



# Hytrel® DYM350BK

## 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, DuPont recommends, 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® DYM350BK is a medium modulus polyester alloy suited for injection molding of Air Bag Deployment Doors. It has a nominal durometer hardness of 55D and contains fine particle size carbon black.

Typical applications:

Air bag deployment door.

### Rheological properties

Melt volume-flow rate	14 cm <sup>3</sup> /10min	ISO 1133
Melt mass-flow rate	15 g/10min	ISO 1133
Temperature	240 °C	ISO 1133
Load	2.16 kg	ISO 1133
Melt mass-flow rate, Temperature	240 °C	ISO 1133
Melt mass-flow rate, Load	2.16 kg	ISO 1133
Moulding shrinkage, parallel	1.4 %	ISO 294-4, 2577
Moulding shrinkage, normal	1.5 %	ISO 294-4, 2577

### Typical mechanical properties

Tensile Modulus	370 MPa	ISO 527-1/-2
Yield stress	15 MPa	ISO 527-1/-2
Yield strain	43 %	ISO 527-1/-2
Stress at 5% strain	10.5 MPa	ISO 527-1/-2
Stress at 10% strain	13 MPa	ISO 527-1/-2
Stress at 50% strain	16 MPa	ISO 527-1/-2
Stress at break	35 MPa	ISO 527-1/-2
Nominal strain at break	600 %	ISO 527-1/-2
Strain at break	>300 %	ISO 527-1/-2



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Flexural Modulus	430 MPa	ISO 178
Charpy impact strength, 23°C	N kJ/m <sup>2</sup>	ISO 179/1eU
Charpy impact strength, -30°C	N kJ/m <sup>2</sup>	ISO 179/1eU
Charpy notched impact strength, -30°C	120 <sup>[P]</sup> kJ/m <sup>2</sup>	ISO 179/1eA
Charpy notched impact strength, -40°C	130 kJ/m <sup>2</sup>	ISO 179/1eA
Puncture - maximum force, 23°C	3200 N	ISO 6603-2
Puncture energy, 23°C	39 J	ISO 6603-2
Brittleness temperature	-100 °C	ISO 974
Shore D hardness, 15s	50 -	ISO 48-4
Shore D hardness, max	55 -	ISO 48-4
Tear strength, parallel	130 kN/m	ISO 34-1
Tear strength, normal	105 kN/m	ISO 34-1

[P]: Partial Break

### Thermal properties

Melting temperature, 10°C/min	222 °C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	-55 °C	ISO 11357-1/-2
Temp. of deflection under load, 1.8 MPa	40 °C	ISO 75-1/-2
Temp. of deflection under load, 0.45 MPa	50 °C	ISO 75-1/-2
Vicat softening temperature, 50°C/h 10N	170 °C	ISO 306
Coeff. of linear therm. expansion, parallel	180 E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	180 E-6/K	ISO 11359-1/-2
Eff. thermal diffusivity	5.44E-8 m <sup>2</sup> /s	

### Flammability

Oxygen index	22	%	ISO 4589-1/-2
FMVSS Class	SE/B	-	ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	23	mm/min	ISO 3795 (FMVSS 302)

### Electrical properties

Relative permittivity, 100Hz	4.6 -	IEC 62631-2-1
Relative permittivity, 1MHz	4.4 -	IEC 62631-2-1
Dissipation factor, 100Hz	70 E-4	IEC 62631-2-1
Dissipation factor, 1MHz	230 E-4	IEC 62631-2-1
Volume resistivity	>1E13 Ohm.m	IEC 62631-3-1
Surface resistivity	5E14 Ohm	IEC 62631-3-2
Electric strength	20 kV/mm	IEC 60243-1

### Other properties

Humidity absorption, 2mm	0.2 %	Sim. to ISO 62
Water absorption, 2mm	0.6 %	Sim. to ISO 62
Density	1180 kg/m <sup>3</sup>	ISO 1183
Density of melt	1000 kg/m <sup>3</sup>	



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Water Absorption, Immersion 24h 0.6 % Sim. to ISO 62

