

DuPont™ Hytrel® 5556

THERMOPLASTIC POLYESTER ELASTOMER

产品

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® 5556 is a medium modulus Hytrel® grade with nominal durometer hardness of 55D. It contains non-discoloring stabilizer. It can be processed by many conventional thermoplastic processing techniques like injection moulding and extrusion.

Typical applications:

Hose and tubing, wire and cable, film and sheeting, belting.

总说明	数值	单位	测试标准
树脂鉴别	TPC-ET	-	ISO 1043
产品标识码	TPC-ET	-	ISO 11469
流变性能	数值	单位	测试标准
熔体体积流动速度, MVR	7	cm³/10min	ISO 1133
温度	220	°C	ISO 1133
负荷	2.16	kg	ISO 1133
熔体质量流动速率	7.8	g/10min	ISO 1133
熔体质量流率, 温度	220	°C	ISO 1133
熔体质量流率, 载荷	2.16	kg	ISO 1133
模塑收缩率, 平行	1.4	%	ISO 294-4, 2577
模塑收缩率, 垂直	1.4	%	ISO 294-4, 2577
机械性能(TPE)	数值	单位	测试标准
屈服拉伸应力	15	MPa	ISO 527-1/-2
屈服拉伸应变	40	%	ISO 527-1/-2
5%应变时的拉伸应力	6.9	MPa	ISO 527-1/-2
10%应变时的应力	11	MPa	ISO 527-1/-2
50%应变应力	14.5	MPa	ISO 527-1/-2
100%应变时的应力	16	MPa	ISO 527-1/-2
断裂应力 TPE	40	MPa	ISO 527-1/-2
断裂应变. TPE	>300	%	ISO 527-1/-2
标称断裂应变	600	%	ISO 527-1/-2
撕裂强度	137	kN/m	ISO 34-1
撕裂强度	134	kN/m	ISO 34-1
耐磨性	120	mm³	ISO 4649
邵氏硬度D, 最高	55	-	ISO 7619-1
肖氏硬度D, 15s	51	-	ISO 7619-1

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机械性能	数值	单位	测试标准
拉伸模量	180	MPa	ISO 527-1/-2
弯曲模量	190	MPa	ISO 178
拉伸蠕变模量			ISO 899-1
1h	170	MPa	
1000h	133	MPa	
无缺口简支梁冲击强度			ISO 179/1eU
+23°C	N	kJ/m ²	
-30°C	N	kJ/m ²	
简支梁缺口冲击强度			ISO 179/1eA
+23°C	N	kJ/m ²	
-30°C	145 ^[P]	kJ/m ²	
-40°C	145 ^[P]	kJ/m ²	
拉伸缺口冲击强度, +23°C	320	kJ/m ²	ISO 8256/1
冲孔最大力			ISO 6603-2
+23°C	2400	N	
-30°C	3700	N	
冲孔功			ISO 6603-2
+23°C	27	J	
-30°C	43	J	
脆变温度	-98	°C	ISO 974
悬臂梁缺口冲击强度			ISO 180/1A
23°C	N	kJ/m ²	
-40°C	N	kJ/m ²	

P: Partial Break

热性能	数值	单位	测试标准
熔融温度, 10°C/min	201	°C	ISO 11357-1/-3
玻璃化转变温度, 10°C/min	-20	°C	ISO 11357-1/-2
热变形温度			ISO 75-1/-2
1.80 MPa	45	°C	
0.45 MPa	70	°C	
维卡软化温度			ISO 306
50°C/h 50N	75	°C	
维卡软化温度	180	°C	
线膨胀系数, 平行	180	E-6/K	ISO 11359-1/-2
线膨胀系数			ISO 11359-1/-2
垂直	180	E-6/K	
垂直, -40-23°C	174	E-6/K	
平行, -40-23°C	160	E-6/K	
熔体	0.16	W/(m K)	-
熔体的比热	2110	J/(kg K)	-
有效导热率 ^a	7E-8	m ² /s	-
相对温度指数, 电气性能			UL 746B
0.75mm	85	°C	
1.5mm	85	°C	
3mm	85	°C	
相对温度指数, 冲击性能			UL 746B
0.75mm	50	°C	
1.5mm	85	°C	
3mm	85	°C	
相对温度指数, 强度			UL 746B
0.75mm	50	°C	
1.5mm	75	°C	
3mm	80	°C	

