

Product Texts

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® 4556 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.

Processing/Physical Characteristics	Value	Unit	Test Standard
ISO Data			
^[C] Melt volume-flow rate, MVR	7.5	cm ³ /10min	ISO 1133
Temperature	220	°C	-
Load	2.16	kg	-
^[C] Molding shrinkage, parallel	1.2	%	ISO 294-4, 2577
^[C] Molding shrinkage, normal	1.1	%	ISO 294-4, 2577
^[C] Eff. thermal diffusivity	5.44E-8	m ² /s	-
ASTM Data			
Melt Flow Index, MFI	8.5	g/10min	ASTM D 1238
Temperature	220	°C	-
Load	2.16	kg	-
Mold Shrinkage, MD	0.011	mm/mm	ASTM D 955

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Mechanical properties	Value	Unit	Test Standard
ISO Data			
^[C] Tensile Modulus	85	MPa	ISO 527
^[C] Charpy impact strength, +23°C	N	kJ/m ²	ISO 179/1eU
^[C] Charpy impact strength, -30°C	N	kJ/m ²	ISO 179/1eU
^[C] Charpy notched impact strength, +23°C	N	kJ/m ²	ISO 179/1eA
^[C] Charpy notched impact strength, -30°C	N	kJ/m ²	ISO 179/1eA
^[C] Puncture - maximum force, +23°C	1600	N	ISO 6603-2
^[C] Puncture - maximum force, -30°C	2700	N	ISO 6603-2
^[C] Puncture energy, +23°C	19	J	ISO 6603-2
^[C] Puncture energy, -30°C	34	J	ISO 6603-2
^[C] Stress at 10% elongation	5.7	MPa	ISO 527
^[C] Stress at 100% elongation	11	MPa	ISO 527
^[C] Stress at 300% elongation	17	MPa	ISO 527
^[C] Stress at break TPE	34	MPa	ISO 527
^[C] Strain at break TPE	>300	%	ISO 527
^[C] Abrasion resistance	130	mm ³	ISO 4649
^[C] Shore D hardness	42	-	ISO 7619-1
ASTM Data			
Tensile Strength at Break	31	MPa	ASTM D 638
Elongation at Break	600	%	ASTM D 638
Flexural Modulus	84	MPa	ASTM D 790
Shore D Hardness	45	-	ASTM D 2240
Izod Impact notched, 1/8 in	N	J/m	ASTM D 256
Izod Impact notched, Low-Temperature	N	J/m	ASTM D 256
Temperature	-40	°C	-

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Thermal properties	Value	Unit	Test Standard
ISO Data			
^[C] Melting temperature, 10°C/min	193	°C	ISO 11357-1/-3
^[C] Glass transition temperature, 10°C/min	-50	°C	ISO 11357-1/-2
^[C] Temp. of deflection under load, 1.80 MPa	35	°C	ISO 75-1/-2
^[C] Temp. of deflection under load, 0.45 MPa	50	°C	ISO 75-1/-2
^[C] Vicat softening temperature, B	60	°C	ISO 306
^[C] Coeff. of linear therm. expansion, parallel	170	E-6/K	ISO 11359-1/-2
^[C] Coeff. of linear therm. expansion, normal	190	E-6/K	ISO 11359-1/-2
^[C] Burning Behav. at 1.5 mm nom. thickn.	HB	class	IEC 60695-11-10
Thickness tested	1.5	mm	-
Yellow Card available	yes	-	-
^[C] Burning Behav. at thickness h	HB	class	IEC 60695-11-10
Thickness tested	3.0	mm	-
Yellow Card available	yes	-	-
^[C] Burning rate, FMVSS, Thickness 1 mm	21	mm/min	ISO 3795 (FMVSS 302)
^[C] Oxygen index	20	%	ISO 4589-1/-2
ASTM Data			
UL 94 Flame rating	HB	-	UL 94
Thickness tested	1.5	mm	-
Coefficient of Thermal Expansion, MD	210	E-6/K	ASTM D 696
Coefficient of Thermal Expansion, TD	190	E-6/K	ASTM D 696
DTUL @ 66 psi	60	°C	ASTM D 648
DTUL @ 264 psi	43	°C	ASTM D 648
Melting Temperature	193	°C	ASTM D 3418

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Electrical properties	Value	Unit	Test Standard
ISO Data			
^[C] Relative permittivity, 100Hz	4.8	-	IEC 62631-2-1
^[C] Relative permittivity, 1MHz	4.5	-	IEC 62631-2-1
^[C] Dissipation factor, 100Hz	95	E-4	IEC 62631-2-1
^[C] Dissipation factor, 1MHz	300	E-4	IEC 62631-2-1
^[C] Volume resistivity	8E10	Ohm*m	IEC 62631-3-1
^[C] Surface resistivity	4E14	Ohm	IEC 62631-3-2
^[C] Electric strength	19	kV/mm	IEC 60243-1
^[C] Comparative tracking index	600	-	IEC 60112

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Other properties	Value	Unit	Test Standard
^[C] Water absorption	0.6	%	Sim. to ISO 62
^[C] Humidity absorption	0.2	%	Sim. to ISO 62
^[C] Density	1140	kg/m ³	ISO 1183
Water Absorption, 24hr	0.6	%	ASTM D 570
Density	1140	kg/m ³	ASTM D 792

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Film Properties	Value	Unit	Test Standard
ISO Data			
^[C] WVTR, 23°C/85%r.h.	600	g/(m ² *d)	ISO 15106-1/-2
^[C] Thickness of specimen	0.025	mm	-

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Characteristics

Processing

Injection Molding, Film Extrusion, Pipe/Tube Extrusion, Profile Extrusion, Sheet Extrusion, Wire/Cable Extrusion, Other Extrusion, Coating, Casting, Thermoforming

Delivery form

Pellets

Additives

Release agent

Special Characteristics

Platable, High impact or impact modified, Light stabilized or stable to light, Heat stabilized or stable to heat

Features

Color Stability, Creep Resistance

Chemical Resistance

Oxidation Resistance

Certifications

Food contact, Food approval FDA 21 CFR

Applications

Automotive

Regional Availability

North America, Europe, Asia Pacific, South and Central America, Near East/Africa

Other text information**Profile extrusion****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