

## Hytel® HTR8908ECO-B 452 BK320 (PRELIMINARY) THERMOPLASTIC POLYESTER ELASTOMER

Common features of Hytel® 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. Hytel® thermoplastic polyester elastomer is plasticiser free.

The good melt stability of Hytel® 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.

Hytel® 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.

Hytel® HTR8908ECO-B 452 BK320 is a soft hardness halogen-free flame retardant thermoplastic elastomer with very good flammability performance. It can be processed by thermoplastic techniques such as injection molding and extrusion. Suitable for thin wall wire & cable extrusion applications. It is the natural color alternative of Hytel® HTR8908ECO-B BK320.

Hytel® HTR8908ECO-B 452 BK320 belongs to the Hytel® ECO-B family. The products of this family are partially produced using bio-feedstock derived from waste\*. This results in reduced lifecycle greenhouse gas emissions and lower fossil resource use.

\*certified bio-circular according to ISCC Plus mass balance approach.

### Rheological properties

Melt mass-flow rate	5.2 g/10min	ISO 1133
Melt mass-flow rate, Temperature	200 °C	
Melt mass-flow rate, Load	2.16 kg	

### Typical mechanical properties

Tensile modulus	58 <sup>[1]</sup> MPa	ISO 527-1/-2
Stress at 5% elongation	2.3 <sup>[2]</sup> MPa	ISO 527-1/-2 or ISO 37
Stress at 10% elongation	4 <sup>[2]</sup> MPa	ISO 527-1/-2 or ISO 37
Tensile stress at 50% elongation	5.5 <sup>[2]</sup> MPa	ISO 527-1/-2 or ISO 37
Tensile stress at break	13 <sup>[2]</sup> MPa	ISO 527-1/-2
Tensile strain at break	>300 <sup>[2]</sup> %	ISO 527-1/-2
Flexural modulus	59 MPa	ISO 178
Charpy notched impact strength, -30 °C	63 kJ/m <sup>2</sup>	ISO 179/1eA
Charpy notched impact strength, -40 °C	79 kJ/m <sup>2</sup>	ISO 179/1eA
Izod notched impact strength, -40 °C	58.0 kJ/m <sup>2</sup>	ISO 180/1A
Brittleness temperature	-70 <sup>[3]</sup> °C	ISO 974
Shore A hardness, 3s	91	ISO 48-4 / ISO 868
Shore A hardness, 15s	90	ISO 48-4 / ISO 868
Shore D hardness, 15s	30	ISO 48-4 / ISO 868
Shore D hardness, max	31	ISO 868
Tear strength, parallel	57 kN/m	ISO 34-1
Tear strength, normal	58 kN/m	ISO 34-1

[1]: 1BA injected test bar, 1 mm/min speed

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[2]: 1BA injected test bar, 200 mm/min speed

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[3]: lower than -70 °C

### Thermal properties

Melting temperature, 10°C/min	172 °C	ISO 11357-1/-3
Temperature of deflection under load, 0.45 MPa	46 °C	ISO 75-1/-2
Vicat softening temperature, 50°C/h 10N	81 °C	ISO 306

### Flammability

Burning Behav. at 1.5mm nom. thickn.	V-2 <sup>[4]</sup> class	IEC 60695-11-10
Thickness tested	1.6 <sup>[4]</sup> mm	IEC 60695-11-10
Burning Behav. at thickness h	V-1 <sup>[4]</sup> class	IEC 60695-11-10
Thickness tested	3.2 <sup>[4]</sup> mm	IEC 60695-11-10

[4]: Not UL certified

### Physical/Other properties

Density	1120 kg/m <sup>3</sup>	ISO 1183
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### Injection

Drying Recommended	yes
Drying Temperature	100 °C
Drying Time, Dehumidified Dryer	2 - 3 h
Processing Moisture Content	≤0.08 %
Min. melt temperature	200 °C
Max. melt temperature	230 °C

### Extrusion

Drying Temperature	70 - 90 °C
Drying Time, Dehumidified Dryer	2 - 3 h
Processing Moisture Content	≤0.06 %
Melt Temperature Range	200 - 235 °C

### Characteristics

Processing	Injection Moulding, Extrusion, Extrusion - Wire and Cable, Other Extrusion, Calendering, Casting, Thermoforming
Delivery form	Pellets
Additives	Flame retardant, Non-halogenated/Red phosphorous free flame retardant
Special characteristics	Flame retardant, Heat stabilised or stable to heat, Colourable
Sustainability	Bio-Content

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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

### 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
- ✓ 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

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- ✗ Ethylene Glycol (50% by mass) in water, 108 °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).

The above data are preliminary and are subject to change as additional data are developed on subsequent lots.

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 equipment, processing technique or material mentioned in this publication should satisfy themselves that they can meet all applicable safety and health standards. We strongly recommend that users seek and adhere to the manufacturer's current instructions for handling each material they use, and entrust the handling of such material to adequately trained personnel only. Please call the telephone numbers listed for additional technical information. Call Customer Services for the appropriate Materials Safety Data Sheets (MSDS) before attempting to process our products.

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