

DuPont™ Hytrel® G4074

THERMOPLASTIC POLYESTER ELASTOMER

Product Information

Common features of Hytrel® thermoplastic polyester elastomer include mechanical and physical properties such as exceptional toughness and resilience, high resistance to creep, impact and flex fatigue, flexibility at low temperatures and good retention of properties at elevated temperatures. In addition, it resists many industrial chemicals, oils and solvents. Special grades include heat stabilised, flame retardant, food contact compliant, blow molding and extrusion grades. Concentrates offered include black pigments, UV protection additives, heat stabilisers, and flame retardants.

Hytrel® thermoplastic polyester elastomer is plasticiser free.

The good melt stability of Hytrel® thermoplastic polyester elastomer normally enables the recycling of properly handled production waste. If recycling is not possible, DuPont recommends, as the preferred option, incineration with energy recovery (-24 kJ/g of base polymer) in appropriately equipped installations.

For disposal, local regulations have to be observed.

Hytrel® thermoplastic polyester elastomer typically is used in demanding applications in the automotive, fluid power, electrical/electronic, consumer goods, appliance and power tool, sporting goods, furniture, industrial and off-road transportation/equipment industry.

Hytrel® G4074 is a low modulus grade with nominal hardness of 40D. It contains discoloring stabilizer. It can be processed by many conventional thermoplastic processing techniques like injection molding and extrusion.

Typical applications:

Hose and tubing, hose jackets, wire and cable jackets, film and sheeting, moulded products. Not suited for light-colored finished products.

General information	Value	Unit	Test Standard
Resin Identification	TPC-ET	-	-
Part Marking Code	>TPC-ET<	-	ISO 11469
Rheological properties	Value	Unit	Test Standard
Melt volume-flow rate	5	cm ³ /10min	ISO 1133
Temperature	190	°C	ISO 1133
Load	2.16	kg	ISO 1133
Melt mass-flow rate	5.3	g/10min	ISO 1133
Melt mass-flow rate, Temperature	190	°C	-
Melt mass-flow rate, Load	2.16	kg	-
Moulding shrinkage, parallel	0.8	%	ISO 294-4, 2577
Moulding shrinkage, normal	0.8	%	ISO 294-4, 2577
Mechanical properties (TPE)	Value	Unit	Test Standard
Tensile Modulus	55	MPa	ISO 527-1/-2
Stress at 5% strain	2.5	MPa	ISO 527-1/-2
Stress at 10% strain	4.4	MPa	ISO 527-1/-2
Stress at 50% strain	8	MPa	ISO 527-1/-2
Stress at break	20	MPa	ISO 527-1/-2
Strain at break	250	%	ISO 527-1/-2
Nominal strain at break	360	%	ISO 527-1/-2
Tear strength, parallel	86	kN/m	ISO 34-1
Tear strength, normal	96	kN/m	ISO 34-1
Abrasion resistance	50	mm ³	ISO 4649
Shore D hardness, max	40	-	ISO 868
Shore D hardness, 15s	35	-	ISO 868
Mechanical properties	Value	Unit	Test Standard
Flexural Modulus	65	MPa	ISO 178
Tensile creep modulus			ISO 899-1
1h	45	MPa	
1000h	35	MPa	