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燃烧性能	数值	单位	测试标准
1.5mm名义厚度时的燃烧性	HB	class	IEC 60695-11-10
测试用试样的厚度	1.5	mm	IEC 60695-11-10
UL注册	yes	-	UL 94
厚度为h时的燃烧性	HB	class	IEC 60695-11-10
测试用试样的厚度	3	mm	IEC 60695-11-10
UL注册	yes	-	UL 94
燃烧性 - 氧指数	20	%	ISO 4589-1/-2
灼热丝可燃指数, 2mm	700	°C	IEC 60695-2-12 DS
灼热丝起燃温度, 2mm	675	°C	IEC 60695-2-13 DS
灼热丝温度, 无火, 2mm	650	°C	IEC 60335-1 DS
FMVSS Class	SE	-	ISO 3795 (FMVSS 302)
DS: Derived from similar grade			
电性能	数值	单位	测试标准
相对介电常数.			IEC 62631-2-1
100Hz	4.8	-	
1MHz	4.4	-	
介质损耗因子			IEC 62631-2-1
100Hz	90	E-4	
1MHz	375	E-4	
体积电阻率	4E11	Ohm*m	IEC 62631-3-1
表面电阻率	>1E15	Ohm	IEC 62631-3-2
介电强度	19	kV/mm	IEC 60243-1
相对漏电起痕指数	600	-	IEC 60112
其它性能	数值	单位	测试标准
吸湿性, 2mm	0.2	%	类似ISO 62
吸水性, 2mm	0.6	%	类似ISO 62
密度	1190	kg/m³	ISO 1183
熔体密度	1030	kg/m³	-
吸水性, 浸泡 24小时	0.6	%	类似ISO 62
机械性能(薄膜)	数值	单位	测试标准
下水蒸汽透过率, 23°C/85%RH	300	g/(m²*d)	DIS 15106-1/-2
下氧气透过率, 23°C/85%RH	6000	cm³/(m²*d*bar)	DIS 15105-1/-2
试样厚度	0.025	mm	-
VDA性能	数值	单位	测试标准
有机化合物的排放	8.5	□ gC/g	VDA 277
气味测试	5	class	VDA 270
雾化	0.1	mg	ISO 6452
注塑	数值	单位	测试标准
建议干燥	是		-
干燥温度	≥ 100	°C	-
干燥时间, 除湿干燥机	2 - 3	h	-
加工前水分含量	≤ 0.08	%	-
最优熔体温度	230	°C	-
注塑 熔体温度	220	°C	-
注塑 熔体温度	250	°C	-
最优模具温度	45	°C	-
模具温度	45	°C	-
模具温度	55	°C	-
薄膜挤出成型	数值	单位	测试标准
干燥温度	90 - 110	°C	-
干燥时间, 除湿干燥机	2 - 3	h	-
加工前水分含量	≤ 0.06	%	-
最优熔体温度	225	°C	-
熔体温度范围	220 - 235	°C	-

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THERMOPLASTIC POLYESTER ELASTOMER

典型数据

加工方法	<ul style="list-style-type: none">• 注塑• 薄膜挤出成型• 异型材挤出成型	<ul style="list-style-type: none">• 片材挤出成型• 其它挤出成型• 表面涂层	<ul style="list-style-type: none">• 浇铸成型• 热成型
供货形式	<ul style="list-style-type: none">• 粒料		
特殊性能	<ul style="list-style-type: none">• 光稳定/耐光的		
地区供应	<ul style="list-style-type: none">• 北美• 欧洲	<ul style="list-style-type: none">• 亚太• 中南美洲	<ul style="list-style-type: none">• 中东/非洲• Global

