



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® 5556 is a medium modulus Hytrel® grade with nominal durometer hardness of 55D. It contains non-discoloring stabilizer. It can be processed by many conventional thermoplastic processing techniques like injection moulding and extrusion.

Typical applications: Hose and tubing, wire and cable, film and sheeting, belting.

2-Pagers

Product information

Resin Identification TPC-E Part Marking Code >TPC-ET	
Rheological properties	
Temperature 22	7 cm ³ /10min ISO 1133 0 °C 6 kg
Melt mass-flow rate, Temperature 22	8 g/10min ISO 1133 0 °C 6 kg
	4 % ISO 294-4, 2577
Moulding shrinkage, normal 1.	4 % ISO 294-4, 2577
Typical mechanical properties	
Tensile stress at yield 1 Tensile strain at yield 4 Stress at 5% strain 6. Stress at 10% strain 1	0 MPa ISO 527-1/-2 5 MPa ISO 527-1/-2 0 % ISO 527-1/-2 9 MPa ISO 527-1/-2 1 MPa ISO 527-1/-2 5 MPa ISO 527-1/-2

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Tensile stress at 100% strain		MPa	ISO 527-1/-2
Tensile stress at break		MPa	ISO 527-1/-2
Nominal strain at break	600		ISO 527-1/-2
Tensile strain at break	>300		ISO 527-1/-2
Flexural modulus		MPa	ISO 178
Tensile creep modulus, 1h		MPa	ISO 899-1
Tensile creep modulus, 1000h		MPa	ISO 899-1
Charpy impact strength, 23°C		kJ/m²	ISO 179/1eU
Charpy impact strength, -30°C		kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23°C		kJ/m²	ISO 179/1eA
Charpy notched impact strength, -30°C		kJ/m²	ISO 179/1eA
Charpy notched impact strength, -40°C		kJ/m²	ISO 179/1eA
Tensile notched impact strength, 23°C		kJ/m²	ISO 8256/1
Puncture - maximum force, 23°C	2400		ISO 6603-2
Puncture - maximum force, -30°C	3700		ISO 6603-2
Puncture energy, 23°C	27		ISO 6603-2
Puncture energy, -30°C	43		ISO 6603-2
Izod notched impact strength, 23°C		kJ/m²	ISO 180/1A
Izod notched impact strength, -40°C		kJ/m²	ISO 180/1A
Poisson's ratio	0.48		
Brittleness temperature	-98	°C	ISO 974
Shore D hardness, 15s	51		ISO 48-4 / ISO 868
Shore D hardness, max	55		ISO 868
Tear strength, parallel		kN/m	ISO 34-1
Tear strength, normal		kN/m	ISO 34-1
Abrasion resistance	120	mm ³	ISO 4649
[P]: Partial Break			
Thermal properties			
Melting temperature, 10 ° C/min	201	°C	ISO 11357-1/-3
Glass transition temperature, 1 Hz	-27		ISO 6721
Temperature of deflection under load, 1.8 MPa		°C	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa		°C	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N		°C	ISO 306
Vicat softening temperature, 50°C/h 10N	180		ISO 306
Coeff. of linear therm. expansion, parallel, -40-23°C		E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion		E-6/K	ISO 11359-1/-2
(CLTE), parallel		,	
Coeff. of linear therm. expansion, normal, -40-23°C	174	E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE),		E-6/K	ISO 11359-1/-2
normal		,	
Thermal conductivity of melt	0.16	W/(m K)	ISO 22007-2
Effective thermal diffusivity, flow	7E-8		ISO 22007-4
Specific heat capacity of melt		J/(kg K)	ISO 22007-4
RTI, electrical, 0.75mm	2110	U/(NU IX)	
			UL 746B
	85	°C	UL 746B UL 746B
RTI, electrical, 1.5mm	85 85	°C °C	UL 746B
RTI, electrical, 1.5mm RTI, electrical, 3.0mm	85 85 85	°C °C	UL 746B UL 746B
RTI, electrical, 1.5mm	85 85 85 50	°C °C	UL 746B

