



Hytrel® 4068FG

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® 4068FG is a high performance thermoplastic polyester elastomer developed for applications in contact with food.

FOOD CONTACT

This product is manufactured according to Good Manufacturing Practice (GMP) principles and generally accepted in food contact applications in Europe and the USA when meeting applicable use conditions. For details, individual compliance statements are available from your DuPont representative.

Product information

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

Rheological properties

Melt volume-flow rate	8.8 cm ³ /10min	ISO 1133
Melt mass-flow rate	8.5 g/10min	ISO 1133
Temperature	220 °C	ISO 1133
Load	2.16 kg	ISO 1133
Melt mass-flow rate, Temperature	220 °C	ISO 1133
Melt mass-flow rate, Load	2.16 kg	ISO 1133
Moulding shrinkage, parallel	1.0 %	ISO 294-4, 2577
Moulding shrinkage, normal	0.9 %	ISO 294-4, 2577



Hytrel® 4068FG

THERMOPLASTIC POLYESTER ELASTOMER

Typical mechanical properties

Tensile Modulus	45 MPa	ISO 527-1/-2
Stress at 5% strain	2.4 MPa	ISO 527-1/-2
Stress at 10% strain	3.5 MPa	ISO 527-1/-2
Stress at 50% strain	6.7 MPa	ISO 527-1/-2
Stress at break	29 MPa	ISO 527-1/-2
Nominal strain at break	800 %	ISO 527-1/-2
Strain at break	>300 %	ISO 527-1/-2
Flexural Modulus	47 MPa	ISO 178
Tensile creep modulus, 1000h	21 MPa	ISO 899-1
Charpy impact strength, 23°C	N kJ/m ²	ISO 179/1eU
Charpy impact strength, -30°C	N kJ/m ²	ISO 179/1eU
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
Tensile notched impact strength, 23°C	145 kJ/m ²	ISO 8256/1
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
Izod notched impact strength, -40°C	N kJ/m ²	ISO 180/1A
Shore D hardness, 15s	33 -	ISO 48-4
Shore D hardness, max	37 -	ISO 48-4
Tear strength, parallel	100 kN/m	ISO 34-1
Tear strength, normal	103 kN/m	ISO 34-1
Abrasion resistance	180 mm ³	ISO 4649

Thermal properties

Melting temperature, 10°C/min	193 °C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	-55 °C	ISO 11357-1/-2
Vicat softening temperature, 50°C/h 10N	130 °C	ISO 306
Coeff. of linear therm. expansion, parallel	230 E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	230 E-6/K	ISO 11359-1/-2
Eff. thermal diffusivity	5.44E-8 m ² /s	

Flammability

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

Electrical properties

Relative permittivity, 100Hz	4.8 -	IEC 62631-2-1
Relative permittivity, 1MHz	4.7 -	IEC 62631-2-1
Electric strength	18 kV/mm	IEC 60243-1
Comparative tracking index	600 -	IEC 60112



Hytrel® 4068FG

THERMOPLASTIC POLYESTER ELASTOMER

Other properties

Humidity absorption, 2mm	0.3 %	Sim. to ISO 62
Water absorption, 2mm	0.7 %	Sim. to ISO 62
Density	1110 kg/m ³	ISO 1183

VDA Properties

Emission of organic compounds	10 µgC/g	VDA 277
Odour	4 class	VDA 270

Injection

Drying Recommended	yes
Drying Temperature	100 °C
Drying Time, Dehumidified Dryer	2 - 3 h
Processing Moisture Content	≤0.08 %
Melt Temperature Optimum	225 °C
Min. melt temperature	220 °C
Max. melt temperature	250 °C
Mold Temperature Optimum	40 °C
Min. mould temperature	30 °C
Max. mould temperature	40 °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 temperature = 100°C
Drying time, dehumidified dryer = 2-3 h
Processing moisture content = <0.06 %

