

Hytrel® HTR8068

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® HTR8068 is a medium modulus flame retardant and antidrip Hytrel® resin that meets the requirement of UL94 V-0. It has nominal durometer hardness of 44D.

Product information

Resin Identification	TPC-ET-FR(17)	ISO 1043
Part Marking Code	>TPC-ET-FR(17)<	ISO 11469

Rheological properties

Melt volume-flow rate	3.6 cm ³ /10min	ISO 1133
Temperature	190 °C	
Load	2.16 kg	
Melt mass-flow rate	4 g/10min	ISO 1133
Melt mass-flow rate, Temperature	190 °C	
Melt mass-flow rate, Load	2.16 kg	
Moulding shrinkage, parallel	1.1 %	ISO 294-4, 2577
Moulding shrinkage, normal	1.1 %	ISO 294-4, 2577

Typical mechanical properties

Tensile modulus	140 MPa	ISO 527-1/-2
Stress at 10% strain	5.9 MPa	ISO 527-1/-2
Tensile stress at 50% strain, 1BA	7.3 MPa	ISO 527-1/-2
Tensile stress at break	13 MPa	ISO 527-1/-2
Nominal strain at break	340 %	ISO 527-1/-2
Tensile strain at break	>300 %	ISO 527-1/-2
Flexural modulus	155 MPa	ISO 178
Charpy notched impact strength, 23°C	40 kJ/m ²	ISO 179/1eA
Charpy notched impact strength, -30°C	7 kJ/m ²	ISO 179/1eA
Charpy notched impact strength, -40°C	5 kJ/m ²	ISO 179/1eA
Brittleness temperature	-48 °C	ISO 974
Shore D hardness, 15s	38	ISO 48-4 / ISO 868
Shore D hardness, max	44	ISO 868
Tear strength, parallel	70 kN/m	ISO 34-1
Tear strength, normal	60 kN/m	ISO 34-1

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Thermal properties

Melting temperature, 10°C/min	170 °C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	41 °C	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	46 °C	ISO 75-1/-2
Vicat softening temperature, 50°C/h 10N	107 °C	ISO 306
Coefficient of linear thermal expansion (CLTE), parallel	150 E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	170 E-6/K	ISO 11359-1/-2
Effective thermal diffusivity, flow	5.44E-8 m²/s	ISO 22007-4
RTI, electrical, 1.5mm	50 °C	UL 746B
RTI, electrical, 3.0mm	50 °C	UL 746B
RTI, impact, 1.5mm	50 °C	UL 746B
RTI, impact, 3.0mm	50 °C	UL 746B
RTI, strength, 1.5mm	50 °C	UL 746B
RTI, strength, 3.0mm	50 °C	UL 746B

Flammability

Burning Behav. at 1.5mm nom. thickn.	V-0 class	IEC 60695-11-10
Thickness tested	1.5 mm	IEC 60695-11-10
UL recognition	yes	UL 94
Burning Behav. at thickness h	V-2 class	IEC 60695-11-10
Thickness tested	0.8 mm	IEC 60695-11-10
Oxygen index	26 %	ISO 4589-1/-2
FMVSS Class	B	ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	<80 mm/min	ISO 3795 (FMVSS 302)

Electrical properties

Relative permittivity, 100Hz	6.8	IEC 62631-2-1
Comparative tracking index	425 ^[1]	IEC 60112
Comparative tracking index, 3.0mm	1 PLC	UL 746A
Electric Strength, Short Time, 23°C, 2mm	20 kV/mm	IEC 60243-1
High Amperage Arc Ignition Resistance, 1.5 mm	200 arcs	UL 746A
[1]: Thickness = 3.0mm		

Physical/Other properties

Water absorption, Immersion 24h	1.9 %	Sim. to ISO 62
Density	1430 kg/m³	ISO 1183
Density of melt	1300 kg/m³	

Injection

Drying Recommended	yes
Drying Temperature	100 °C
Drying Time, Dehumidified Dryer	2 - 3 h
Processing Moisture Content	≤0.08 %
Melt Temperature Optimum	200 °C
Min. melt temperature	190 °C