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RTI, impact, 3.0mm RTI, strength, 0.75mm RTI, strength, 1.5mm RTI, strength, 3.0mm TGA curve	50 75	°C °C °C	UL 746B UL 746B UL 746B UL 746B ISO 11359-1/-2
Flammability Burning Behav. at 1.5mm nom. thickn. Thickness tested UL recognition Burning Behav. at thickness h Thickness tested UL recognition Oxygen index Glow Wire Flammability Index, 2.0mm Glow Wire Ignition Temperature, 2.0mm Glow Wire Temperature, No Flame, 2mm FMVSS Class	1.5 yes HB	°C	IEC 60695-11-10 IEC 60695-11-10 UL 94 IEC 60695-11-10 IEC 60695-11-10 UL 94 ISO 4589-1/-2 IEC 60695-2-12 IEC 60695-2-13 IEC 60335-1 ISO 3795 (FMVSS 302)
[DS]: Derived from similar grade			,
Electrical properties Relative permittivity, 100Hz Relative permittivity, 1MHz Dissipation factor, 100Hz Dissipation factor, 1MHz Volume resistivity Surface resistivity Electric strength Comparative tracking index	375 4E11 >1E15	Ohm.m	IEC 62631-2-1 IEC 62631-2-1 IEC 62631-2-1 IEC 62631-2-1 IEC 62631-3-1 IEC 62631-3-2 IEC 60243-1 IEC 60112
Physical/Other properties			
Humidity absorption, 2mm Water absorption, 2mm Water absorption, Immersion 24h Density Density of melt		%	Sim. to ISO 62 Sim. to ISO 62 Sim. to ISO 62 ISO 1183
Film Properties WVTR, 23°C/85%r.h. Oxygen transmission rate, 23°C/85%r.h. Thickness of specimen		g/(m ² *d) cm ³ /(m ² *d*bar) mm	DIS 15106-1/-2 DIS 15105-1/-2
VDA Properties			
Light stability delta I Light stability delta a Light stability delta b Light stability delta E	3 -2 13 14		DIN 53236 DIN 53236 DIN 53236 DIN 53236

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Emission of organic compounds	8.5 μgC/g	VDA 277
Odour	5 class	VDA 270
Fogging, G-value (condensate)	0.1 mg	ISO 6452

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	122 °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

Characteristics

Processing Injection Moulding, Film Extrusion, Extrusion, Sheet Extrusion, Other Extrusion,

Coatable, Casting, Thermoforming

Delivery form Pellets

Special characteristics Light stabilised or stable to light

Automotive

OEM STANDARD ADDITIONAL INFORMATION

Bosch N28 BN34-OX067

General Motors GMW17327P-TPC-ET-Type 3M2

Mercedes-Benz DBL5562 TPC

Stellantis - Chrysler MS-DB-448 / CPN-3042 Natural

VW Group VW 50123 TPC-ET

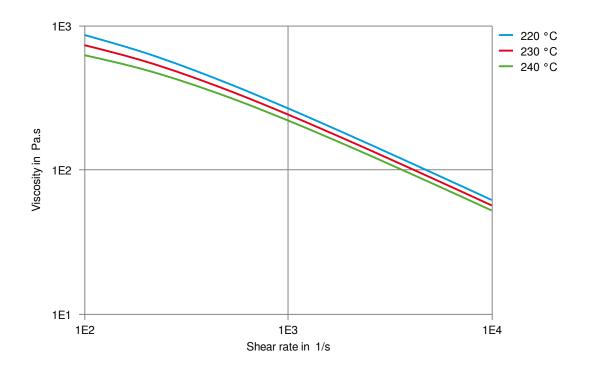
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Viscosity-shear rate



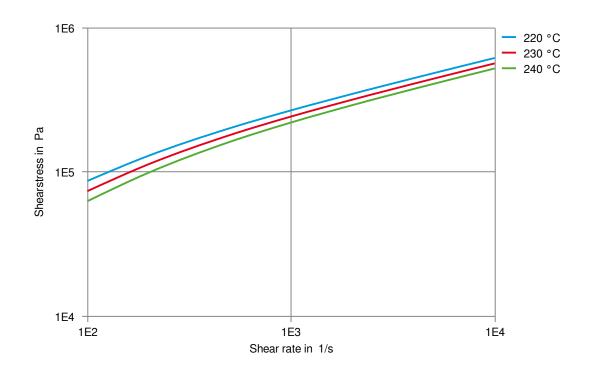
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Hytrel® 5556 THERMOPLASTIC POLYESTER ELASTOMER

Shearstress-shear rate



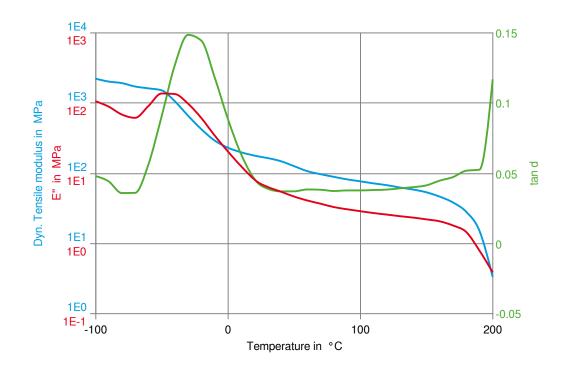
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Dynamic Tensile modulus-temperature