成型

型材挤出成型

干燥温度：100°C

干燥：除湿干燥机 2~3小时

加工要求：水份含量小于 0.08 %

最佳熔融温度：225°C

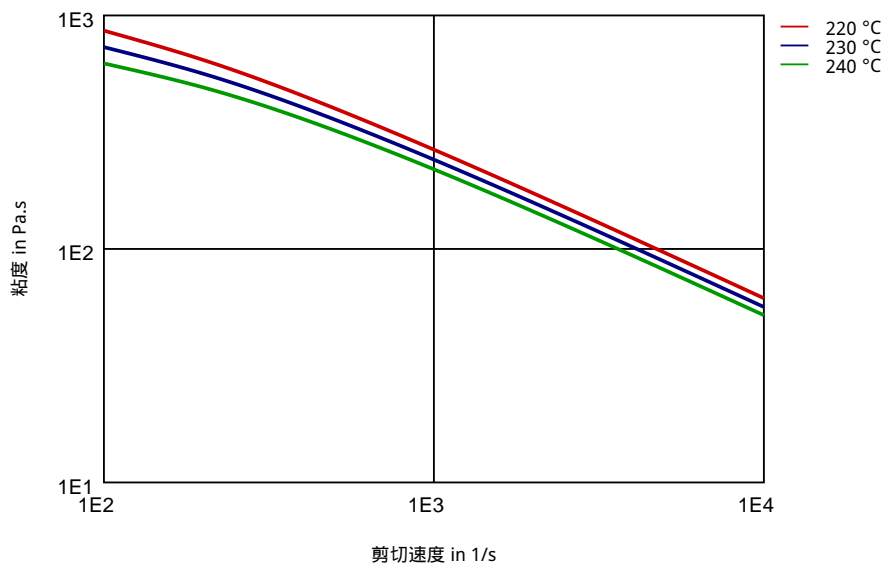


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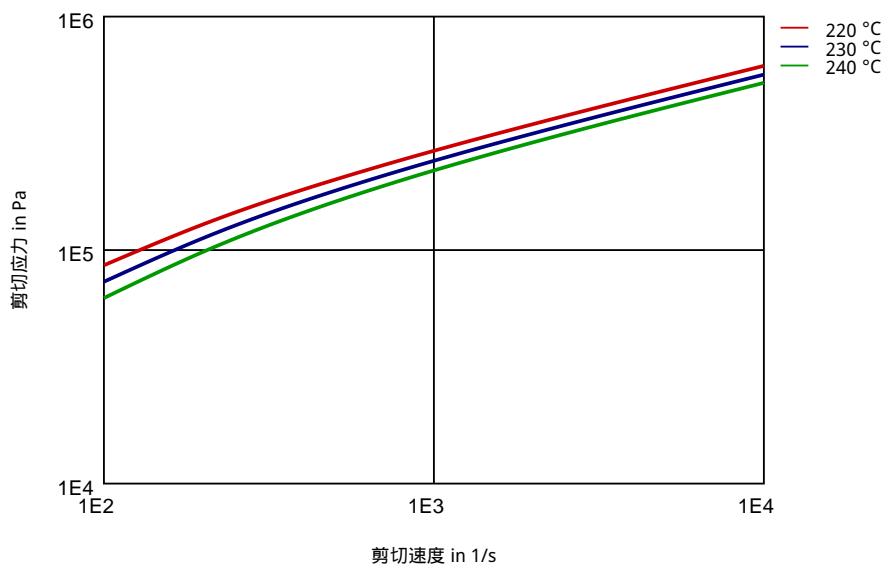
THERMOPLASTIC POLYESTER ELASTOMER

图表

粘度 - 剪切速度



剪切应力 - 剪切速度



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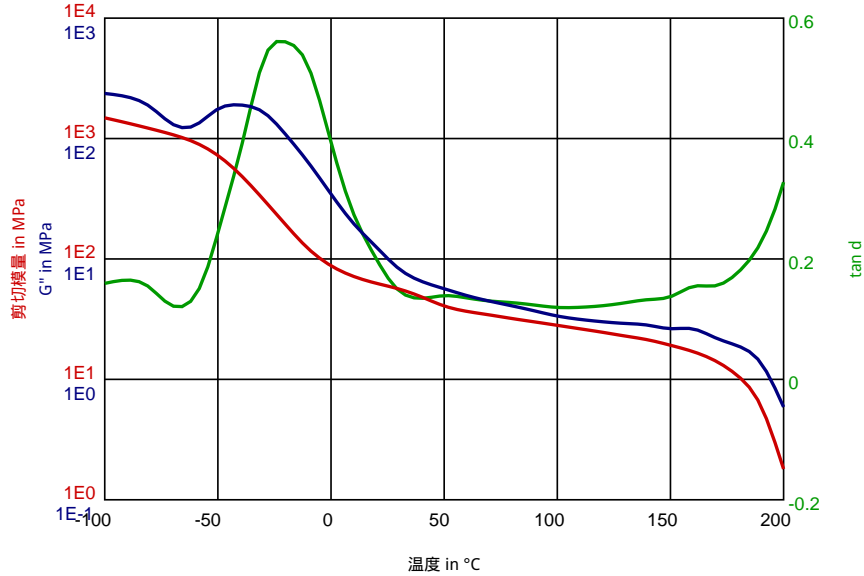