PROCESSING

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

Profile extrusion

PREPROCESSING



Hytrel[®] 4068FG

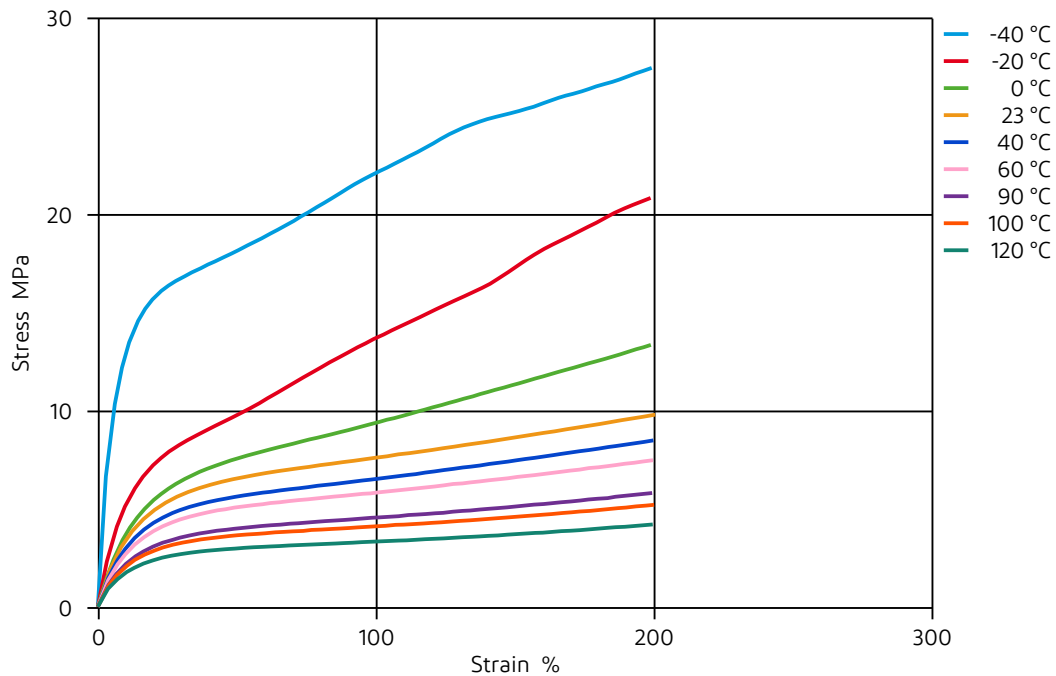
THERMOPLASTIC POLYESTER ELASTOMER

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

PROCESSING

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

Stress-Strain (Flexible Materials)



Hytrel[®] 4068FG

THERMOPLASTIC POLYESTER ELASTOMER

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® 4068FG

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).

The information set forth herein is furnished free of charge, is based on technical data that DuPont believes to be reliable, and represents typical values that fall within the normal range of properties. This information relates only to the specific material designated and may not be valid for such material used in combination with other materials or in other processes. It is intended for use by persons having technical skill, at their own discretion and risk. This information should not be used to establish specification limits nor used alone as the basis of design. Handling precaution information is given with the understanding that those using it will satisfy themselves that their particular conditions of use present no health or safety hazards and comply with applicable law. Since conditions of product use and disposal are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information. As with any product, evaluation under end-use conditions prior to specification is essential. Nothing herein is to be taken as a license to operate or a recommendation to infringe on patents.

CAUTION: Do not use DuPont materials in medical applications involving implantation in the human body or contact with internal body fluids or tissues unless the material has been provided from DuPont under a written contract or other acknowledgement that is consistent with the DuPont policy regarding medical applications and expressly acknowledges the contemplated use. For further information, please contact your DuPont representative.

DuPont's sole warranty is that our products will meet our standard sales specifications in effect at the time of shipment. Your exclusive remedy for breach of such warranty is limited to refund of purchase price or replacement of any product shown to be other than as warranted. TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, DUPONT SPECIFICALLY DISCLAIMS ANY OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, OR NON-INFRINGEMENT. DUPONT DISCLAIMS LIABILITY FOR ANY SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES.