpy notched impact strength			ISO 179/1eA
23°C	10 / 12	kJ/m²	
-30°C	9 / 9	kJ/m²	
Puncture - maximum force, 23°C	970 / -	N	ISO 6603-2
Puncture energy, 23°C	4.5 / -	J	ISO 6603-2
Izod notched impact strength			ISO 180/1A
23°C	10 / 12	kJ/m²	
-40°C	7 / -	kJ/m²	
Thermal properties	dry / cond	Unit	Test Standard
Melting temperature, 10°C/min	263 / *	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	80 / 20	°C	ISO 11357-1/-2
Temp. of deflection under load			ISO 75-1/-2
1.8 MPa	250 / *	°C	
0.45 MPa	258 / *	°C	
Vicat softening temperature, 50°C/h, 50N	250 / *	°C	ISO 306
Thermal conductivity solid	0.36	W/(m K)	-
Thermal conductivity of melt	0.21	W/(m K)	-
Spec. heat capacity of melt	2290	J/(kg K)	-
Eff. thermal diffusivity	7E-8	m²/s	-

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RTI, electrical			UL 746B
0.75mm	140 / *	°C	
1.5mm	140 / *	°C	
3mm	140	°C	
RTI, impact			UL 746B
0.75mm	125	°C	
1.5mm	125 / *	°C	
3mm	125	°C	
RTI, strength			UL 746B
0.75mm	140	°C	
1.5mm	140 / *	°C	
3mm	140	°C	
Flammability	dry / cond	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
UL recognition	UL / *	-	UL 94
Burning Behav. at thickness h	HB / *	class	IEC 60695-11-10
Thickness tested	0.75 / *	mm	IEC 60695-11-10
UL recognition	UL / *	-	UL 94
Oxygen index	24 / *	%	ISO 4589-1/-2
Glow Wire Flammability Index			IEC 60695-2-12
1mm	700 / -	°C	
2mm	750 / -	°C	
3mm	800 / -	°C	
Glow Wire Ignition Temperature			IEC 60695-2-13
1mm	725 / -	°C	
2mm	725 / -	°C	
3mm	775 / -	°C	
Glow Wire Temperature, No Flame			IEC 60335-1
1mm	700 / -	°C	
2mm	700 / -	°C	
3mm	750 / -	°C	
FMVSS Class	B	-	ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	22	mm/min	ISO 3795 (FMVSS 302)
Electrical properties	dry / cond	Unit	Test Standard
Relative permittivity			IEC 62631-2-1
100Hz	4.4 / 11	-	
1MHz	4.1 / 4.6	-	
Dissipation factor			IEC 62631-2-1
100Hz	70 / 4600	E-4	
1MHz	150 / 650	E-4	
Volume resistivity	>1E13 / 1E9	Ohm*m	IEC 62631-3-1
Surface resistivity	* / 1E13	Ohm	IEC 62631-3-2
Electric strength	38 / 32	kV/mm	IEC 60243-1
Comparative tracking index			
Comparative tracking index	400 / -	-	IEC 60112
CTI, 23°C	1 / -	PLC	UL 746A
Other properties	dry / cond	Unit	Test Standard
Humidity absorption, 2mm	1.9 / *	%	Sim. to ISO 62
Water absorption, 2mm	6 / *	%	Sim. to ISO 62
Density	1370 / -	kg/m³	ISO 1183
Density of melt	1200	kg/m³	-
VDA Properties	dry / cond	Unit	Test Standard
Light stability grey scale	4	-	ISO 105-A02
Emission of organic compounds	10	µgC/g	VDA 277
Odour	3	class	VDA 270

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Fogging, G-value (condensate)	0.6 / *	mg	ISO 6452
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	295	°C	-
Min. melt temperature	285	°C	-
Max. melt temperature	305	°C	-
Max. screw tangential speed	0.2 / *	m/s	-
Mold Temperature Optimum	100	°C	-
Min. mould temperature	70	°C	-
Max. mould temperature	120	°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	• Lubricants	• Release agent
Special characteristics	• Heat stabilised or stable to heat	
Regional Availability	• Europe	• Near East/Africa

