

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® 7246 ECO-B 452 is a high modulus grade with nominal hardness of 72D. It contains non-discoloring stabilizer. It can be processed by many conventional thermoplastic processing techniques like injection molding and extrusion. It has the same performance and processing properties as Hytrel® 7246.

The 72 Shore D hardness is based on a legacy method and still used for grade identification purposes.

Hytrel® 7246 ECO-B 452 belongs to the Hytrel® ECO-B family. The products of this family are partially produced using bio-feedstock derived from waste\*. This results in reduced lifecycle greenhouse gas emissions and lower fossil resource use.

\*certified bio-circular according to ISCC Plus mass balance approach.

Typical applications:

Tubing, wire and cable jackets, gears and sprockets, oil field parts.

#### 2-Pagers

### Product information

ISO designation

ISO 20029-TPC-ET,,GLN,70-22-075

### **Rheological properties**

Melt volume-flow rate	12	cm <sup>3</sup> /10min	ISO 1133
Temperature	240	°C	
Load	2.16	kg	
Melt mass-flow rate	13	g/10min	ISO 1133
Melt mass-flow rate, Temperature	240	°C	
Melt mass-flow rate, Load	2.16	kg	
Moulding shrinkage, parallel	1.6	%	ISO 294-4, 2577
Moulding shrinkage, normal	1.6	%	ISO 294-4, 2577



THERMOPLASTIC POLYESTER ELASTOMER

### Typical mechanical properties

Tensile modulus	550	MPa	ISO 527-1/-2
Tensile stress at yield	27	MPa	ISO 527-1/-2
Tensile strain at yield	23	%	ISO 527-1/-2
Stress at 5% strain	14	MPa	ISO 527-1/-2
Stress at 10% strain	23	MPa	ISO 527-1/-2
Tensile stress at 50% strain, 1BA	24	MPa	ISO 527-1/-2
Tensile stress at break	50	MPa	ISO 527-1/-2
Nominal strain at break	530	%	ISO 527-1/-2
Tensile strain at break	>300	%	ISO 527-1/-2
Flexural modulus		MPa	ISO 178
Shear Modulus	280	MPa	ISO 6721
Tensile creep modulus, 1h		MPa	ISO 899-1
Tensile creep modulus, 1000h		MPa	ISO 899-1
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/m <sup>2</sup>	ISO 8256/1
Izod notched impact strength, 23°C		kJ/m <sup>2</sup>	ISO 180/1A
Izod notched impact strength, -40 °C		kJ/m <sup>2</sup>	ISO 180/1A
Poisson's ratio	0.47		
Brittleness temperature	-97	°C	ISO 974
Shore D hardness, 15s	64	-	ISO 48-4 / ISO 868
Shore D hardness, max	68		ISO 868
Tear strength, parallel		kN/m	ISO 34-1
Tear strength, normal		kN/m	ISO 34-1
Abrasion resistance		mm <sup>3</sup>	ISO 4649
Thermal properties			
Melting temperature, 10°C/min	218	°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	50	°C	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	100	°C	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	140	°C	ISO 306
Vicat softening temperature, 50°C/h 10N	205	°C	ISO 306
Coeff. of linear therm. expansion, parallel, -40-23°C	120	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	130	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	0.15	W/(mK)	ISO 22007-2
Effective thermal diffusivity, flow	8E-8		ISO 22007-4
Specific heat capacity of melt		J/(kg K)	ISO 22007-4
RTI, electrical, 1.5mm		°C	UL 746B
RTI, impact, 1.5mm		°Č	UL 746B
RTI, strength, 1.5mm		°Č	UL 746B
		-	

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### Flammability

Burning Behav. at 1.5mm nom. thickn. Thickness tested UL recognition Oxygen index FMVSS Class		class mm %	IEC 60695-11-10 IEC 60695-11-10 UL 94 ISO 4589-1/-2 ISO 3795 (FMVSS 302)
Electrical properties			
Relative permittivity, 100Hz Relative permittivity, 1MHz Dissipation factor, 100Hz Dissipation factor, 1MHz Volume resistivity Surface resistivity Electric strength Comparative tracking index	300 2E10 >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
VDA Properties			
Light stability delta l Light stability delta a Light stability delta b Light stability delta E Emission of organic compounds	-3 -0.1 15 16 300	μgC/g	DIN 53236 DIN 53236 DIN 53236 DIN 53236 VDA 277
Injection			
Drying Recommended Drying Temperature Drying Time, Dehumidified Dryer Processing Moisture Content Melt Temperature Optimum Min. melt temperature Max. melt temperature Mold Temperature Optimum Min. mould temperature Max. mould temperature Hold pressure range	45 55	h % °C °C	



### THERMOPLASTIC POLYESTER ELASTOMER

### Extrusion

Drying Temperature	100 - 120 °C
Drying Time, Dehumidified Dryer	2-3 h
Processing Moisture Content	≤0.06 %
Melt Temperature Optimum	235 °C
Melt Temperature Range	225 - 245 °C

### **Characteristics**

Processing	Injection Moulding, Film Extrusion, Extrusion, Sheet Extrusion, Other Extrusion, Casting, Thermoforming
Delivery form	Pellets
Special characteristics	Light stabilised or stable to light
Sustainability	Bio-Content
Automotive	

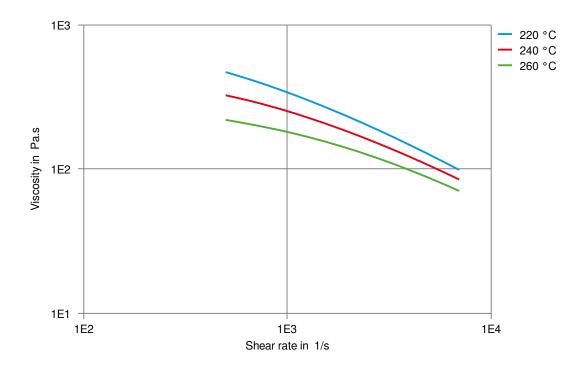
### F

OEM	STANDARD
Hyundai	MS220-24 Type B
Mercedes-Benz	DBL5562.50 TPC
VW Group	VW 50123 TPC-ET 55D





