

Hytrel® 3046 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® 3046 NC010 is a high performance thermoplastic elastomer, with excellent flexibility and impact strength at temperature as low as -40 °C, and significant strength and integrity above 110 °C without the use of plasticizers. It has excellent flex crack resistance, as well as resistance to tear, wear, impact, stress relaxation and creep; good hydrocarbon resistance.

Product information

Resin Identification	TPC-ET	ISO 1043
Part Marking Code	>TPC-ET<	ISO 11469

Rheological properties

Melt mass-flow rate	11 g/10min	ISO 1133
Melt mass-flow rate, Temperature	190 °C	
Melt mass-flow rate, Load	2.16 kg	

Typical mechanical properties

Tensile modulus	24 MPa	ISO 527-1/-2
Stress at 10% strain	1.9 MPa	ISO 527-1/-2
Tensile stress at 50% strain, 1BA	3.2 MPa	ISO 527-1/-2
Tensile stress at break	20 MPa	ISO 527-1/-2
Tensile strain at break	>300 %	ISO 527-1/-2
Charpy notched impact strength, 23 °C	N kJ/m ²	ISO 179/1eA
Charpy notched impact strength, -30 °C	N kJ/m ²	ISO 179/1eA
Charpy notched impact strength, -40 °C	N kJ/m ²	ISO 179/1eA
Izod notched impact strength, 23 °C	N kJ/m ²	ISO 180/1A
Izod notched impact strength, -30 °C	N kJ/m ²	ISO 180/1A
Shore D hardness, 15s	25	ISO 48-4 / ISO 868
Shore D hardness, max	30	ISO 868

Hytrel® 3046 NC010

THERMOPLASTIC POLYESTER ELASTOMER

Thermal properties

Melting temperature, 10°C/min	168 °C	ISO 11357-1/-3
Vicat softening temperature, 50°C/h 10N	67 °C	ISO 306

Flammability

FMVSS Class	B	ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	41 mm/min	ISO 3795 (FMVSS 302)

Physical/Other properties

Humidity absorption, 2mm	0.2 %	Sim. to ISO 62
Density	1070 kg/m ³	ISO 1183

VDA Properties

Emission of organic compounds	1.5 µgC/g	VDA 277
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Injection

Drying Recommended	yes
Drying Temperature	80 °C
Drying Time, Dehumidified Dryer	2 - 3 h
Processing Moisture Content	≤0.08 %
Melt Temperature Optimum	205 °C
Min. melt temperature	190 °C
Max. melt temperature	210 °C
Mold Temperature Optimum	30 °C
Min. mould temperature	30 °C
Max. mould temperature	40 °C
Ejection temperature	65 °C

Characteristics

Processing	Injection Moulding, Film Extrusion, Sheet Extrusion
Delivery form	Pellets
Special characteristics	Light stabilised or stable to light

Additional information

Injection molding

PREPROCESSING

Drying recommended = Yes
 Drying temperature = 80°C
 Drying time, dehumidified dryer = 2-3 h
 Processing moisture content = <0.08 %

PROCESSING

Melt temperature optimum = 205°C
 Mold temperature optimum = 30°C

Hytrel® 3046 NC010

THERMOPLASTIC POLYESTER ELASTOMER

Mold temperature range = 30-40°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

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

Hytrel® 3046 NC010

THERMOPLASTIC POLYESTER ELASTOMER

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).