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Max. melt temperature	210 °C
Mold Temperature Optimum	40 °C
Min. mould temperature	30 °C
Max. mould temperature	40 °C

Extrusion

Drying Temperature	80 °C
Drying Time, Dehumidified Dryer	2 - 3 h
Processing Moisture Content	≤0.06 %
Melt Temperature Range	185 - 200 °C

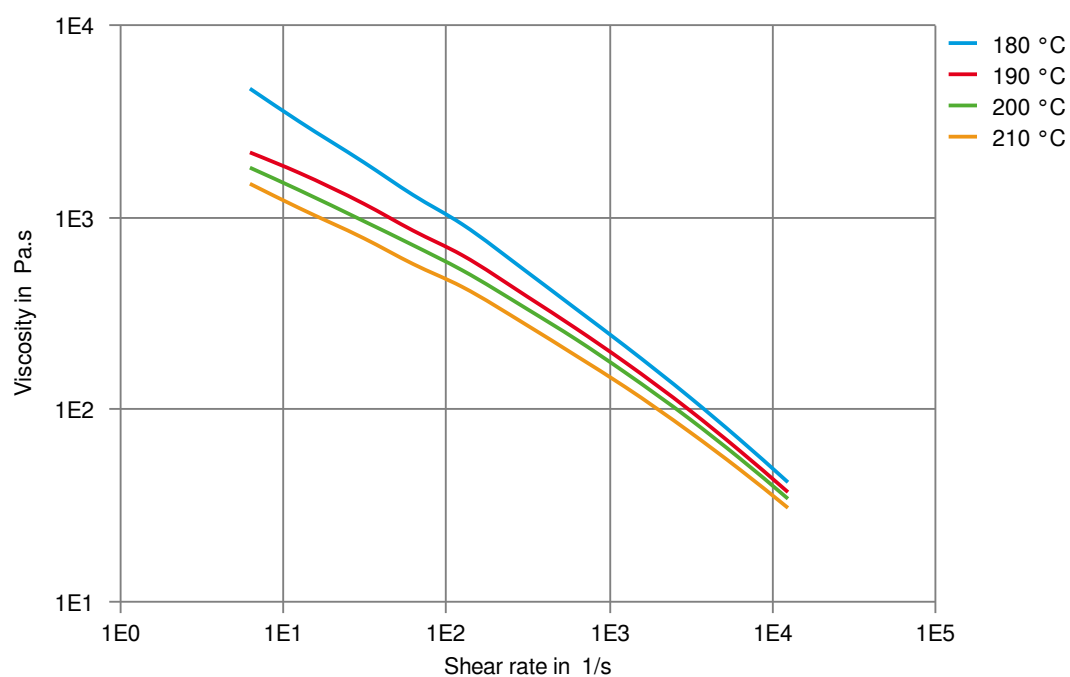
Characteristics

Processing	Injection Moulding, Film Extrusion, Extrusion, Sheet Extrusion, Other Extrusion, Coatable, Casting, Thermoforming
Delivery form	Pellets
Additives	Flame retardant
Special characteristics	Flame retardant, Light stabilised or stable to light