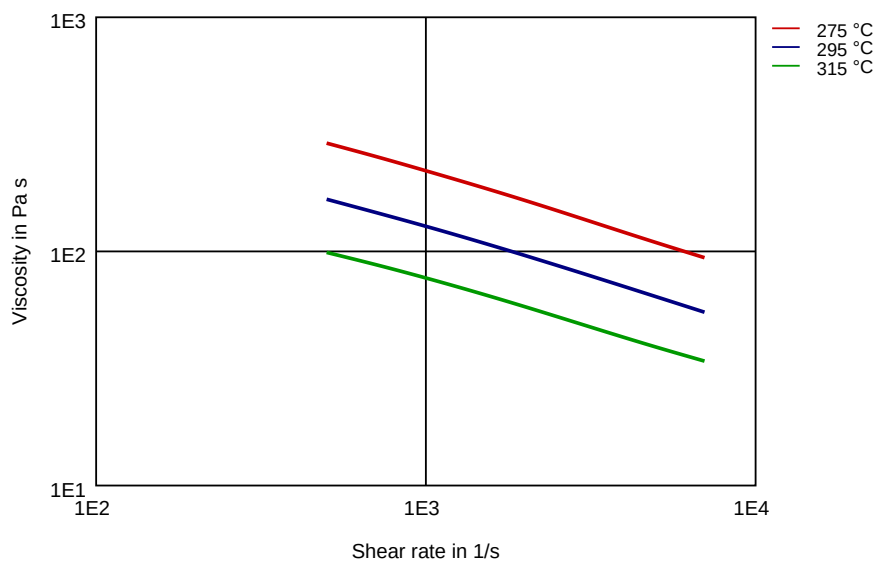


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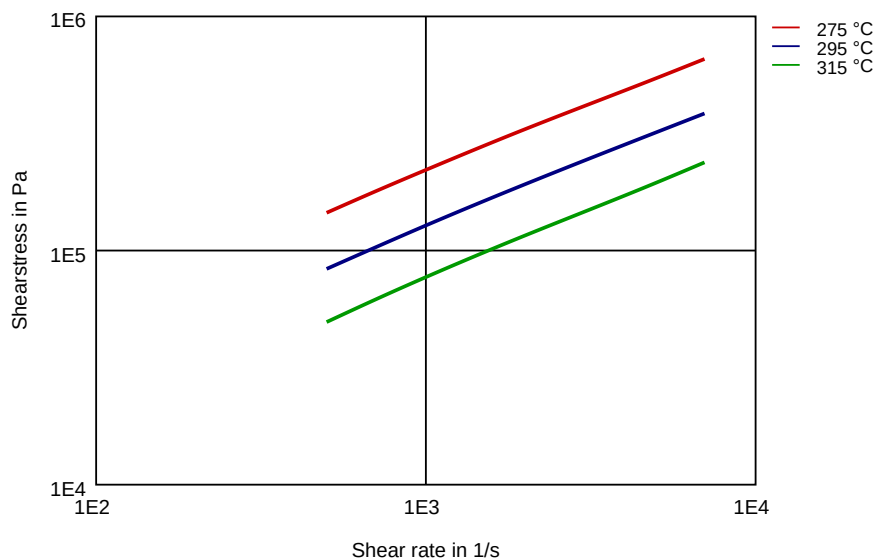
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Diagrams