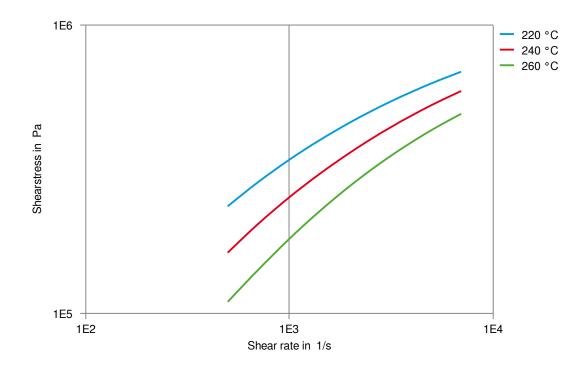
Viscosity-shear rate







Shearstress-shear rate

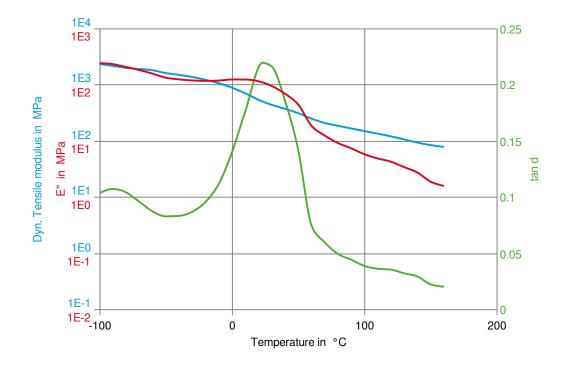






THERMOPLASTIC POLYESTER ELASTOMER

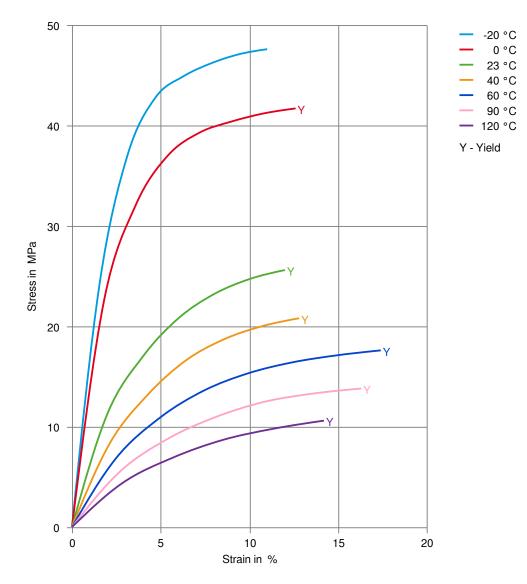
Dynamic Tensile modulus-temperature





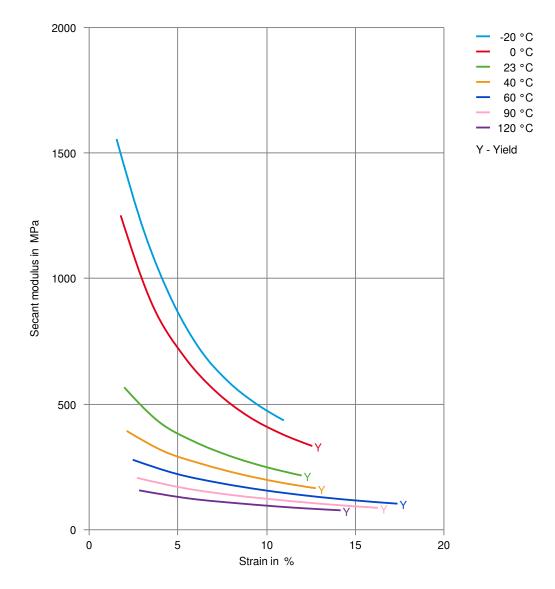
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Stress-strain