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Charpy impact strength			ISO 179/1eU
23 °C	N	kJ/m ²	
-30 °C	N	kJ/m ²	
Charpy notched impact strength			ISO 179/1eA
23 °C	N	kJ/m ²	
-30 °C	N	kJ/m ²	
Brittleness temperature	-60	°C	ISO 974
Izod notched impact strength			ISO 180/1A
23 °C	N	kJ/m ²	
-40 °C	N	kJ/m ²	
Thermal properties	Value	Unit	Test Standard
Melting temperature, 10 °C/min	170	°C	ISO 11357-1/-3
Glass transition temperature, 10 °C/min	-35	°C	ISO 11357-1/-2
Vicat softening temperature, 50 °C/h, 10N	115	°C	ISO 306
Coeff. of linear therm. expansion, parallel	217	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion			
normal	205	E-6/K	ISO 11359-1/-2
Normal, 23-55 °C (73-130 °F)	205	E-6/K	ASTM E 831
Normal, -40-23 °C	227	E-6/K	ISO 11359-1/-2
Parallel, 23-55 °C (73-130 °F)	217	E-6/K	ASTM E 831
Parallel, -40-23 °C	191	E-6/K	ISO 11359-1/-2
Thermal conductivity of melt	0.26	W/(m K)	-
Spec. heat capacity of melt	2050	J/(kg K)	-
Eff. thermal diffusivity	5.44E-8	m ² /s	-
RTI, electrical			UL 746B
0.8mm	90	°C	
1.5mm	90	°C	
3mm	90	°C	
RTI, impact			UL 746B
0.8mm	50	°C	
1.5mm	85	°C	
3mm	85	°C	
RTI, strength			UL 746B
0.8mm	50	°C	
1.5mm	85	°C	
3mm	85	°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
UL recognition	UL	-	-
Burning Behav. at thickness h	HB	class	IEC 60695-11-10
Thickness tested	3.0	mm	IEC 60695-11-10
UL recognition	UL	-	-
Oxygen index	20	%	ISO 4589-1/-2
Flammability, 3.0mm	HB	-	IEC 60695-11-10
Electrical properties	Value	Unit	Test Standard
Relative permittivity			IEC 60250
100Hz	5.7	-	
1MHz	5	-	
Dissipation factor			IEC 60250
100Hz	550	E-4	
1MHz	530	E-4	
Volume resistivity	4E9	Ohm*m	IEC 60093
Surface resistivity	2E13	Ohm	IEC 60093
Electric strength	17	kV/mm	IEC 60243-1

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Other properties	Value	Unit	Test Standard
Humidity absorption, 2mm	0.4	%	Sim. to ISO 62
Water absorption, 2mm	3.7	%	Sim. to ISO 62
Density	1180	kg/m ³	ISO 1183
Density of melt	1030	kg/m ³	-
Water Absorption, Immersion 24h	2.1	%	ASTM D 570

Characteristics			
Processing	<ul style="list-style-type: none"> • Injection Moulding • Film Extrusion • Profile Extrusion 	<ul style="list-style-type: none"> • Sheet Extrusion • Other Extrusion • Blow Moulding 	<ul style="list-style-type: none"> • Casting • Thermoforming
Delivery form	<ul style="list-style-type: none"> • Pellets 		
Special characteristics	<ul style="list-style-type: none"> • Heat stabilised or stable to heat 		
Regional Availability	<ul style="list-style-type: none"> • North America • Europe 	<ul style="list-style-type: none"> • Asia Pacific • South and Central America 	<ul style="list-style-type: none"> • Near East/Africa • Global

Processing Texts

Injection molding

PREPROCESSING

Drying recommended = Yes
 Drying temperature = 80°C
 Drying time, dehumidified dryer = 2-3 h
 Processing moisture content = <0.08 %

PROCESSING

Melt temperature optimum = 200°C
 Mold temperature optimum = 40°C
 Mold temperature range = 30-40°C

Profile extrusion

PREPROCESSING

Drying temperature = 80°C
 Drying time, dehumidified dryer = 2-3 h
 Processing moisture content = <0.06 %

PROCESSING

Melt temperature optimum = 195°C
 Melt temperature range = 185-200°C

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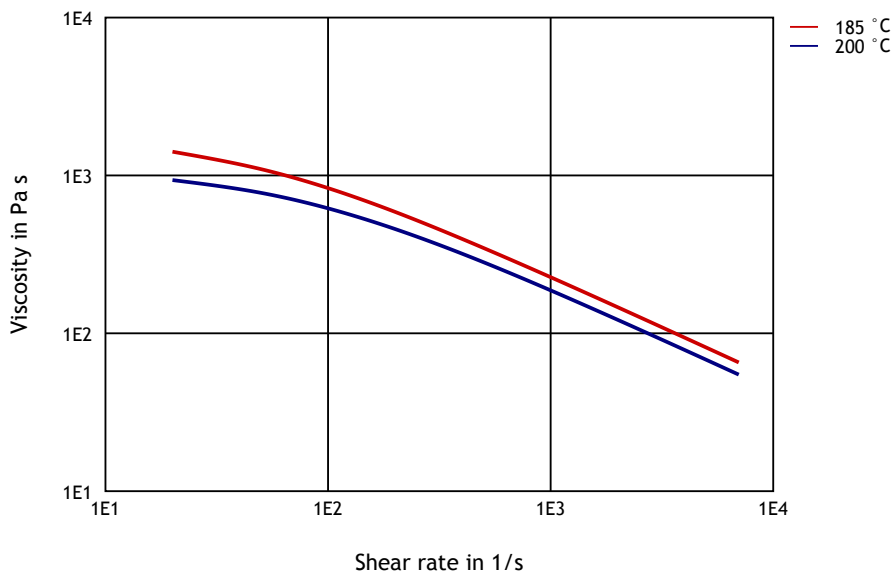