Viscosity-shear rate



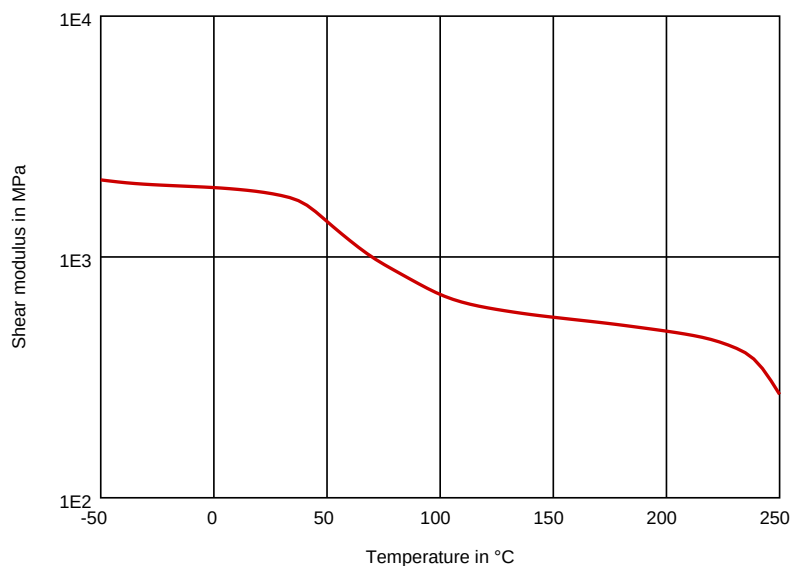
Shearstress-shear rate



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Dynamic Shear modulus-temperature (dry)



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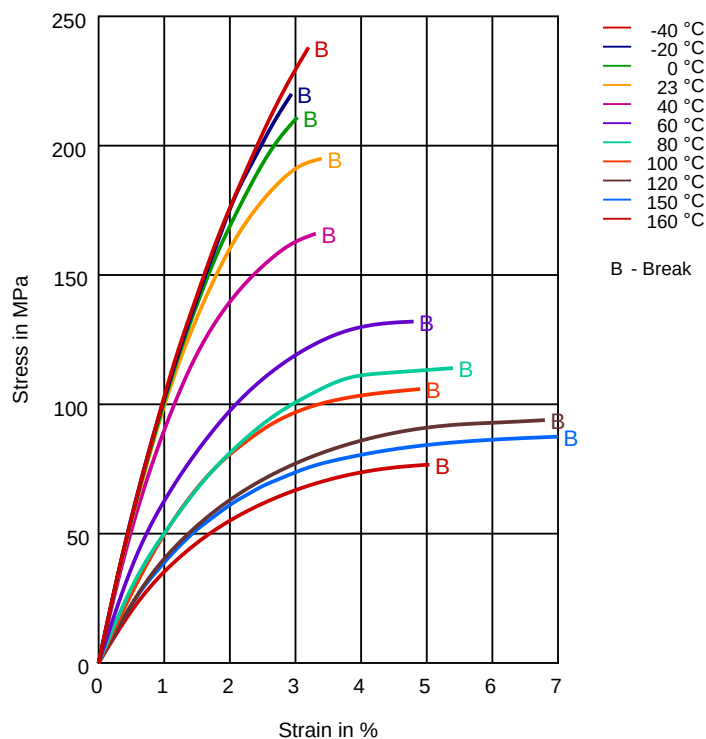
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Stress-strain (dry)



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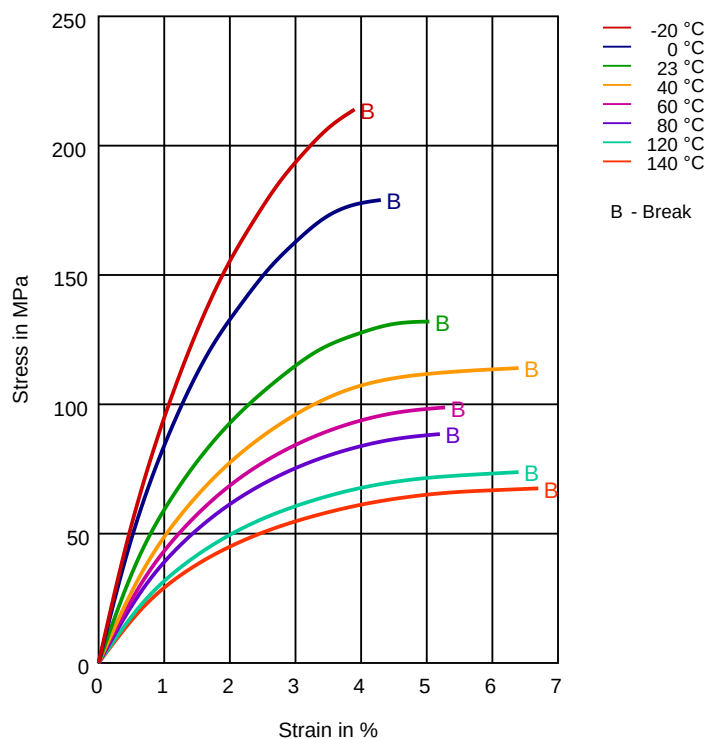
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Stress-strain (cond.)