### VDA Properties

Emission of organic compounds 2.7 µgC/g VDA 277  
Odour 5 class VDA 270

### Injection

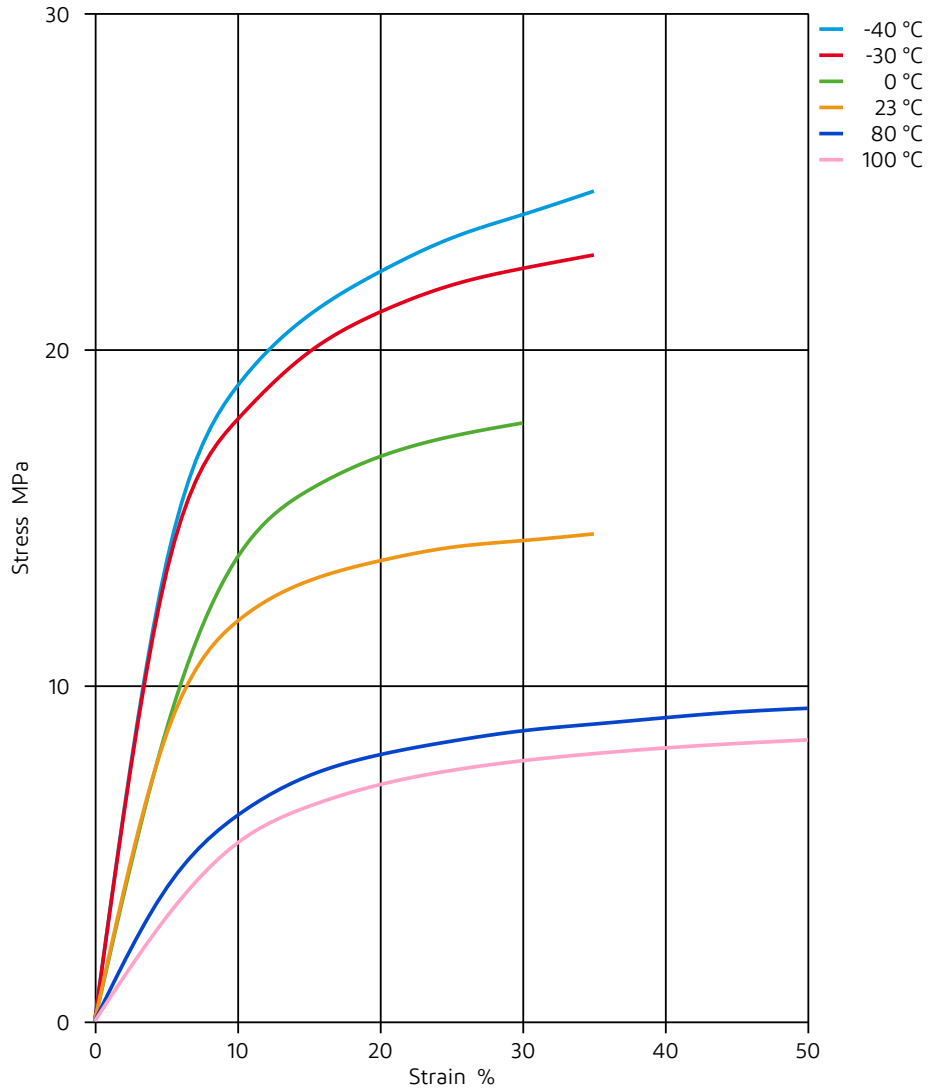
Drying Recommended yes  
Drying Temperature 100 °C  
Drying Time, Dehumidified Dryer 3 - 4 h  
Processing Moisture Content ≤0.05 %  
Melt Temperature Optimum 245 °C  
Min. melt temperature 240 °C  
Max. melt temperature 250 °C  
Mold Temperature Optimum 45 °C  
Min. mould temperature 40 °C  
Max. mould temperature 55 °C