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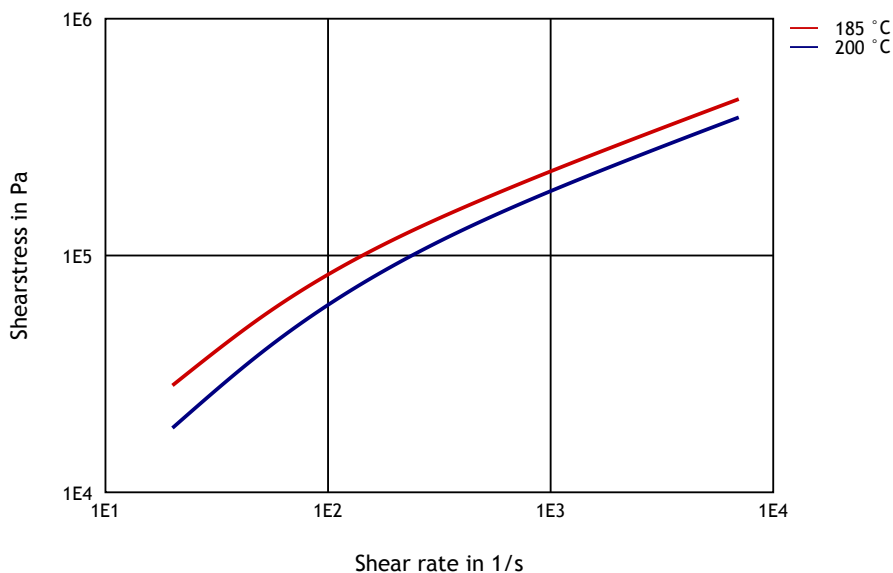
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Diagrams

Viscosity-shear rate



Shearstress-shear rate



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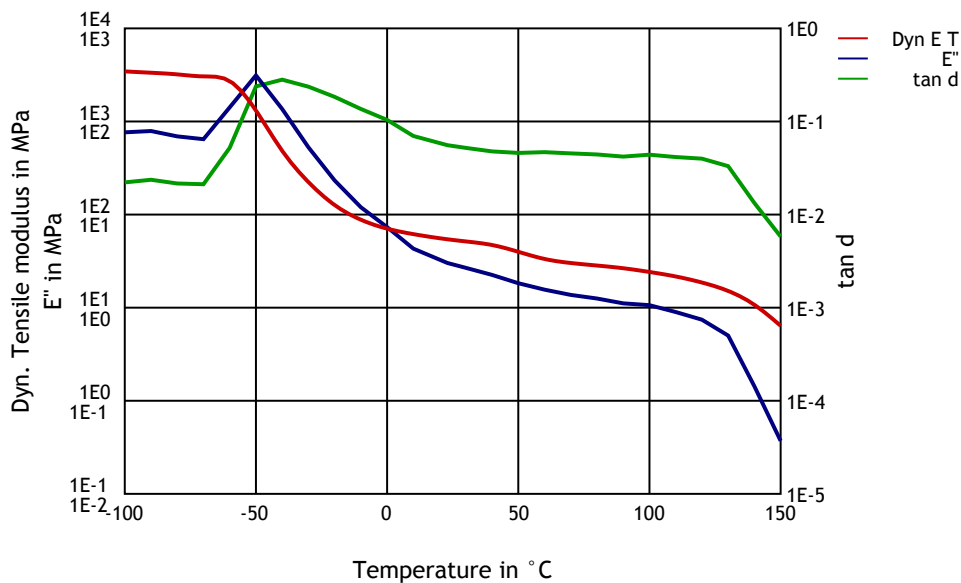
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Dynamic Tensile modulus-temperature