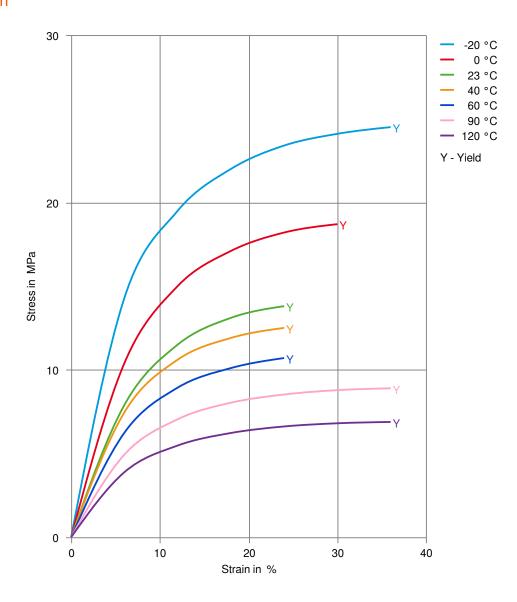
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Stress-strain



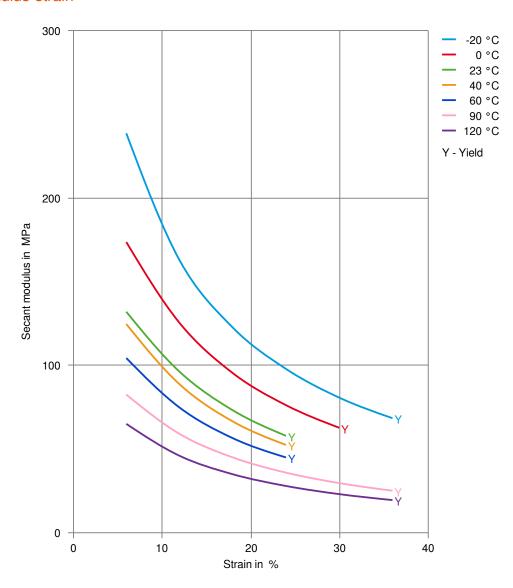
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Secant modulus-strain



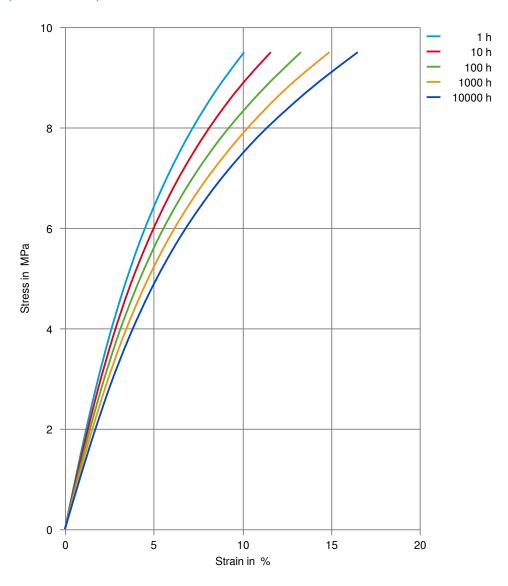
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Stress-strain (isochronous) 23°C



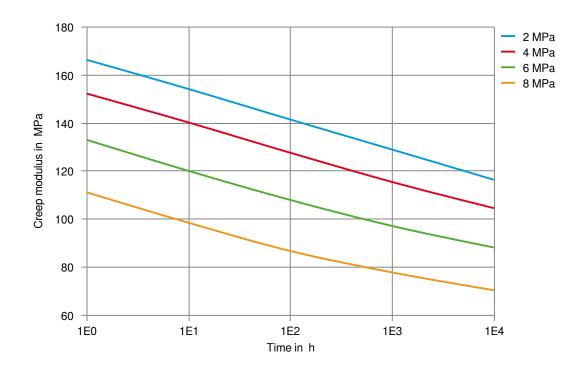
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Creep modulus-time 23°C



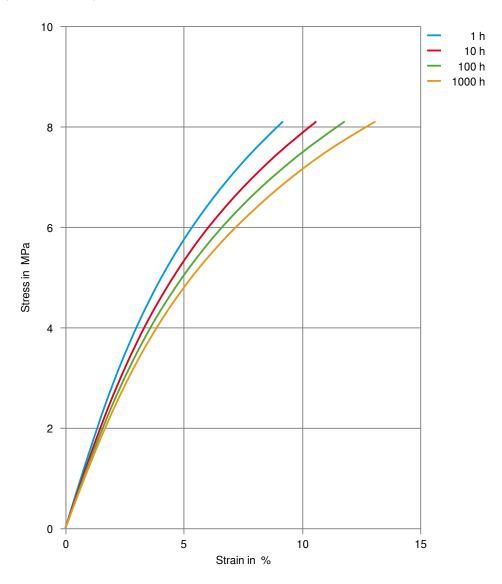
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Stress-strain (isochronous) 40°C