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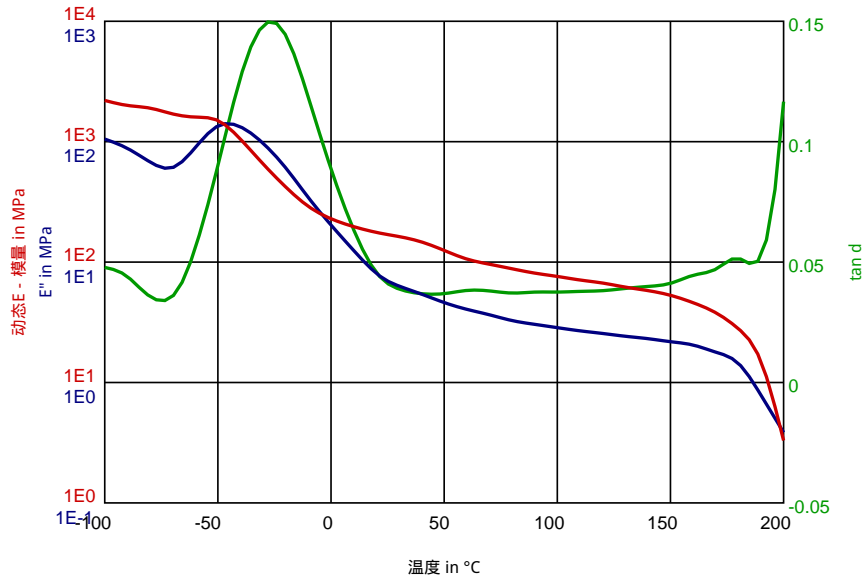
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动态剪切模量 - 温度



动态E - 模量 - 温度



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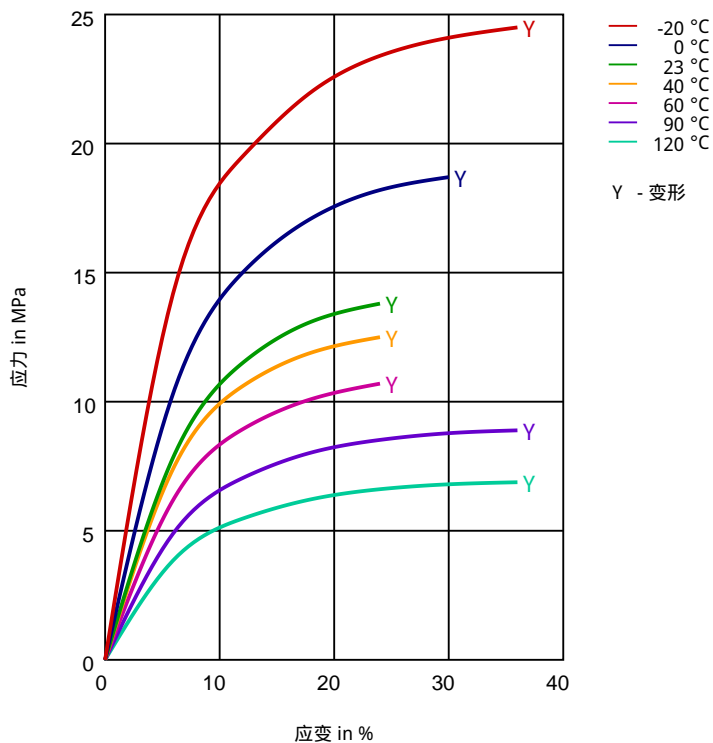
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THERMOPLASTIC POLYESTER ELASTOMER

应力 - 应变.



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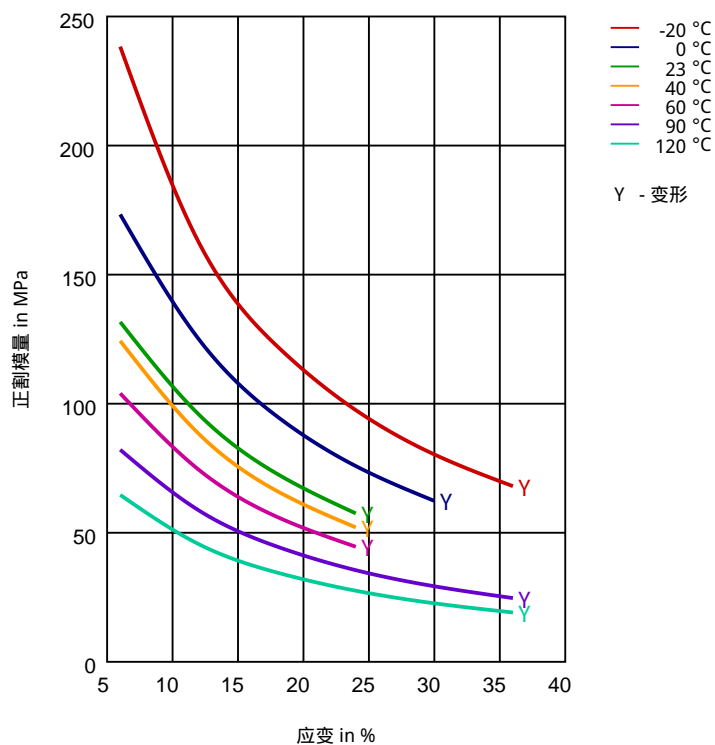
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正割模量 - 应变.