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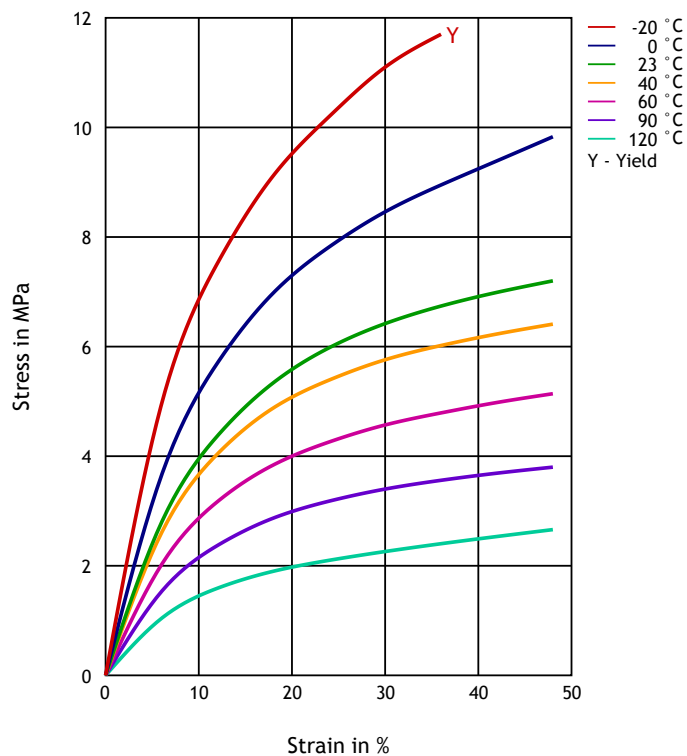
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Stress-strain



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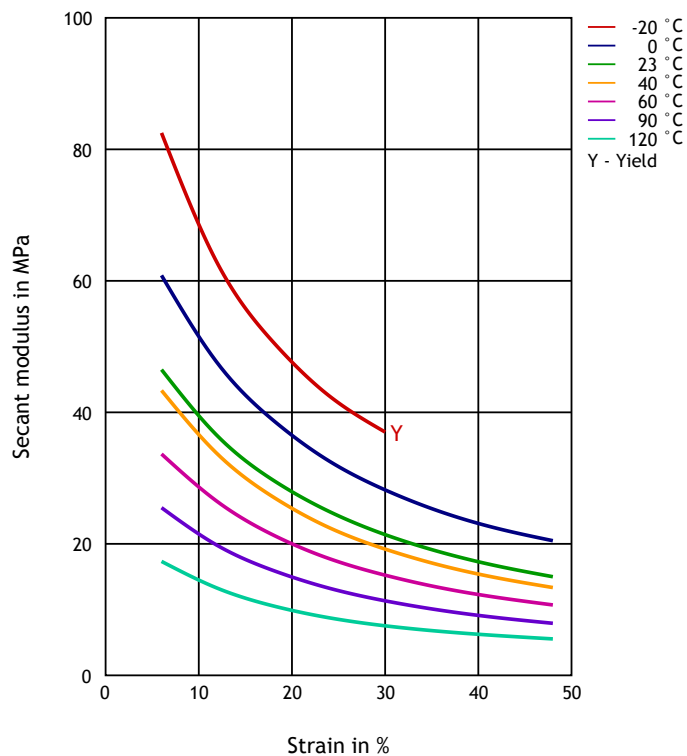
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Secant modulus-strain