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## Stress-strain

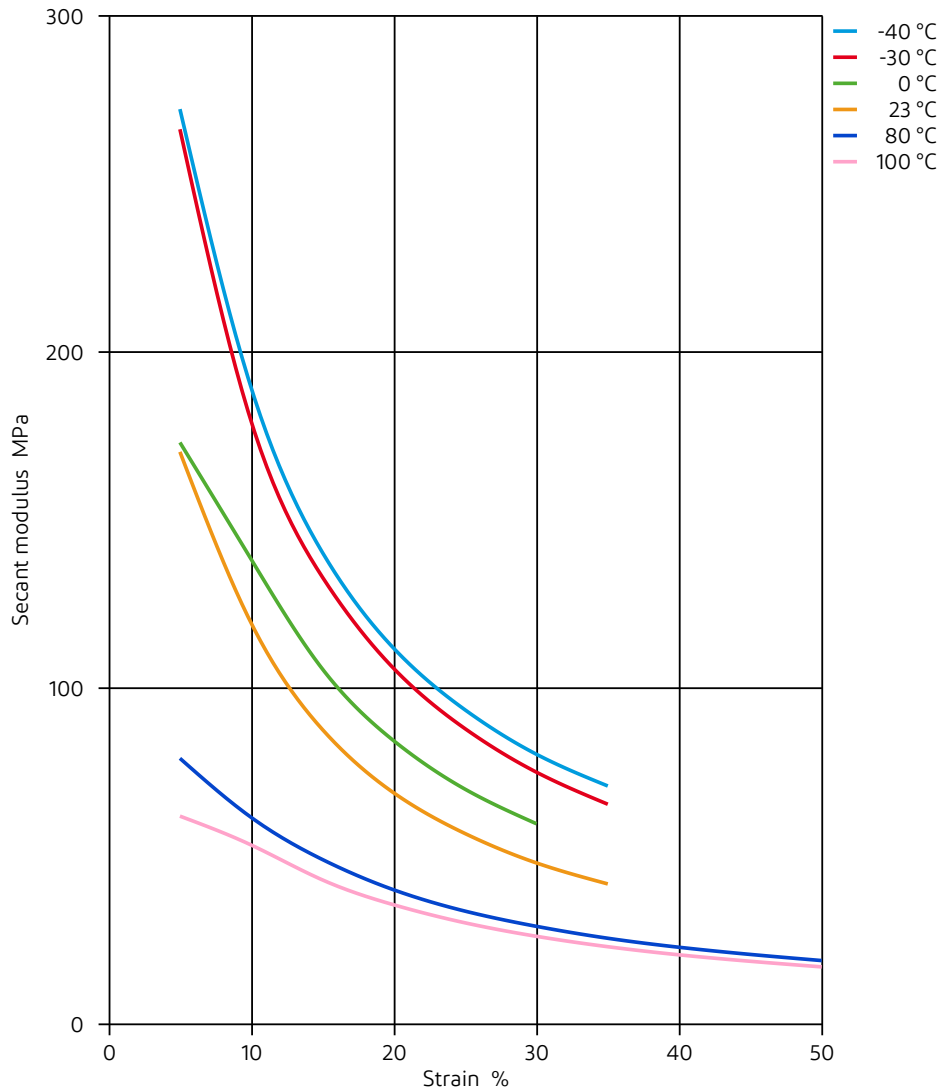




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## Secant modulus-strain

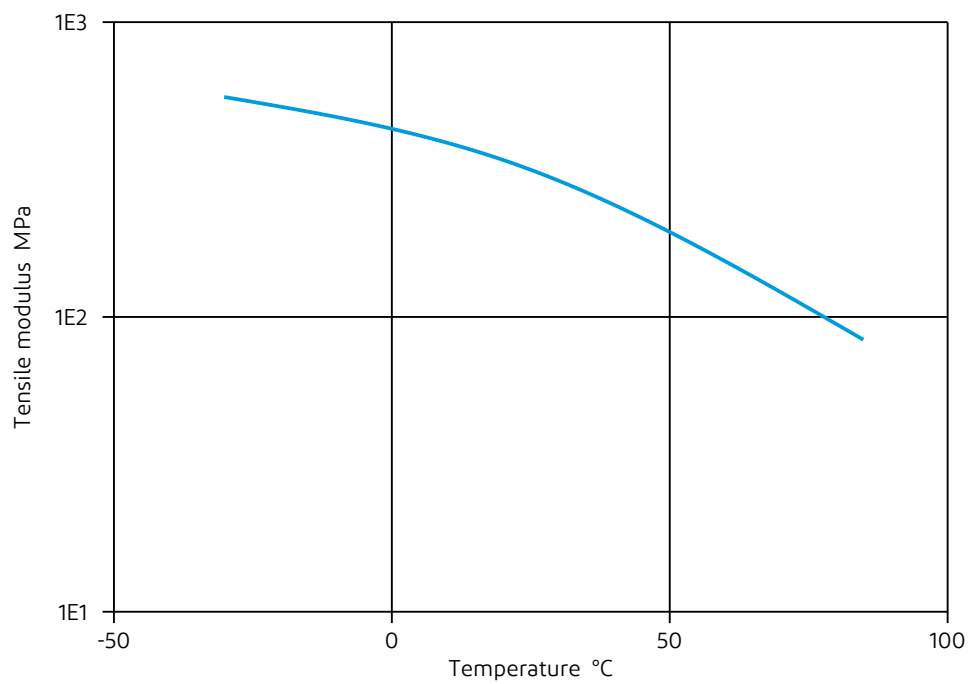




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## Tensile modulus-temperature

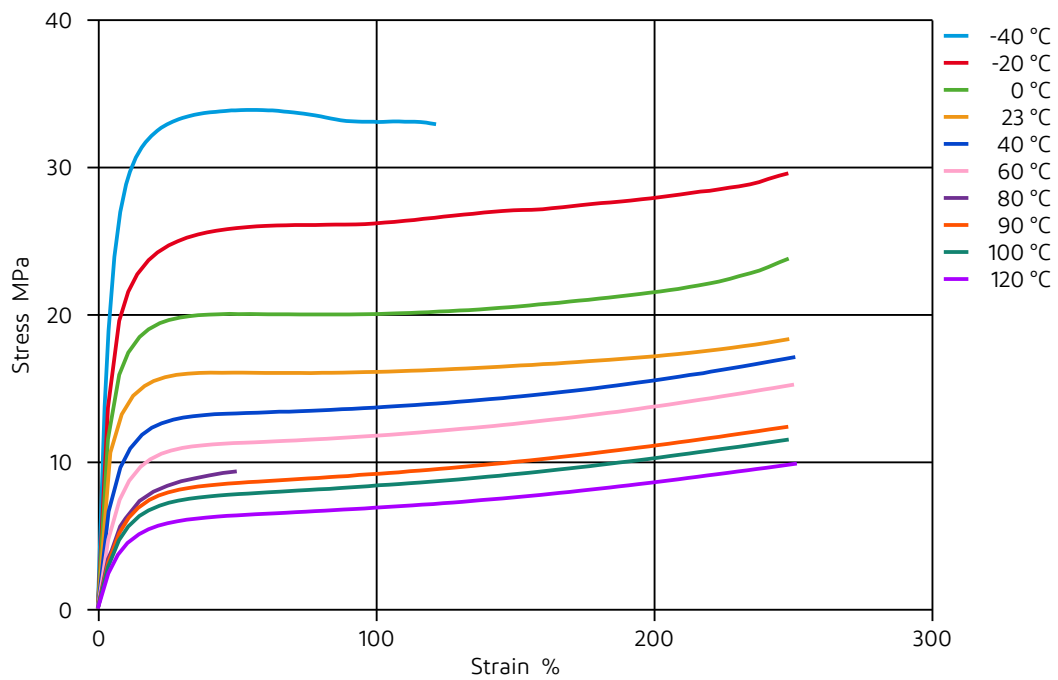




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THERMOPLASTIC POLYESTER ELASTOMER

## Stress-Strain (Flexible Materials)



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## THERMOPLASTIC POLYESTER ELASTOMER

### 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).

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