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Hytrel® 5555HS

THERMOPLASTIC POLYESTER ELASTOMER

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, we recommend, 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® 5555HS is a medium modulus Hytrel® grade, with nominal durometer hardness of 55D. It is a specially stabilized version of Hytrel® 5556 for superior heat and oil resistance properties.

Typical applications:

Parts with increased heat-ageing stability and oil and grease resistance such as tubing and hose, wire and cable jackets, film and sheeting, belting.

Precautions:

Contains a discoloring antioxidant. Not suited for light-colored finished products.

Product information

Resin Identification	TPC-ET	ISO 1043
Part Marking Code	>TPC-ET<	ISO 11469

Rheological properties

Melt volume-flow rate	8.5	cm^3/10min	ISO 1133
Temperature	220	°C	
Load	2.16	kg	
Melt mass-flow rate	8.5	g/10min	ISO 1133
Melt mass-flow rate, Temperature	220	°C	
Melt mass-flow rate, Load	2.16	kg	
Moulding shrinkage, parallel	1.3	%	ISO 294-4, 2577
Moulding shrinkage, normal	1.4	%	ISO 294-4, 2577

Typical mechanical properties

Tensile modulus	190	MPa	ISO 527-1/-2
Tensile stress at yield	15	MPa	ISO 527-1/-2
Tensile strain at yield	36	%	ISO 527-1/-2
Stress at 5% strain	6.9	MPa	ISO 527-1/-2
Stress at 10% strain	11.1	MPa	ISO 527-1/-2
Tensile stress at 50% strain, 1BA	14.7	MPa	ISO 527-1/-2
Tensile stress at 100% strain	16	MPa	ISO 527-1/-2
Tensile stress at break	35	MPa	ISO 527-1/-2

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Nominal strain at break	640	%	ISO 527-1/-2
Tensile strain at break	>300	%	ISO 527-1/-2
Flexural modulus	195	MPa	ISO 178
Shear Modulus	65	MPa	ISO 6721
Tensile creep modulus, 1h	140	MPa	ISO 899-1
Tensile creep modulus, 1000h	100	MPa	ISO 899-1
Charpy impact strength, 23°C	N	kJ/m²	ISO 179/1eU
Charpy notched impact strength, -30°C	30	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -40°C	14	kJ/m²	ISO 179/1eA
Tensile notched impact strength, 23°C	300	kJ/m²	ISO 8256/1
Izod notched impact strength, -40°C	110.0[P]	kJ/m²	ISO 180/1A
Poisson's ratio	0.48		
Brittleness temperature	-80	°C	ISO 974
Shore D hardness, 15s	52		ISO 48-4 / ISO 868
Shore D hardness, max	55		ISO 868
Compression set, 70°C, 24h	60	%	ISO 815
Tear strength, parallel	170	kN/m	ISO 34-1
Tear strength, normal	170	kN/m	ISO 34-1
Abrasion resistance	120	mm³	ISO 4649

[P]: Partial Break

Thermal properties

Melting temperature, 10°C/min	201	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	-25	°C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	51	°C	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	78	°C	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	75	°C	ISO 306
Vicat softening temperature, 50°C/h 10N	177	°C	ISO 306
Coefficient of linear thermal expansion (CLTE), parallel	180	E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	180	E-6/K	ISO 11359-1/-2
Effective thermal diffusivity, flow	5.44E-8	m²/s	ISO 22007-4
RTI, electrical, 0.75mm	90	°C	UL 746B
RTI, electrical, 1.5mm	90	°C	UL 746B
RTI, electrical, 3.0mm	90	°C	UL 746B
RTI, impact, 0.75mm	50	°C	UL 746B
RTI, impact, 1.5mm	85	°C	UL 746B
RTI, impact, 3.0mm	85	°C	UL 746B
RTI, strength, 0.75mm	50	°C	UL 746B
RTI, strength, 1.5mm	85	°C	UL 746B
RTI, strength, 3.0mm	85	°C	UL 746B
TGA curve	available		ISO 11359-1/-2

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Flammability

Burning Behav. at 1.5mm nom. thickn.	HB	class	IEC 60695-11-10
Thickness tested	1.5	mm	IEC 60695-11-10
UL recognition	yes		UL 94
Burning Behav. at thickness h	HB	class	IEC 60695-11-10
Thickness tested	3	mm	IEC 60695-11-10
UL recognition	yes		UL 94
Oxygen index	20	%	ISO 4589-1/-2
FMVSS Class	SE		ISO 3795 (FMVSS 302)