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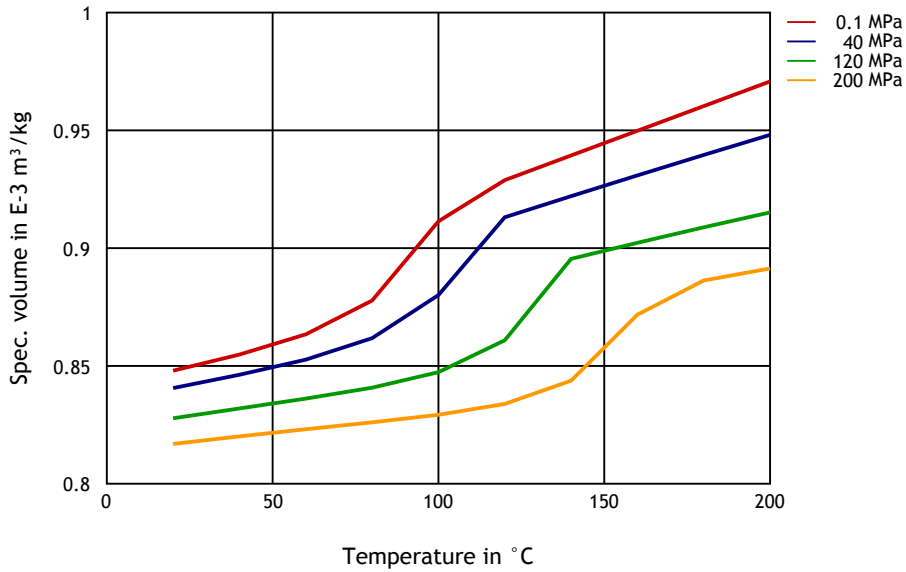
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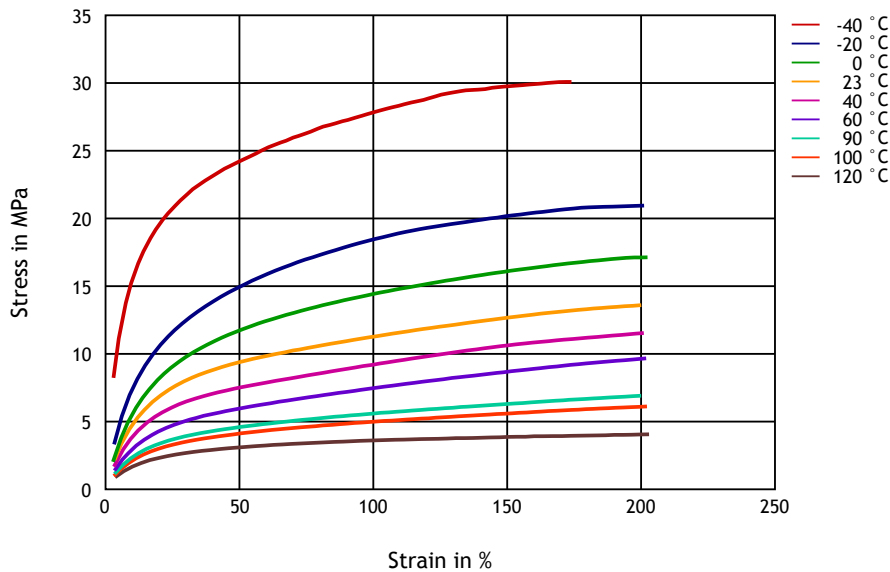
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Specific volume-temperature (pvT)



Stress-Strain (TPE)