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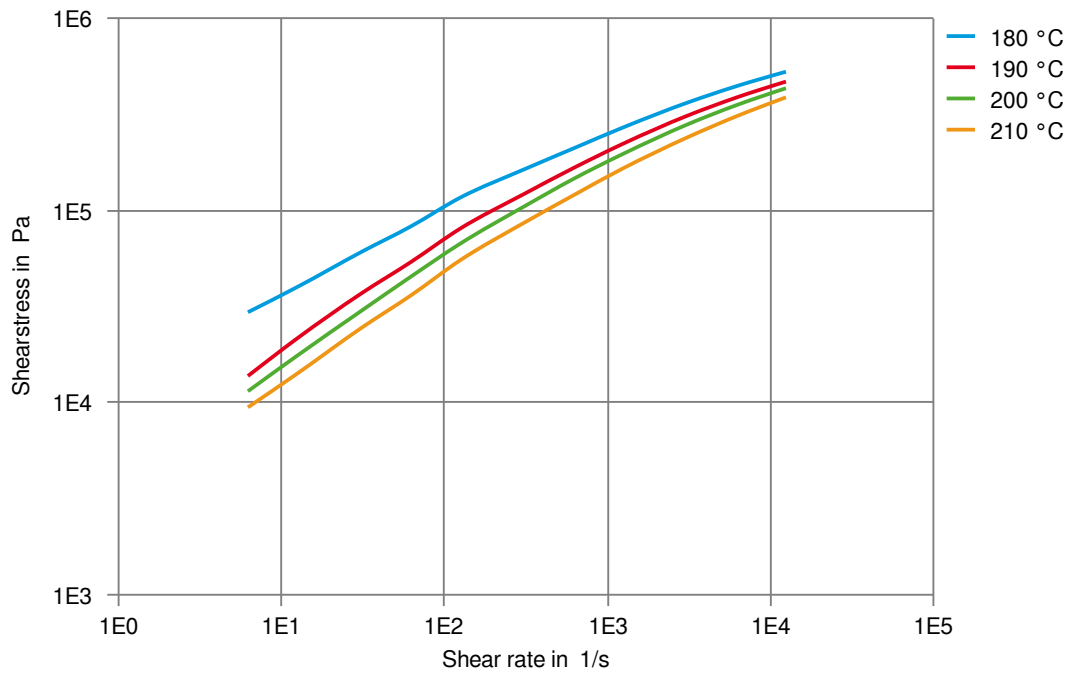
Viscosity-shear rate



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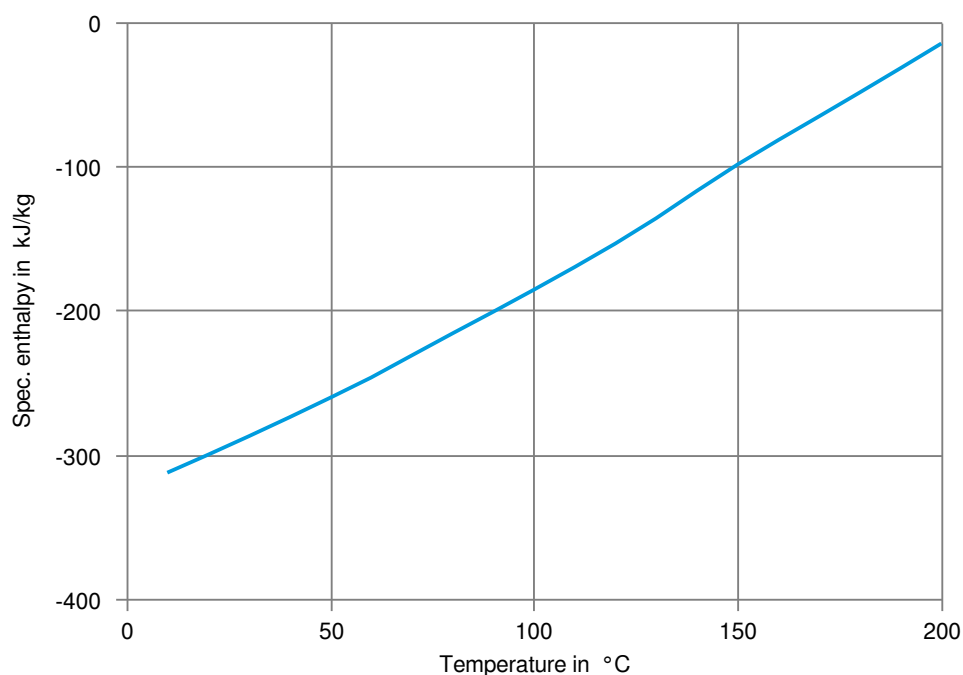
Shearstress-shear rate



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Spec. enthalpy/mass-temp. (DSC)



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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

Salt solutions

- ✓ Sodium Chloride solution (10% by mass), 23°C
- ✗ Sodium Hypochlorite solution (10% by mass), 23°C

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- ✓ 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).