



# 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® HTR8332 BK320 is designed for blow molding or processing techniques requiring high melt viscosity. It has nominal hardness of 50D, is pigmented black with fine particle size carbon black, and contains a general purpose stabilizer. It shows excellent mechanical properties at elevated temperatures, superior fatigue, abrasion, and grease resistance.

## **Product information**

1 Todact information			
Resin Identification	TPC-ET		ISO 1043
Part Marking Code	>TPC-ET<		ISO 11469
3			
Rheological properties			
Temperature	230	°C	
Load	10	kg	
Melt mass-flow rate		g/10min	ISO 1133
Typical mechanical properties			
Tensile modulus	106	MPa	ISO 527-1/-2
Stress at 10% elongation	8	MPa	ISO 527-1/-2 or ISO 37
Tensile stress at break	28	MPa	ISO 527-1/-2
Tensile strain at break	300	%	ISO 527-1/-2
Flexural modulus	100	MPa	ISO 178
Charpy notched impact strength, -30°C	N	kJ/m²	ISO 179/1eA
Poisson's ratio	0.49		
Low temperature brittleness	-50	°C	ISO 812
Shore D hardness, 15s	45		ISO 48-4 / ISO 868
Tear strength, parallel	100	kN/m	ISO 34-1
Tear strength, normal	100	kN/m	ISO 34-1

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## Thermal properties

Melting temperature, 10°C/min	199 °C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	-40 °C	ISO 11357-1/-3
Vicat softening temperature, 50°C/h 10N	163 °C	ISO 306

# Flammability

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

# Physical/Other properties

Water absorption, 2mm	0.5 %	Sim. to ISO 62	
Density	1160 kg/m³	ISO 1183	

# Injection

Drying Recommended	yes
Drying Temperature	100 °C
Drying Time, Dehumidified Dryer	2-4 h
Processing Moisture Content	≤0.08 %
Melt Temperature Optimum	225 °C
Min. melt temperature	220 °C
Max. melt temperature	250 °C
Mold Temperature Optimum	45 °C
Min. mould temperature	45 °C
Max. mould temperature	55 °C

# Extrusion

Processing Moisture Content	≤0.06	%
Melt Temperature Optimum	200	°C

# **Blow Molding**

Drying Temperature	100 - 110	°C
Drying Time, Dehumidified Dryer	3 - 4	h
Processing Moisture Content	≤0.02	%
Melt Temperature Optimum	225	°C
Melt Temperature Range	220 - 240	°C
Mold Temperature Optimum	30	°C
Mold Temperature Range	20 - 40	°C

## Characteristics

Processing Injection Moulding, Extrusion, Blow Moulding

Delivery form Pellets

Special characteristics Light stabilised or stable to light, U.V. stabilised or stable to weather, Heat stabilised

or stable to heat

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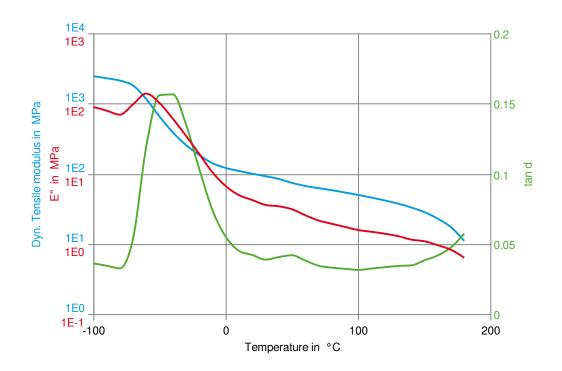
# Additional information

Blow molding POSTPROCESSING

## **Automotive**

OEM STANDARD
Mercedes-Benz DBL5562.50 TPC

# Dynamic Tensile modulus-temperature



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# Hytrel® HTR8332 BK320

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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
- X Hydrochloric Acid (36% by mass), 23°C
- X Nitric Acid (40% by mass), 23°C
- X Sulfuric Acid (38% by mass), 23°C
- ✓ Sulfuric Acid (5% by mass), 23°C
- X 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
- X SAE 10W40 multigrade motor oil, 130°C
- X SAE 80/90 hypoid-gear oil, 130°C
- ✓ Insulating Oil, 23°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
- ➤ 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
- X Hydrogen peroxide, 23°C
- X 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
- X 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).

x 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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NOTICE TO USERS: Values shown are based on testing of laboratory test specimens and represent data that fall within the standard range of properties for natural material. These values alone do not represent a sufficient basis for any part design and are not intended for use in establishing maximum, minimum, or ranges of values for specification purposes. Colourants or other additives may cause significant variations in data values. Properties of moulded parts can be influenced by a wide variety of factors including, but not limited to, material selection, additives, part design, processing conditions and environmental exposure. Other than those products expressly identified as medical grade (including by MT® product designation or otherwise), Celanese's products are not intended for use in medical or dental implants. Regardless of any such product designation, any determination of the suitability of a particular material and part design for any use contemplated by the users and the manner of such use is the sole responsibility of the users, who must assure themselves that the material as subsequently processed meets the needs of their particular product or use. To the best of our knowledge, the information contained in this publication is accurate; however, we do not assume any liability whatsoever for the accuracy and completeness of such information. The information contained in this publication should not be construed as a promise or guarantee of specific properties of our products. It is the sole responsibility of the users to investigate whether any existing patents are infringed by the use of the materials mentioned in this publication. Moreover, there is a need to reduce human exposure to many materials to the lowest practical limits in view of possible adverse effects. To the extent that any hazards may have been mentioned in this publication, we neither suggest nor guarantee that such hazards are the only ones that exist. We recommend that persons intending to rely on any recommendation or to use any e

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