Celanese
The chemistry inside innovation™

Hytrel® HTR237BG BK320

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® HTR237BG is designed for blow moulding or processing techniques requiring high viscosity. It has nominal durometer hardness of 45D, is pigmented black with fine particle size carbon black and contains a general purpose stabiliser.

Product information

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

Rheological properties

Melt mass-flow rate	0.4	g/10min	ISO 1133
Melt mass-flow rate, Temperature	220	°C	
Melt mass-flow rate, Load	2.16	kg	

[1]: 4.5 g/10min at 220 Celsius @10kg

Typical mechanical properties

Tensile Modulus	90	MPa	ISO 527-1/-2
Stress at 10% strain	7.6	MPa	ISO 527-1/-2
Stress at 50% strain	12.1	MPa	ISO 527-1/-2
Stress at 100% strain	15	MPa	ISO 527-1/-2
Stress at 300% strain	26	MPa	ISO 527-1/-2
Stress at break	30	MPa	ISO 527-1/-2
Strain at break	>300	%	ISO 527-1/-2
Flexural Modulus	90	MPa	ISO 178
Charpy notched impact strength, 23°C	N	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -40°C	120	kJ/m²	ISO 179/1eA
Izod notched impact strength, 23°C	N	kJ/m²	ISO 180/1A
Izod notched impact strength, -40°C	N	kJ/m²	ISO 180/1A
Brittleness temperature	-100	°C	ISO 974

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Shore D hardness, 15s	41		ISO 48-4 / ISO 868
Shore D hardness, max	45		ISO 868
Tear strength, parallel	120	kN/m	ISO 34-1
Tear strength, normal	120	kN/m	ISO 34-1

Thermal properties

Melting temperature, 10°C/min	204	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	-45	°C	ISO 11357-1/-3
Temp. of deflection under load, 1.8 MPa	41	°C	ISO 75-1/-2
Temp. of deflection under load, 0.45 MPa	57	°C	ISO 75-1/-2
Vicat softening temperature, 50°C/h 10N	160	°C	ISO 306
Coeff. of linear therm. expansion, parallel, -40-23°C	197	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, parallel	210	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, parallel, 55-160°C	219	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, -40-23°C	170	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	200	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, 55-160°C	237	E-6/K	ISO 11359-1/-2
Thermal conductivity	0.25	W/(m K)	ISO 22007-2
Thermal conductivity of melt	0.23	W/(m K)	Internal

Flammability

FMVSS Class	B		ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	<80	mm/min	ISO 3795 (FMVSS 302)

Other properties

Density	1150	kg/m³	ISO 1183
Density of melt	990[2]	kg/m³	Internal

[2]: at 230 °C

Injection

Drying Recommended	yes		
Drying Temperature	100	°C	
Drying Time, Dehumidified Dryer	2 - 3	h	
Processing Moisture Content	≤0.08	%	
Melt Temperature Optimum	225	°C	Internal
Min. melt temperature	220	°C	
Max. melt temperature	250	°C	

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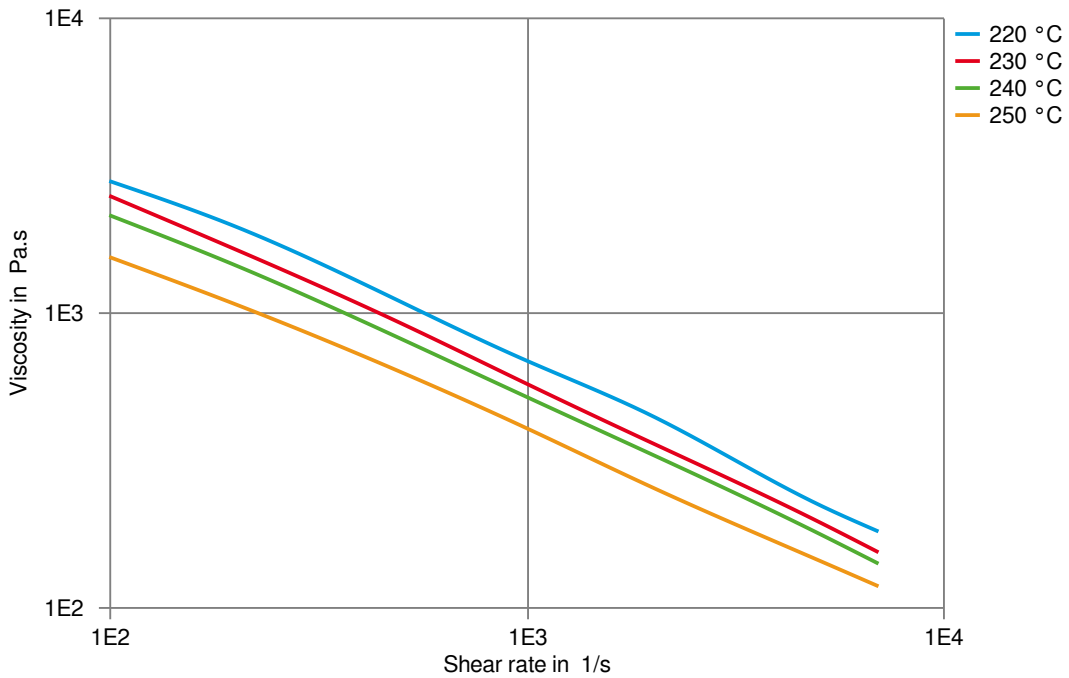
Blow Molding