Electrical properties

Comparative tracking index	600		IEC 60112

Physical/Other properties

Humidity absorption, 2mm	0.2	%	Sim. to ISO 62
Water absorption, 2mm	0.6	%	Sim. to ISO 62
Water absorption, Immersion 24h	0.7	%	Sim. to ISO 62
Density	1190	kg/m³	ISO 1183

VDA Properties

Fogging, G-value (condensate)	0.1[DS]	mg	ISO 6452

[DS]: Derived from similar grade

Injection

Drying Recommended	yes	
Drying Temperature	100	°C
Drying Time, Dehumidified Dryer	2 - 3	h
Processing Moisture Content	≤0.08	%
Melt Temperature Optimum	235	°C
Min. melt temperature	220	°C
Max. melt temperature	250	°C
Mold Temperature Optimum	50	°C
Min. mould temperature	45	°C
Max. mould temperature	55	°C
Ejection temperature	146	°C

Extrusion

Drying Temperature	90 - 110	°C
Drying Time, Dehumidified Dryer	2 - 3	h
Processing Moisture Content	≤0.06	%
Melt Temperature Optimum	225	°C
Melt Temperature Range	220 - 235	°C

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Characteristics

Processing	Injection Moulding, Film Extrusion, Extrusion, Sheet Extrusion, Other Extrusion, Casting, Thermoforming
Delivery form	Pellets
Special characteristics	Light stabilised or stable to light, Heat stabilised or stable to heat

Additional information

Injection molding

PREPROCESSING

Drying recommended = Yes
Drying temperature = 100 °C
Drying time, dehumidified dryer = 2-3 h
Processing moisture content = <0.08 %

PROCESSING

Melt temperature optimum = 230 °C
Mold temperature optimum = 45 °C
Mold temperature range = 45-55 °C

Profile extrusion

PREPROCESSING

Drying temperature = 100 °C
Drying time, dehumidified dryer = 2-3 h
Processing moisture content = <0.06%

PROCESSING

Melt temperature optimum = 225 °C

Automotive

OEM	STANDARD	ADDITIONAL INFORMATION
Bosch	N28 BN34-OX036	
General Motors	GMW17327P-TPC-ET-Type 3M2H	
Mercedes-Benz	DBL5562.50 TPC	
Stellantis - Chrysler	MS-DB-448 / CPN-2576	Natural
Stellantis - Chrysler	MS-DB-448 / CPN-2749	Canod
Stellantis - Chrysler	MS-DB-448 / CPN-2910	Black
VW Group	VW 50123	

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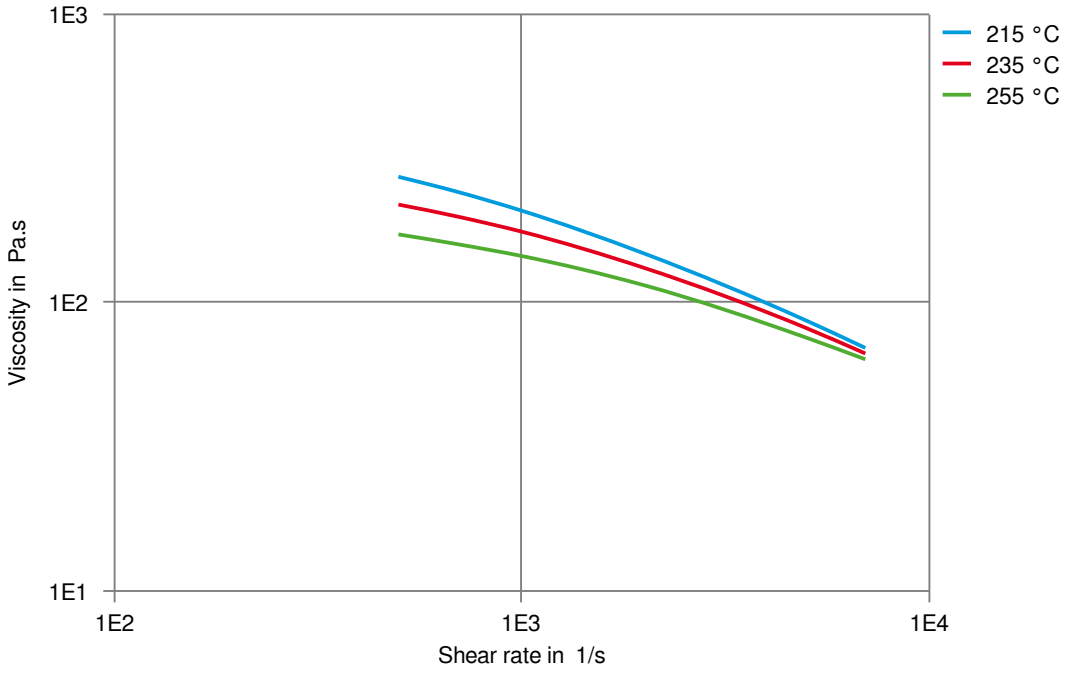
THERMOPLASTIC POLYESTER ELASTOMER