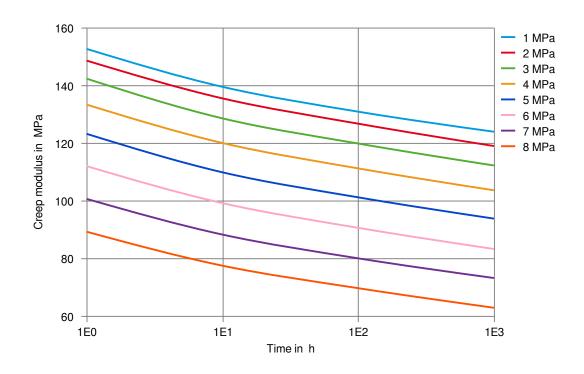
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Creep modulus-time 40°C



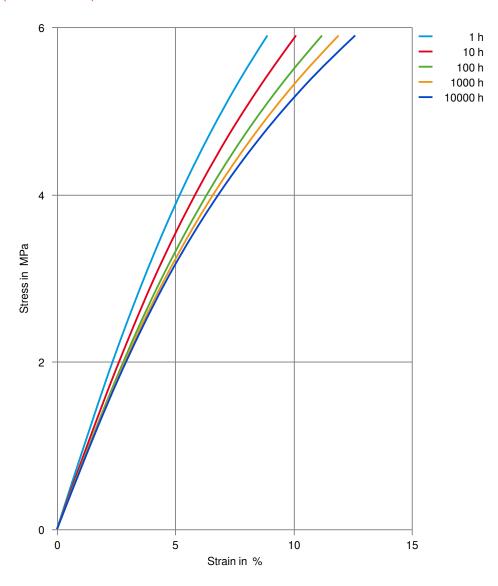
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Stress-strain (isochronous) 80°C



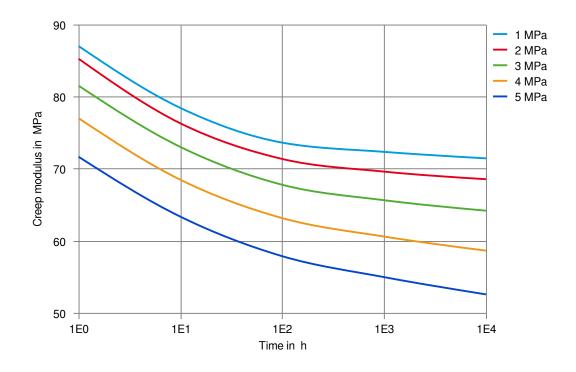
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THERMOPLASTIC POLYESTER ELASTOMER

Creep modulus-time 80°C



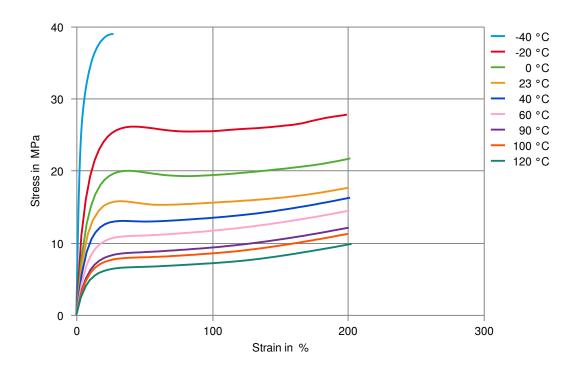
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Stress-Strain (Flexible Materials)



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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
- X Hydrochloric Acid (36% by mass), 23°C
- X Nitric Acid (40% by mass), 23°C
- X Sulfuric Acid (38% by mass), 23°C
- ✓ Sulfuric Acid (5% by mass), 23°C
- X 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

X Acetone, 23°C

Ethers

X Diethyl ether, 23°C

Mineral oils

- ✓ SAE 10W40 multigrade motor oil, 23°C
- X SAE 10W40 multigrade motor oil, 130°C
- ★ SAE 80/90 hypoid-gear oil, 130°C
- ✓ Insulating Oil, 23°C
- X Motor oil OS206 304 Ref.Eng.Oil, ISP, 135°C
- ★ Automatic hypoid-gear oil Shell Donax TX, 135°C
- X Hydraulic oil Pentosin CHF 202, 125°C

Standard Fuels

- X ISO 1817 Liquid 1 E5, 60°C
- X ISO 1817 Liquid 2 M15E4, 60°C
- X ISO 1817 Liquid 3 M3E7, 60°C
- X 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
- X 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).

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).

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

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