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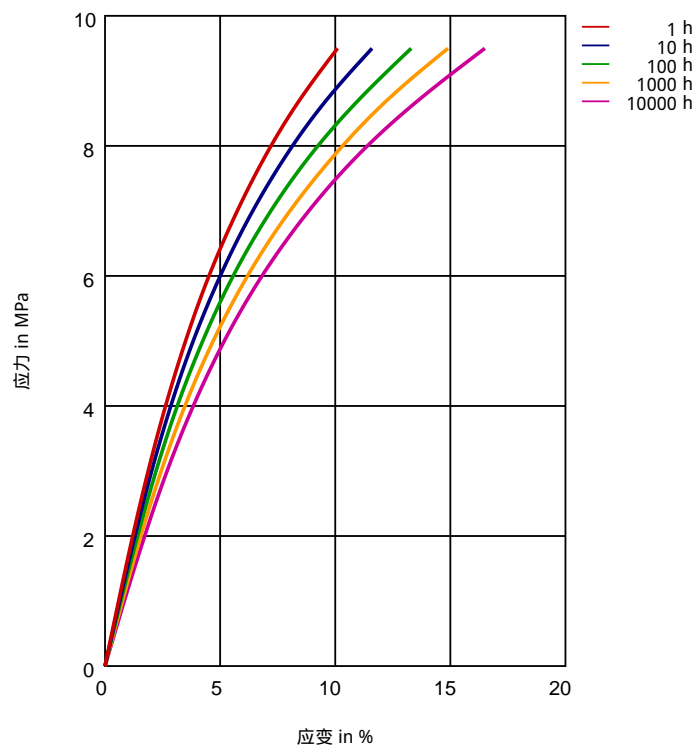
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THERMOPLASTIC POLYESTER ELASTOMER

应力 - 应变(等时的) 23°C



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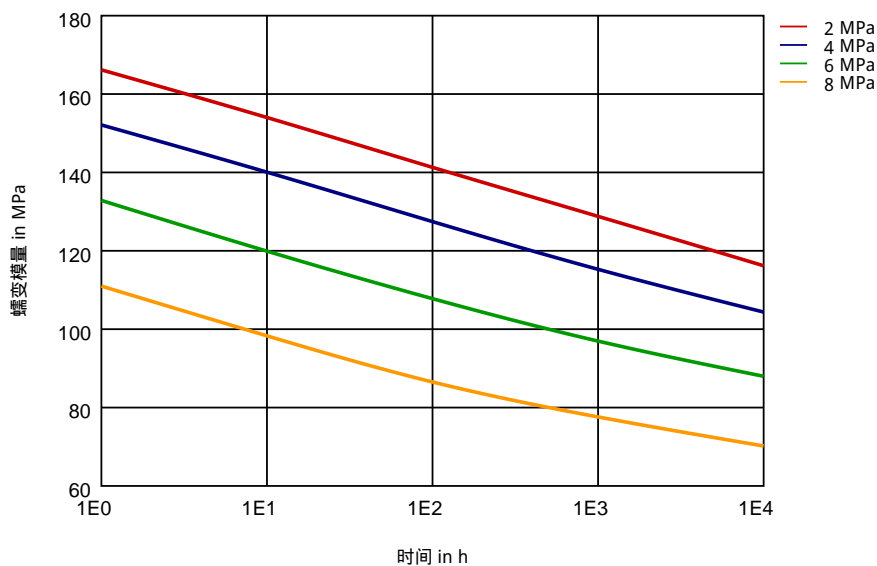


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THERMOPLASTIC POLYESTER ELASTOMER