Viscosity-shear rate



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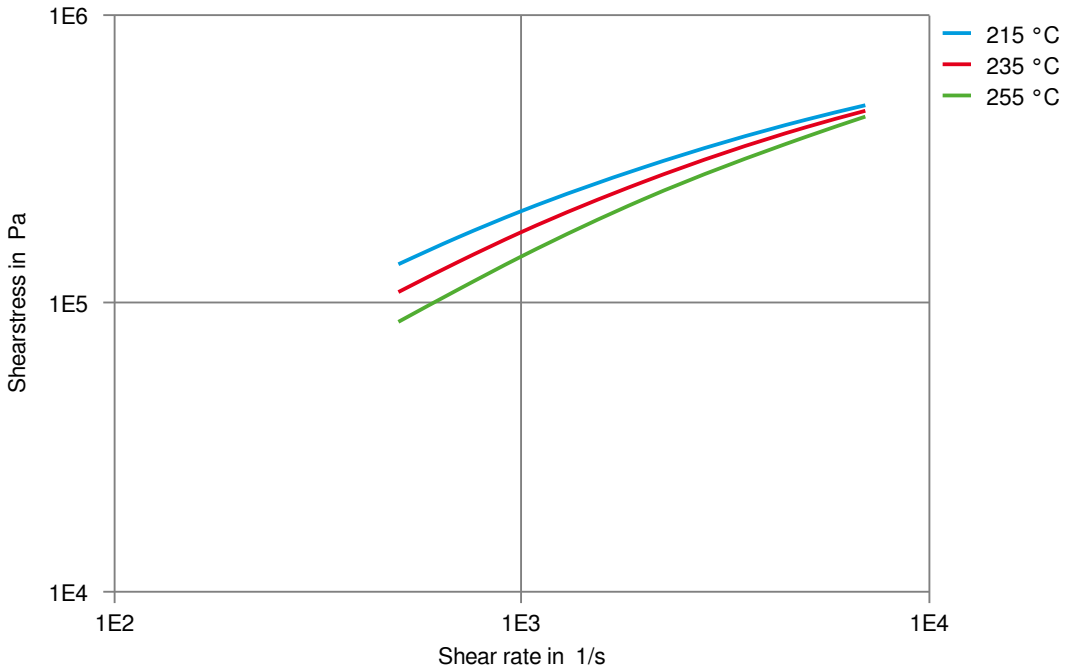
Shearstress-shear rate