### Secant modulus-strain

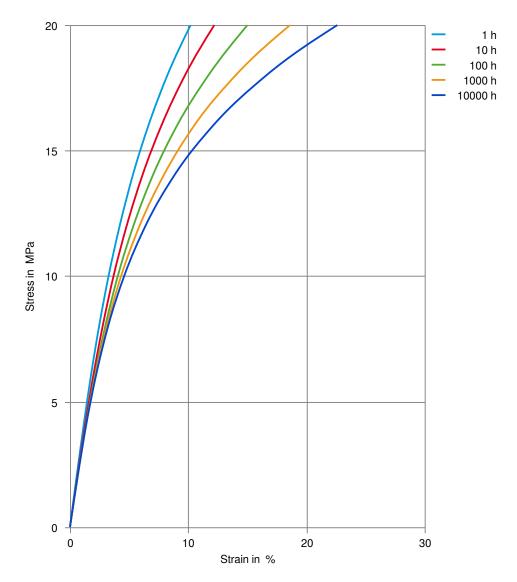






THERMOPLASTIC POLYESTER ELASTOMER

### Stress-strain (isochronous) 23°C

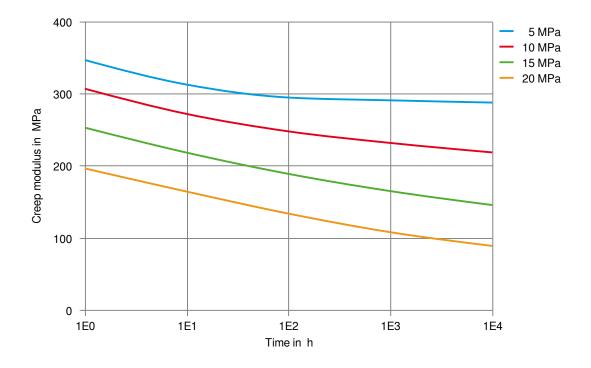






THERMOPLASTIC POLYESTER ELASTOMER

Creep modulus-time 23°C

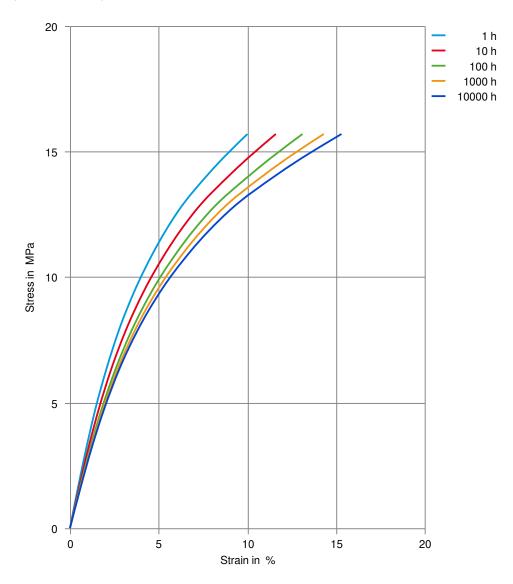






### THERMOPLASTIC POLYESTER ELASTOMER

### Stress-strain (isochronous) 40°C

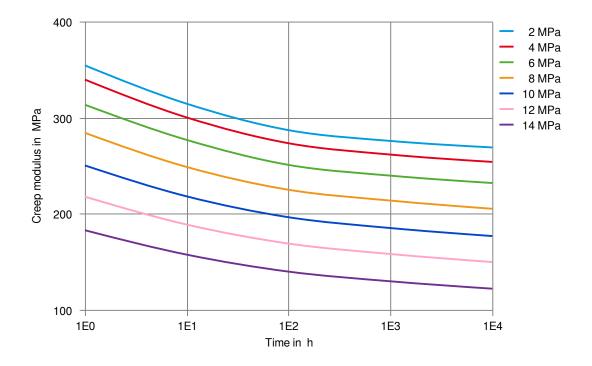






THERMOPLASTIC POLYESTER ELASTOMER

Creep modulus-time 40°C

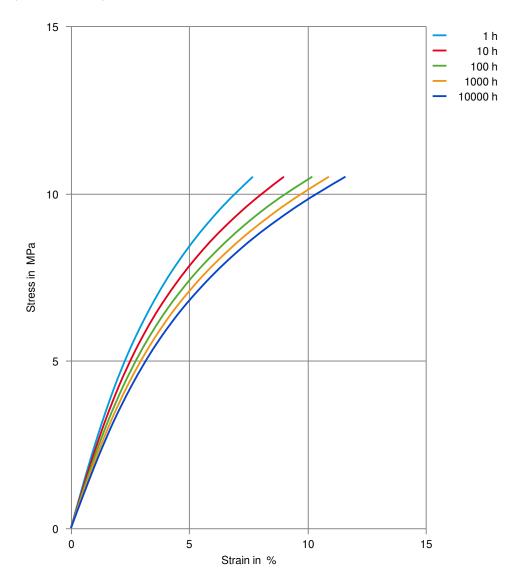






### THERMOPLASTIC POLYESTER ELASTOMER

### Stress-strain (isochronous) 80°C

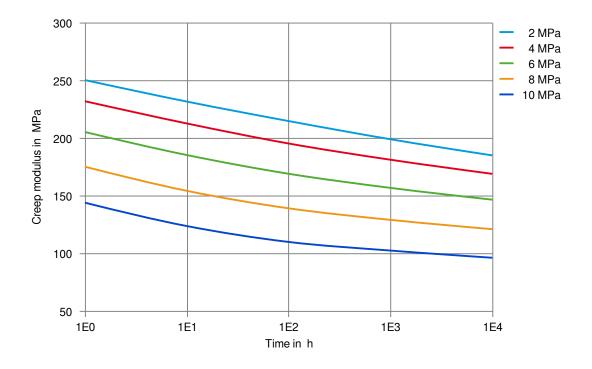






THERMOPLASTIC POLYESTER ELASTOMER

Creep modulus-time 80°C

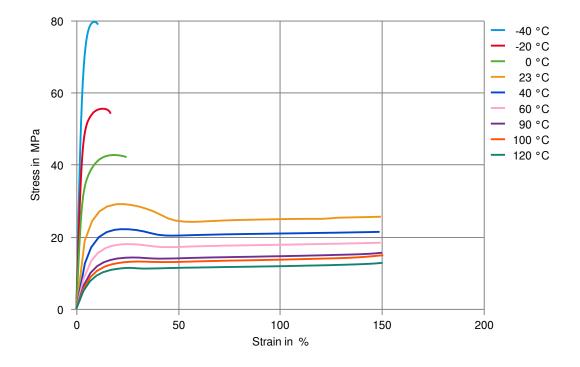






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Stress-Strain (Flexible Materials)





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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
- ★ Hydrochloric Acid (36% by mass), 23°C
- X 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

X Acetone, 23°C

### Ethers

X Diethyl ether, 23°C

### Mineral oils

- ✓ SAE 10W40 multigrade motor oil, 23°C
- ✗ SAE 10W40 multigrade motor oil, 130°C
- X SAE 80/90 hypoid-gear oil, 130 °C
- ✓ Insulating Oil, 23°C
- X Motor oil OS206 304 Ref.Eng.Oil, ISP, 135°C
- X Automatic hypoid-gear oil Shell Donax TX, 135°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
- X Diesel fuel (pref. ISO 1817 Liquid F), >90°C

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(+) **18816996168** Ponciplastics.com



### Hytrel<sup>®</sup> 7246 ECO-B 452

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#### Salt solutions

- ✓ Sodium Chloride solution (10% by mass), 23°C
- X 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
- X DOT No. 4 Brake fluid, 130°C
- X DOT No. 4 Brake fluid, 120°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
- X Water, 90°C
- Phenol solution (5% by mass), 23°C
- X 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).

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