蠕变模量 - 时间, 23°C



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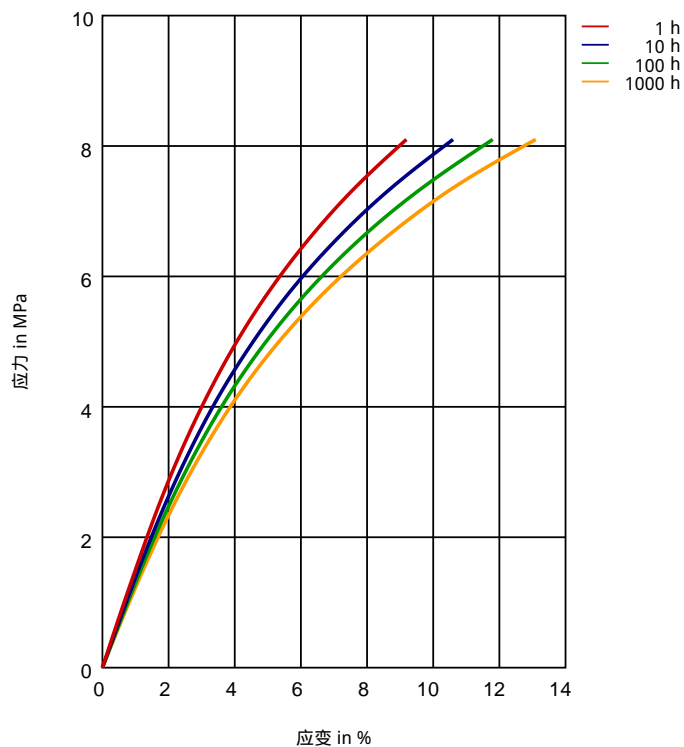


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THERMOPLASTIC POLYESTER ELASTOMER

应力 - 应变(等时的) 40°C



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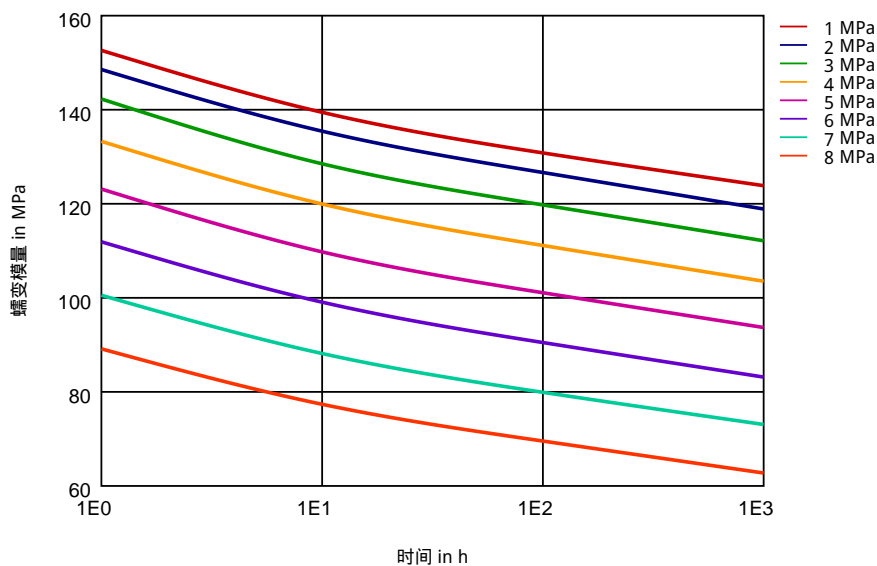
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蠕变模量 - 时间. 40°C



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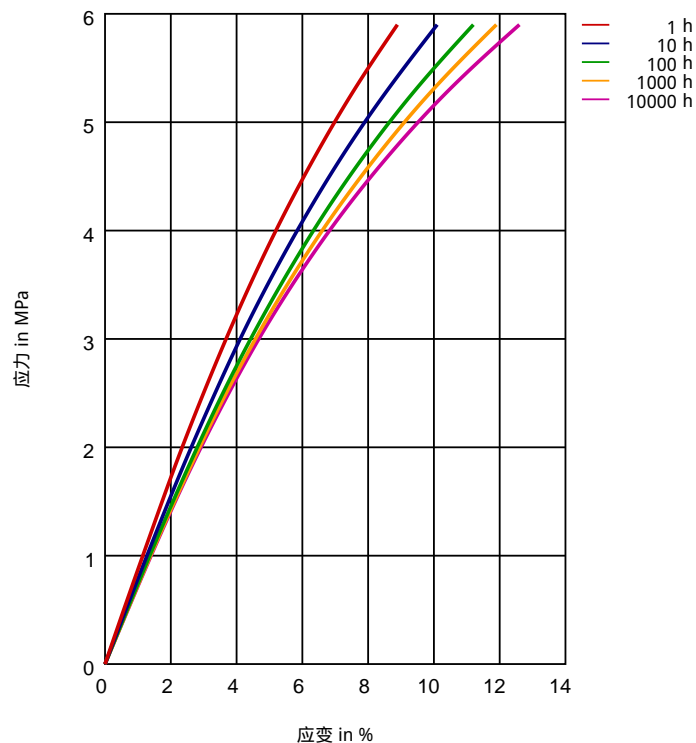


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THERMOPLASTIC POLYESTER ELASTOMER