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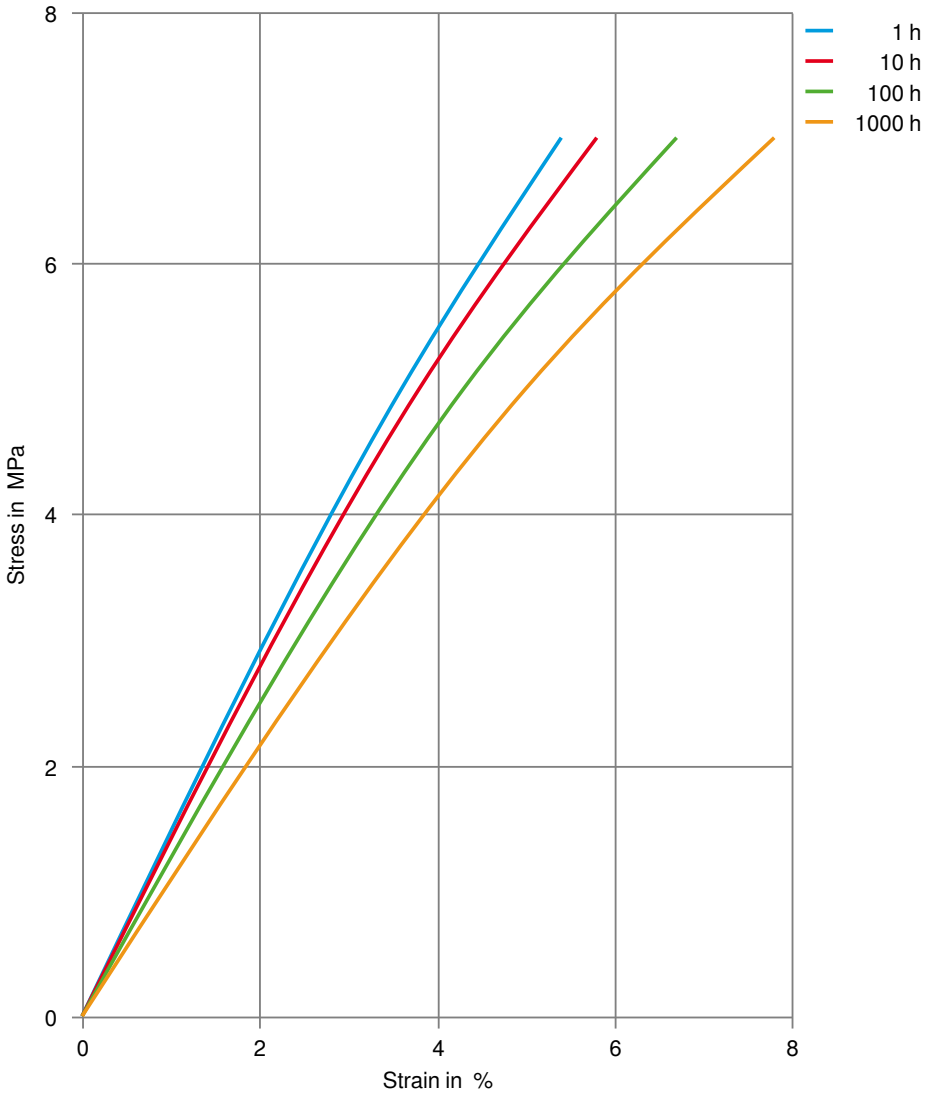
THERMOPLASTIC POLYESTER ELASTOMER

Stress-strain (isochronous) 23 °C



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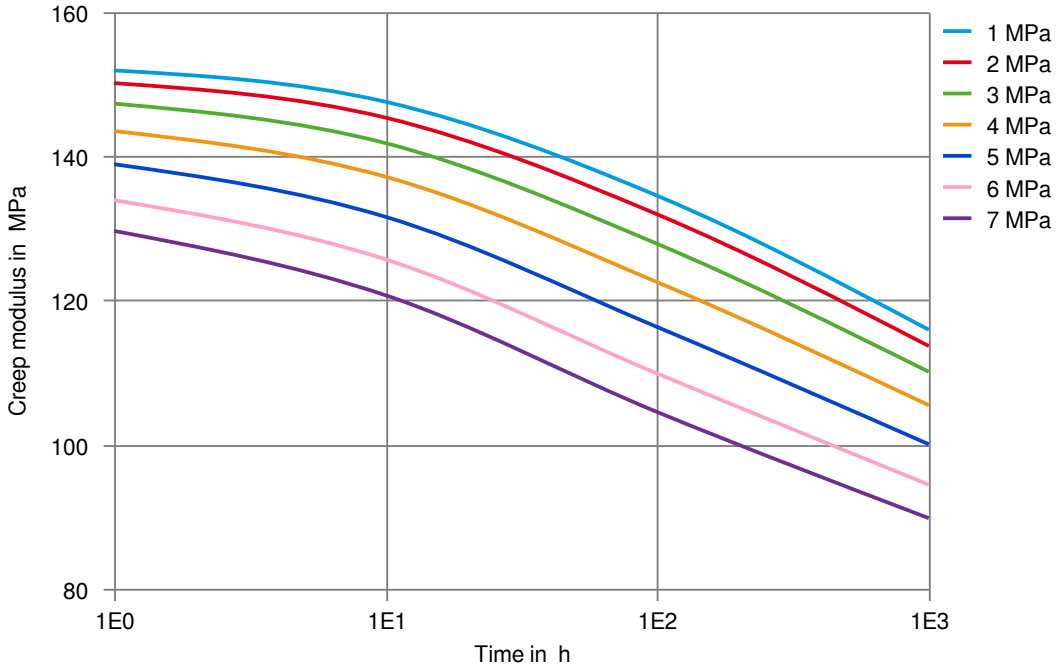
THERMOPLASTIC POLYESTER ELASTOMER

Creep modulus-time 23 °C



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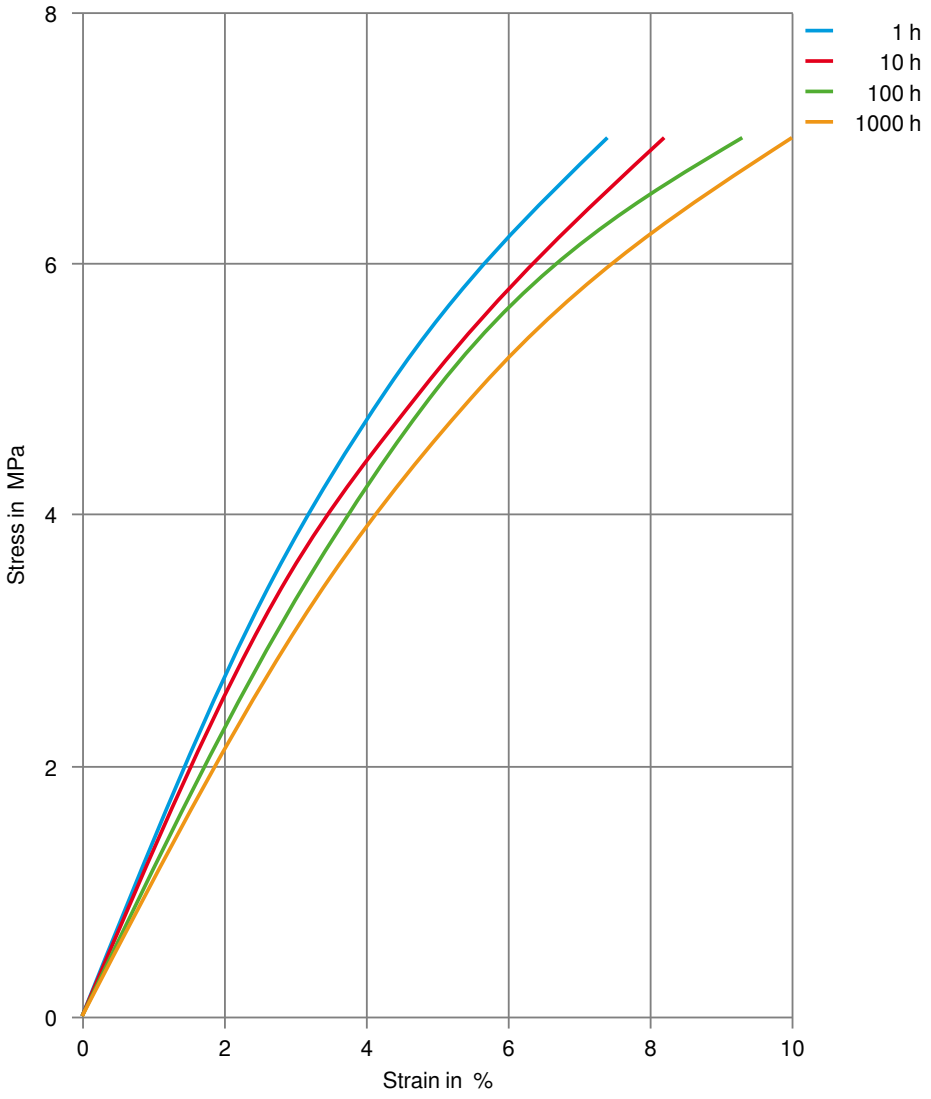
Stress-strain (isochronous) 40 °C