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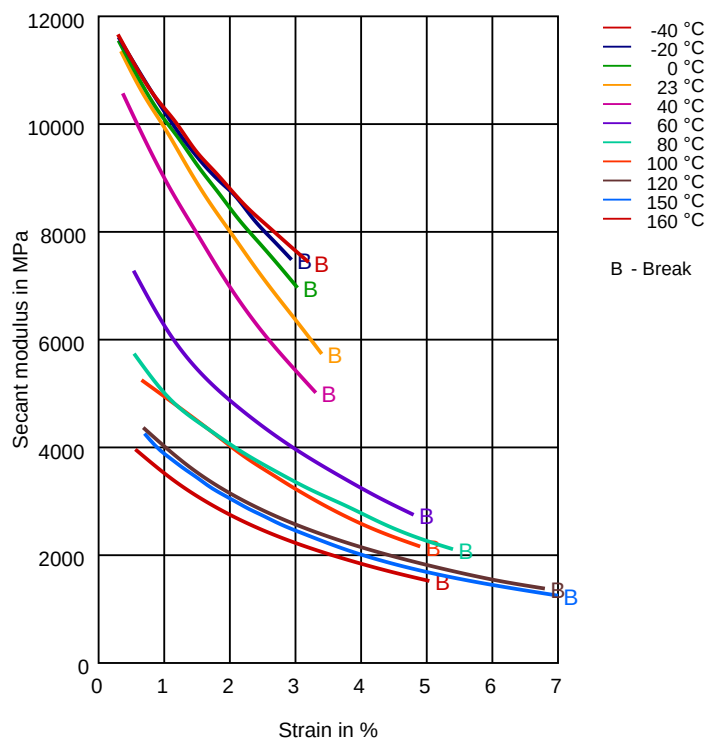
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Secant modulus-strain (dry)



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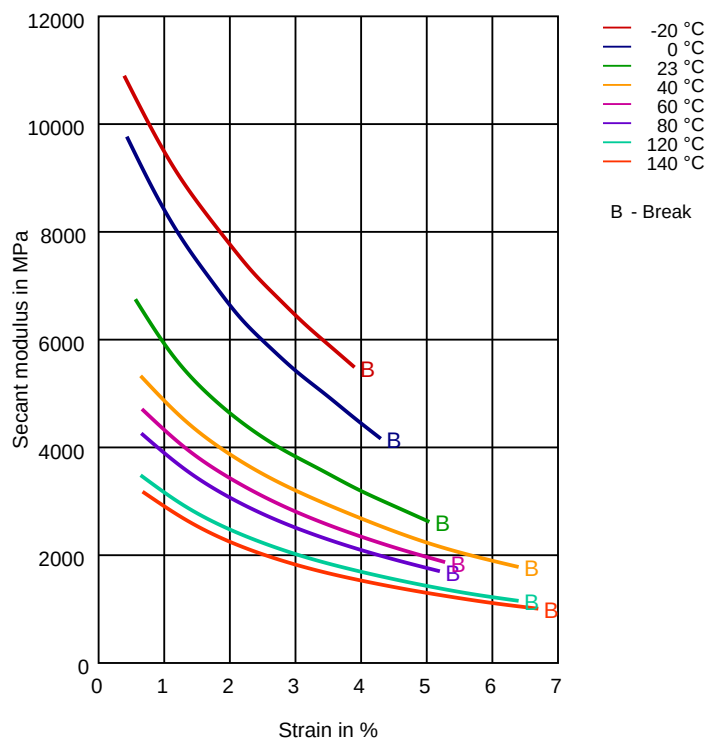
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Secant modulus-strain (cond.)



