DuPont™ Hytrel® 4053FG NC010

THERMOPLASTIC POLYESTER ELASTOMER

Product Information

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® 4053FG is a low modulus high performance thermoplastic elastomer developed for applications in contact with food. It is suitable for extrusion and injection molding processes.

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.

General information	Value	Unit	Test Standard
Resin Identification	TPC-ET	-	ISO 1043
Part Marking Code	TPC-ET	-	ISO 11469
Rheological properties	**Value**	**Unit**	**Test Standard**
Melt volume-flow rate	5	cm^3/10min	ISO 1133
Temperature	190	°C	ISO 1133
Load	2.16	kg	ISO 1133
Melt mass-flow rate	5.3	g/10min	ISO 1133
Melt mass-flow rate, Temperature	190	°C	ISO 1133
Melt mass-flow rate, Load	2.16	kg	ISO 1133
Molding shrinkage, parallel	0.2	%	ISO 294-4, 2577
Molding shrinkage, normal	0.4	%	ISO 294-4, 2577
Mechanical properties (TPE)	**Value**	**Unit**	**Test Standard**
Stress at 5% strain	2.4	MPa	ISO 527-1/-2
Stress at 10% strain	4.1	MPa	ISO 527-1/-2
Stress at 50% strain	7.3	MPa	ISO 527-1/-2
Stress at break	26	MPa	ISO 527-1/-2
Strain at break	>300	%	ISO 527-1/-2
Tear strength, parallel	110	kN/m	ISO 34-1
Shore D hardness, 15s	38	-	ISO 7619-1
Mechanical properties	**Value**	**Unit**	**Test Standard**
Tensile Modulus	56	MPa	ISO 527-1/-2
Tensile creep modulus			ISO 899-1
1h	50	MPa	
1000h	40	MPa	
Charpy impact strength			ISO 179/1eU
73°F	N	kJ/m^2	
-22°F	N	kJ/m^2	

To find out more, visit DuPont Performance Polymers or contact nearest DuPont location.

North America **Asia Pacific** **Europe/Middle East/Africa**
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Charpy notched impact strength			ISO 179/1eA
73°F	N	kJ/m²	
-22°F	N	kJ/m²	
-40°F	N	kJ/m²	
Tensile notched impact strength, 73°F	230	kJ/m²	ISO 8256/1
Thermal properties	**Value**	**Unit**	**Test Standard**
Melting temperature, 18°F/min	150	°C	ISO 11357-1/-3
Glass transition temperature, 18°F/min	-50	°C	ISO 11357-1/-2
Temp. of deflection under load, 65 psi	50	°C	ISO 75-1/-2
Coeff. of linear therm. expansion, parallel	220	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	220	E-6/K	ISO 11359-1/-2
Eff. thermal diffusivity	5.44E-8	m²/s	-
Flammability	**Value**	**Unit**	**Test Standard**
Burning Behav. at 60mil nom. thickn.	HB	class	IEC 60695-11-10
Thickness tested	1.5	mm	IEC 60695-11-10
UL recognition	yes	-	UL 94
Oxygen index	20	%	ISO 4589-1/-2
FMVSS Class	SE	-	ISO 3795 (FMVSS 302)
Electrical properties	**Value**	**Unit**	**Test Standard**
Relative permittivity			IEC 62631-2-1
100Hz	5.2	-	
1MHz	4.7	-	
Dissipation factor			IEC 62631-2-1
100Hz	110	E-4	
1MHz	525	E-4	
Volume resistivity	7E10	Ohm*m	IEC 62631-3-1
Surface resistivity	2E14	Ohm	IEC 62631-3-2
Electric strength	18	kV/mm	IEC 60243-1
Comparative tracking index	600	-	IEC 60112
Other properties	**Value**	**Unit**	**Test Standard**
Humidity absorption, 80mil	0.2	%	Sim. to ISO 62
Water absorption, 80mil	0.7	%	Sim. to ISO 62
Density	1160	kg/m³	ISO 1183
Density of melt	1020	kg/m³	-
Injection	**Value**	**Unit**	**Test Standard**
Drying Recommended	yes	-	-
Drying Temperature	≥80	°C	-
Drying Time, Dehumidified Dryer	2 - 3	h	-
Processing Moisture Content	≤0.08	%	-
Melt Temperature Optimum	180	°C	-
Min. melt temperature	170	°C	-
Max. melt temperature	190	°C	-
Mold Temperature Optimum	40	°C	-
Min. mold temperature	30	°C	-
Max. mold temperature	40	°C	-
Extrusion	**Value**	**Unit**	**Test Standard**
Drying Temperature	70 - 90	°C	-
Drying Time, Dehumidified Dryer	2 - 3	h	-
Processing Moisture Content	≤0.06	%	-
Melt Temperature Optimum	170	°C	-
Melt Temperature Range	165 - 180	°C	-

Characteristics			
Processing	• Injection Molding • Film Extrusion • Profile Extrusion	• Sheet Extrusion • Other Extrusion • Coating	• Calandering • Casting • Thermoforming

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Delivery form	• Pellets		
Special characteristics	• Light stabilized or stable to light		
Regional Availability	• North America • Europe	• Asia Pacific • South and Central America	• Near East/Africa • Global

Processing Texts

Injection molding

Snake Flow Test , mm

Inject press 62MPa, 1mm	80
Inject press 62MPa, 2.5mm	330
Inject press 83MPa(12,000psi), 1mm	95
Inject press 83MPa(12,000psi), 2.5mm	430

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Chemical Media Resistance

Other

✓ Water (90°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).

Contact DuPont for Material Safety Data Sheet, general guides and/or additional information about ventilation, handling, purging, drying, etc. ISO Mechanical properties measured at 160 mil (Hytrel® measured at 80 mil), IEC Electrical properties measured at 80 mil, all ASTM properties measured at 120 mil, and test temperatures are 73°F unless otherwise stated.

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