Drying Recommended	yes
Drying Temperature	≤110 °C
Drying Time, Dehumidified Dryer	≥2 h
Processing Moisture Content	≤0.02 %

Viscosity-shear rate



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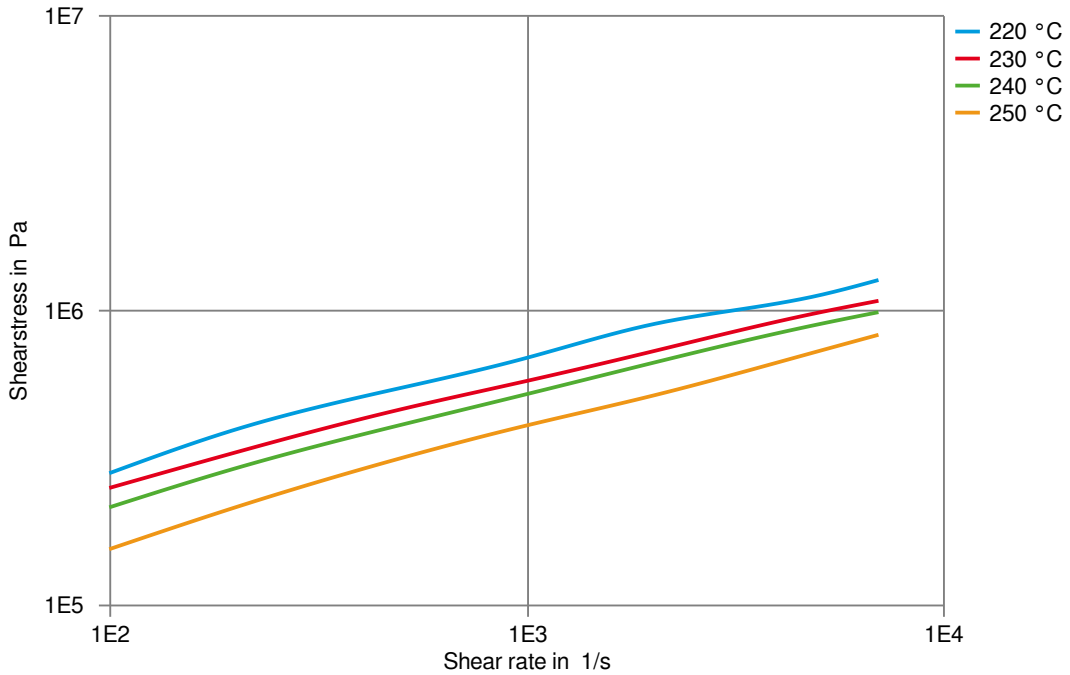
Shearstress-shear rate



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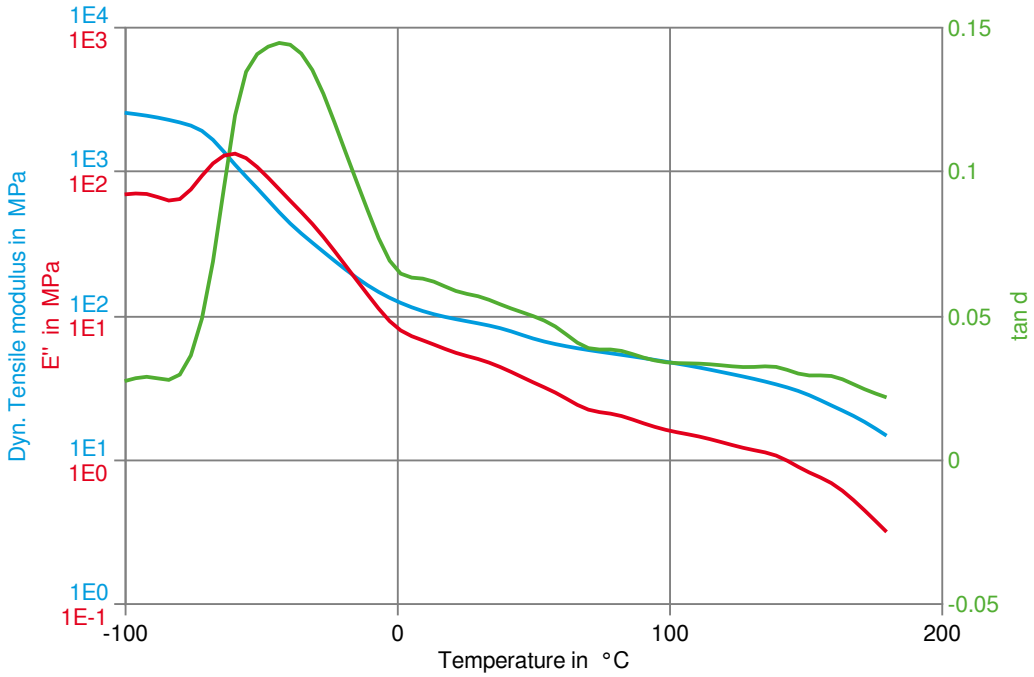
Dynamic Tensile modulus-temperature



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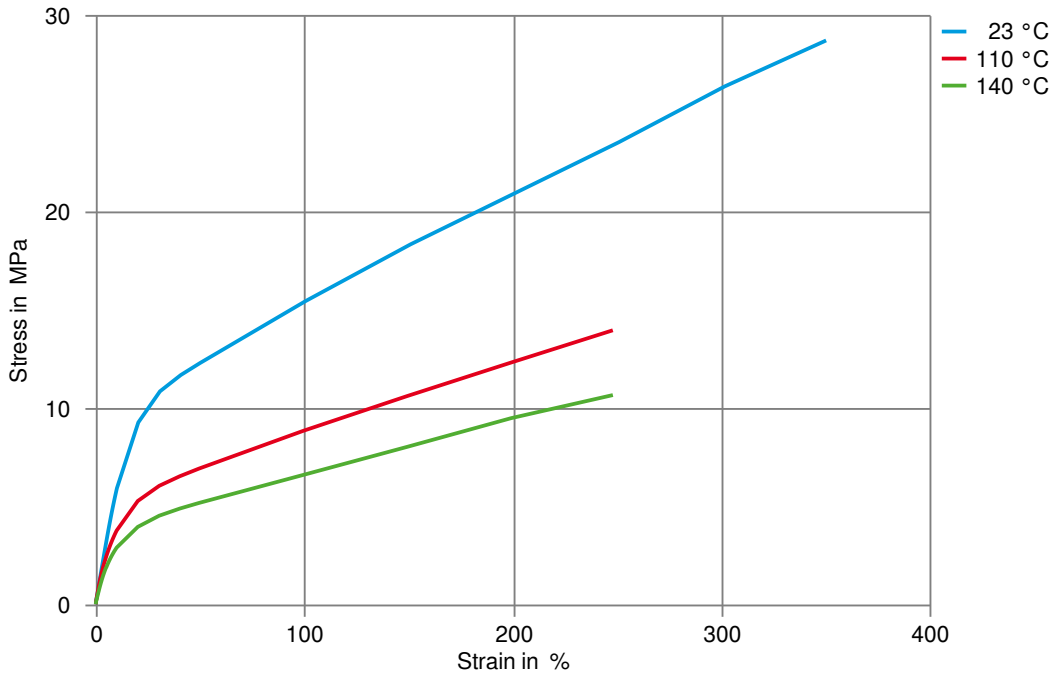
Stress-Strain (Flexible Materials)



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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

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
- ✔ 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).

✘ 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).