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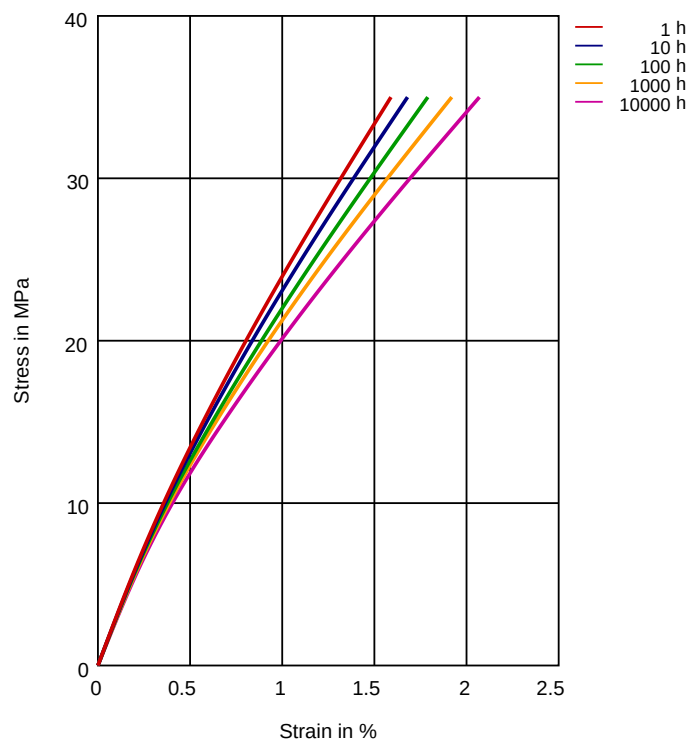
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Stress-strain (isochronous) 140°C (cond.)



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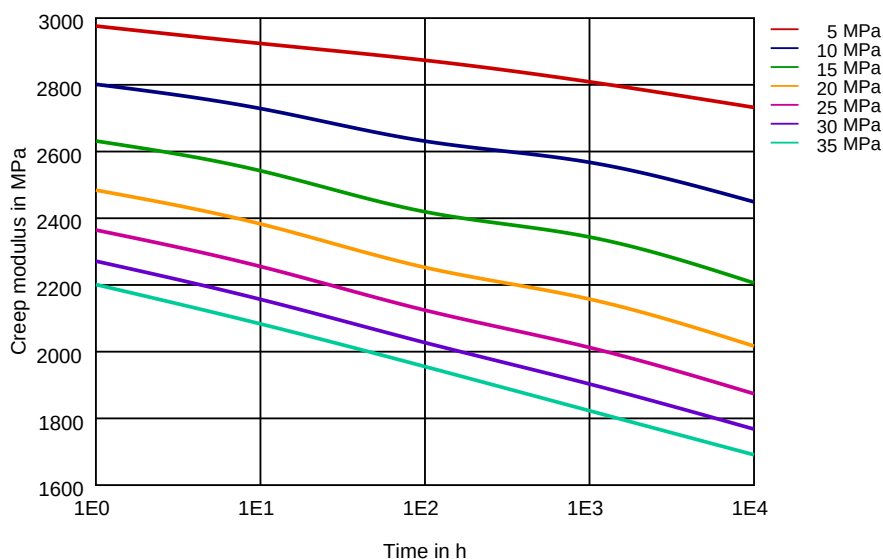


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Creep modulus-time 140°C(cond.)



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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)
- ✗ 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).

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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