应力 - 应变(等时的) 80°C



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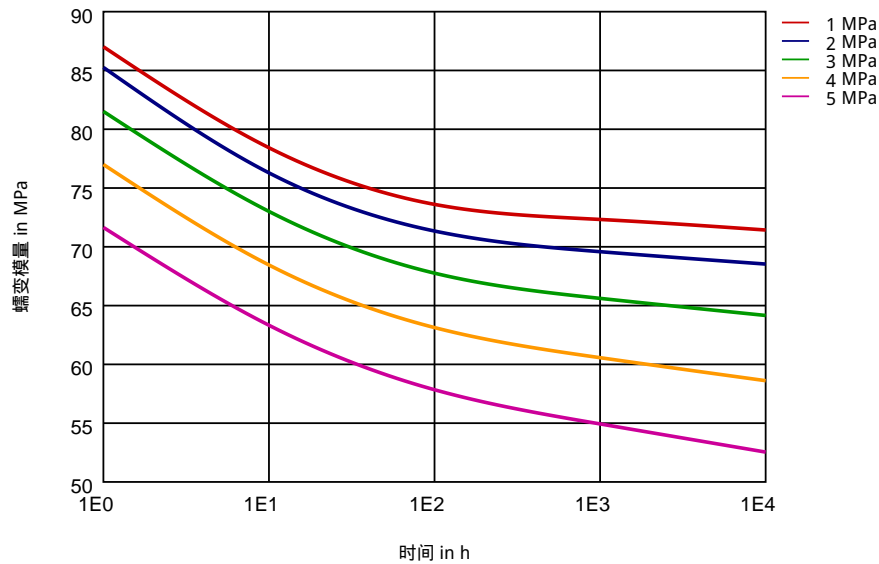


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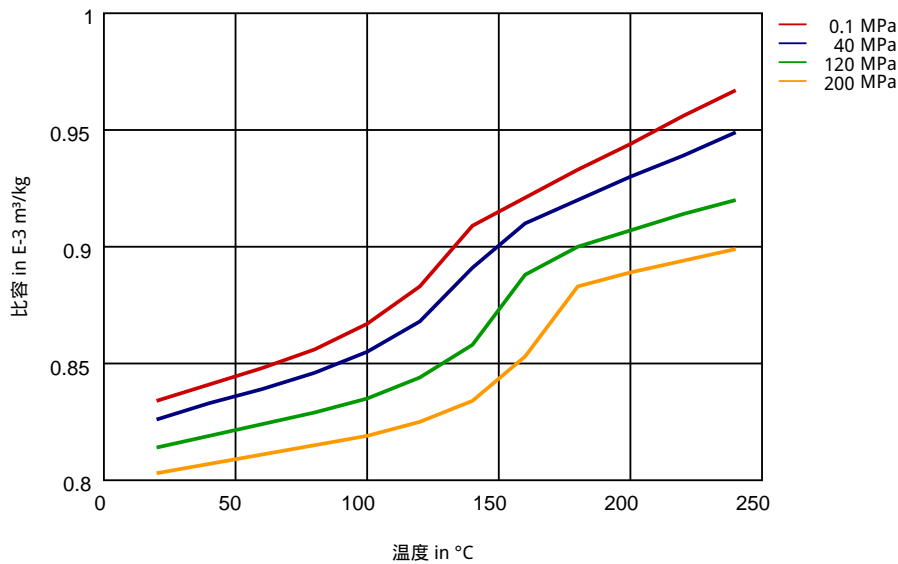
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THERMOPLASTIC POLYESTER ELASTOMER

蠕变模量 - 时间, 80°C



比容 - 温度(pvT)