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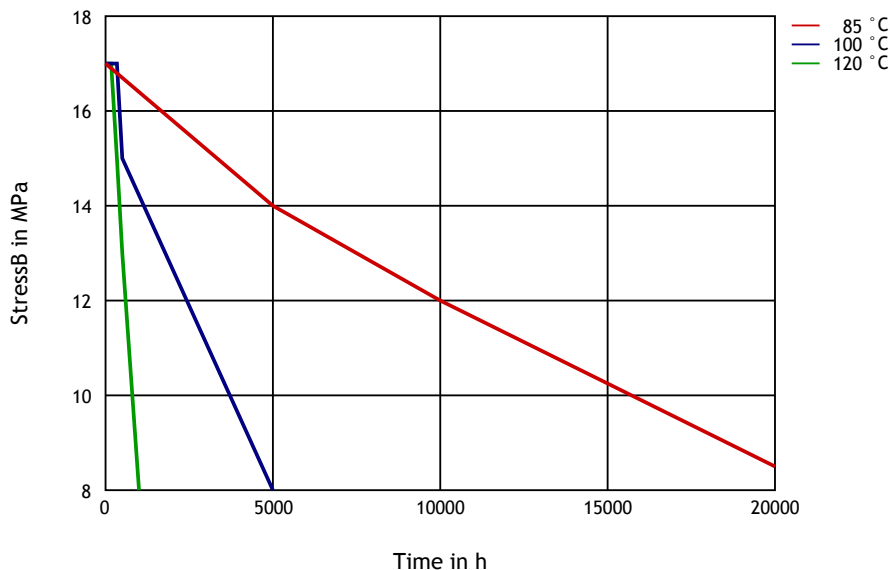
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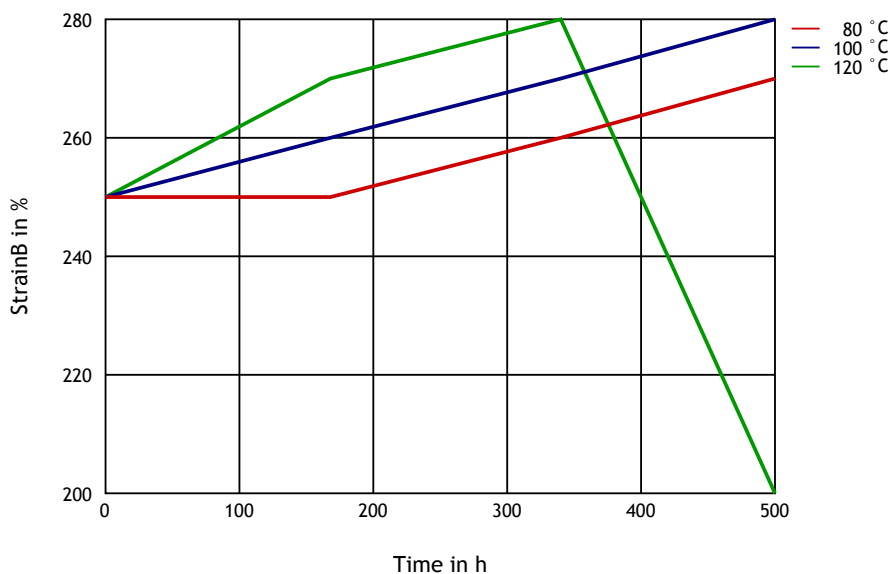
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LTHA-Stress at Break 2mm



LTHA-Strain at Break 2mm



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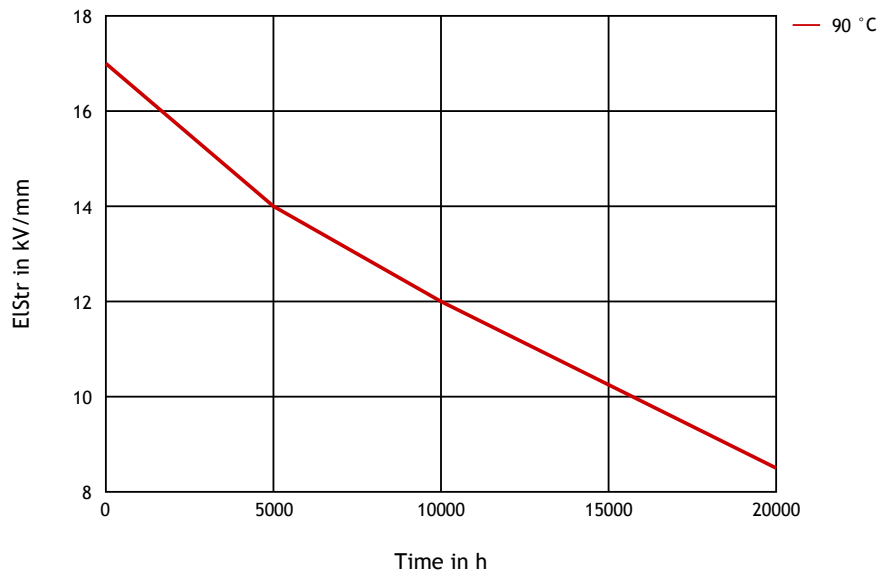
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LTHA-Electric Strength 1mm



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)

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✓ 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)
- ✗ 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).

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X 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.

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