



# 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, 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® 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 <sup>3</sup> /10min | ISO 1133        |
| Melt mass-flow rate              | 4 g/10min                  | ISO 1133        |
| Temperature                      | 190 °C                     | ISO 1133        |
| Load                             | 2.16 kg                    | ISO 1133        |
| Melt mass-flow rate, Temperature | 190 °C                     | ISO 1133        |
| Melt mass-flow rate, Load        | 2.16 kg                    | ISO 1133        |
| 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 |
| Stress at 50% strain    | 7.3 MPa | ISO 527-1/-2 |
| Stress at break         | 13 MPa  | ISO 527-1/-2 |
| Nominal strain at break | 340 %   | ISO 527-1/-2 |
| Strain at break         | >300 %  | ISO 527-1/-2 |
| Flexural Modulus        | 155 MPa | ISO 178      |



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|                                       |                      |             |
|---------------------------------------|----------------------|-------------|
| Charpy notched impact strength, 23°C  | 40 kJ/m <sup>2</sup> | ISO 179/1eA |
| Charpy notched impact strength, -30°C | 7 kJ/m <sup>2</sup>  | ISO 179/1eA |
| Charpy notched impact strength, -40°C | 5 kJ/m <sup>2</sup>  | ISO 179/1eA |
| Brittleness temperature               | -48 °C               | ISO 974     |
| Shore D hardness, 15s                 | 38 -                 | ISO 48-4    |
| Shore D hardness, max                 | 44 -                 | ISO 48-4    |
| Tear strength, parallel               | 70 kN/m              | ISO 34-1    |
| Tear strength, normal                 | 70 kN/m              | ISO 34-1    |

### Thermal properties

|   |                           |                |
|---|---------------------------|----------------|
| Melting temperature, 10°C/min               | 170 °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    | 46 °C                     | ISO 75-1/-2    |
| Vicat softening temperature, 50°C/h 10N     | 107 °C                    | ISO 306        |
| Coeff. of linear therm. expansion, parallel | 150 E-6/K                 | ISO 11359-1/-2 |
| Coeff. of linear therm. expansion, normal   | 170 E-6/K                 | ISO 11359-1/-2 |
| Eff. thermal diffusivity                    | 5.44E-8 m <sup>2</sup> /s |                |
| RTI, electrical, 1.5mm                      | 50 °C                     | UL 746B        |
| RTI, electrical, 3mm                        | 50 °C                     | UL 746B        |
| RTI, impact, 1.5mm                          | 50 °C                     | UL 746B        |
| RTI, impact, 3mm                            | 50 °C                     | UL 746B        |
| RTI, strength, 1.5mm                        | 50 °C                     | UL 746B        |
| RTI, strength, 3mm                          | 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, 3.0mm             | 425 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       |

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### Other properties

|                                 |                        |                |
|---------------------------------|------------------------|----------------|
| Density                         | 1430 kg/m <sup>3</sup> | ISO 1183       |
| Density of melt                 | 1300 kg/m <sup>3</sup> |                |
| Water Absorption, Immersion 24h | 1.9 %                  | Sim. to ISO 62 |

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

### Characteristics

|           |                 |
|-----------|-----------------|
| Additives | Flame retardant |
|-----------|-----------------|

### 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

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- ✓ 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
- ✓ 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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