Celanese
The chemistry inside innovation™

Hytrel® HTR8997 NC010

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® HTR8997 is a medium modulus grade with nominal hardness of 45D. It contains non-discoloring stabilizer. It can be processed by many conventional thermoplastic processing techniques like injection molding and extrusion.

Rheological properties

Melt mass-flow rate	6.5	g/10min	ISO 1133
Melt mass-flow rate, Temperature	200	°C	
Melt mass-flow rate, Load	2.16	kg	

[1]: single point data

Typical mechanical properties

Tensile Modulus	77	MPa	ISO 527-1/-2
Stress at 10% strain	6	MPa	ISO 527-1/-2
Stress at break, 50mm/min	21	MPa	ISO 527-1/-2
Stress at break	20.6	MPa	ISO 527-1/-2
Strain at break	>300	%	ISO 527-1/-2
Flexural Modulus	81	MPa	ISO 178
Poisson's ratio	0.49		
Shore D hardness, 15s	39		ISO 48-4 / ISO 868
Shore D hardness, max	45		ISO 868

[1]: single point data

Thermal properties

Melting temperature, 10°C/min	168	°C	ISO 11357-1/-3
Glass transition temperature, 1 Hz	-32	°C	ISO 6721

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Other properties

Density	1160	kg/m³	ISO 1183

Injection

Drying Recommended	yes		
Drying Temperature	80	°C	
Drying Time, Dehumidified Dryer	2 - 3	h	
Processing Moisture Content	≤0.06	%	
Melt Temperature Optimum	200	°C	Internal
Min. melt temperature	190	°C	
Max. melt temperature	220	°C	
Mold Temperature Optimum	45	°C	
Min. mould temperature	45	°C	
Max. mould temperature	55	°C	

Extrusion

Drying Temperature	90 - 110	°C
Drying Time, Dehumidified Dryer	2 - 3	h
Processing Moisture Content	≤0.06	%
Melt Temperature Optimum	215	°C
Melt Temperature Range	210 - 225	°C

Additional information

Injection molding

PREPROCESSING

Drying recommended = Yes
Drying temperature = 80°C
Drying time, dehumidified dryer = 2-3 h
Processing moisture content = <0.06 %

PROCESSING

Melt temperature range = 190-220°C
Melt temperature optimum = 200°C
Mold temperature optimum = 45°C
Mold temperature range = 45-55°C

Profile extrusion

PREPROCESSING

Drying temperature = 100°C
Drying time, dehumidified dryer = 2-3 h
Processing moisture content = <0.06 %

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PROCESSING

Melt termperature range = 205-230 °C
Melt temperature optimum = 215 °C

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
- ✘ Motor oil OS206 304 Ref.Eng.Oil, ISP, 135 °C
- ✘ Automatic hypoid-gear oil Shell Donax TX, 135 °C
- ✘ Hydraulic oil Pentosin CHF 202, 125 °C

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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).