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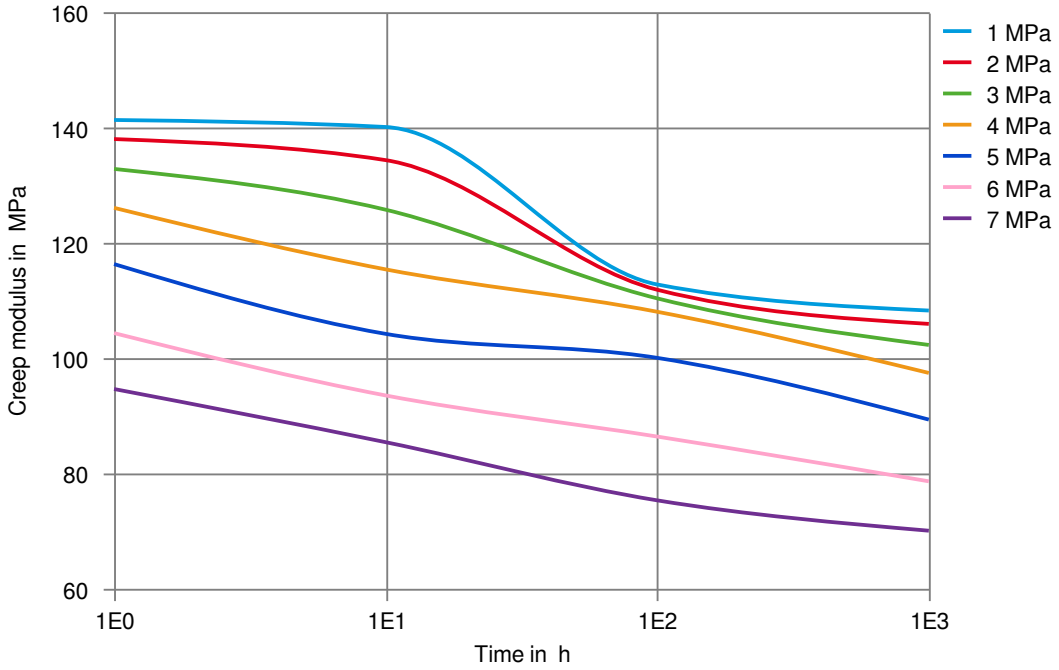
THERMOPLASTIC POLYESTER ELASTOMER

Creep modulus-time 40 °C



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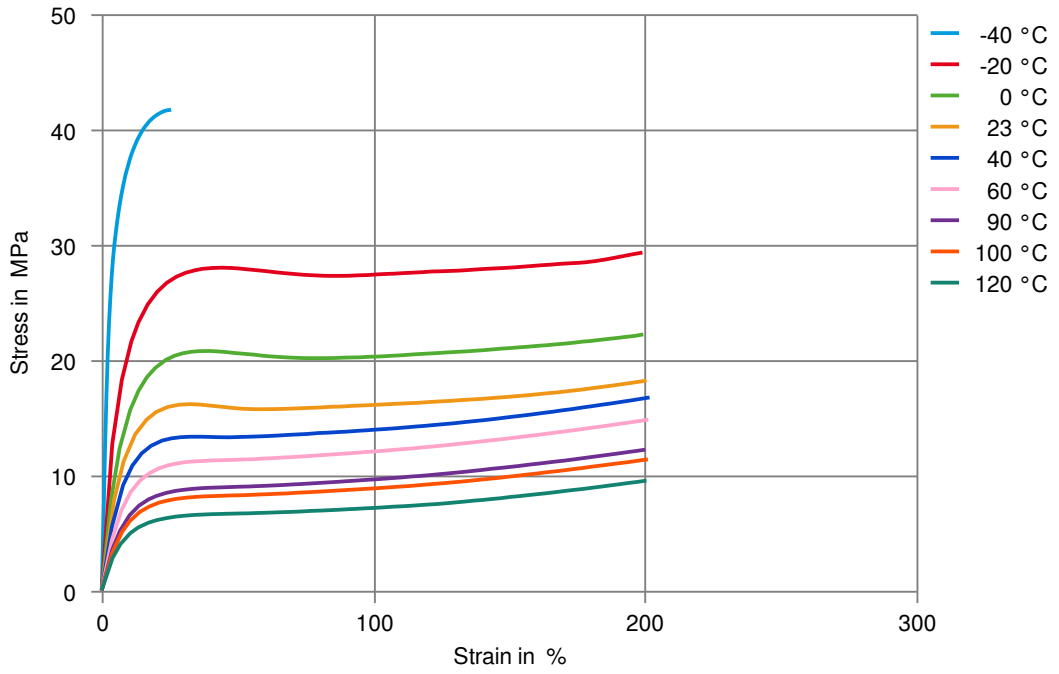
Stress-Strain (Flexible Materials)



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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
- ✔ Motor oil OS206 304 Ref.Eng.Oil, ISP, 135°C
- ✘ Automatic hypoid-gear oil Shell Donax TX, 135°C
- ✔ Hydraulic oil Pentosin CHF 202, 125°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
- ✔ 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

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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
- ✔ 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).

Revised: 2025-04-17 Source: Celanese Materials Database