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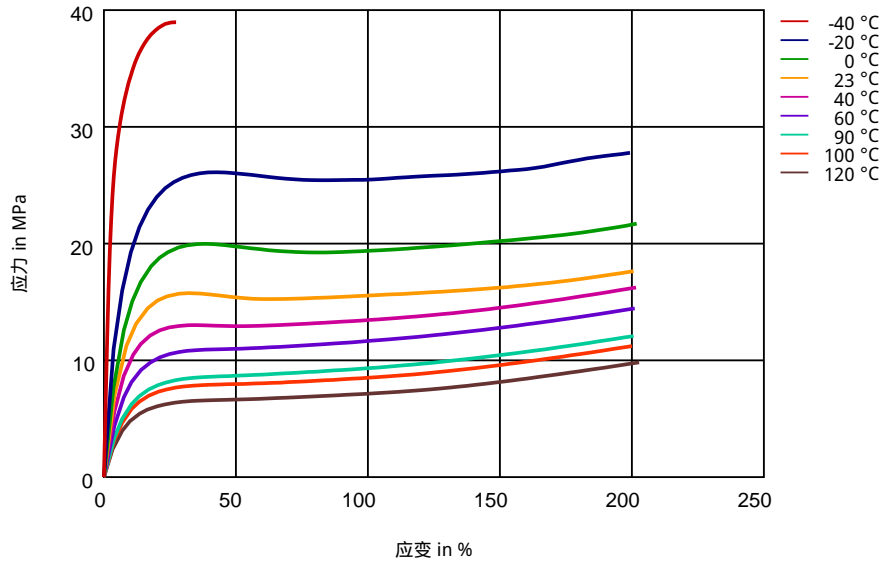
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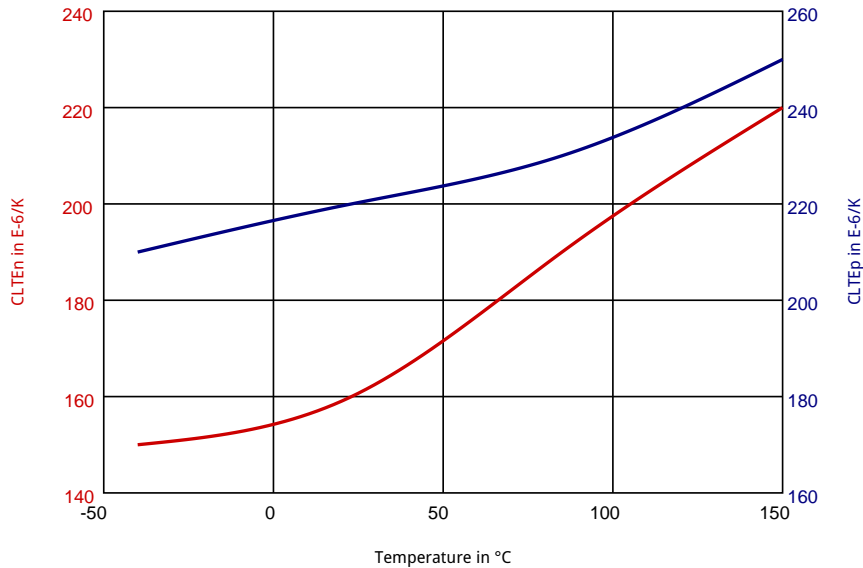
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THERMOPLASTIC POLYESTER ELASTOMER

应力 - 应变(TPE)



Coeff. of linear thermal expansion, normal



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耐化学性

酸类

- ✓ 醋酸 (5g/100g) (23°C)
- ✓ 柠檬酸溶液 (10g/100g) (23°C)
- ✓ 乳酸 (10g/100g) (23°C)
- ✗ 盐酸 (36g/100g) (23°C)
- ✗ 硝酸 (40g/100g) (23°C)
- ✗ 硫酸 (38g/100g) (23°C)
- ✓ 硫酸 (5g/100g) (23°C)
- ✗ 铬酸溶液 (40g/100g) (23°C)

碱类

- ✓ 氢氧化钠溶液 (35g/100g) (23°C)
- ✓ 氢氧化钠溶液 (1g/100g) (23°C)
- ✓ 氨水(氢氧化铵) (10g/100g) (23°C)

醇类

- ✓ 异丙醇 (23°C)
- ✓ 甲醇 (23°C)
- ✓ 乙醇 (23°C)

碳氢化合物

- ✓ n-乙烷 (23°C)
- ✓ 甲苯 (23°C)
- ✓ 异辛烷 (23°C)

酮类

- ✗ 丙酮 (23°C)

醚类

- ✗ (二)乙醚 (23°C)

矿物油

- ✓ SAE 10W40号多效润滑油 (23°C)
- ✗ SAE 10W40号多效润滑油 (130°C)
- ✗ SAE 89/90号变速箱润滑油 (130°C)
- ✓ 绝缘油 (23°C)
- ✗ 滑油OS206 304 Ref.Eng.Oil, ISP (135°C)
- ✗ 自动准双曲面齿轮油壳牌壳牌Donax (135°C)
- ✗ 水力油Pentosin CHF 202 (125°C)

标准燃油

- ✗ ISO 1817 燃油1号 (60°C)
- ✗ ISO 1817 燃油2号 (60°C)
- ✗ ISO 1817 燃油3号 (60°C)

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DuPont™ Hytrel® 5556

THERMOPLASTIC POLYESTER ELASTOMER

- ✗ ISO 1817 燃油4号 (60°C)
- ✓ 不含酒精的标准燃油(优先使用C类ISO 1817 燃油) (23°C)
- ✓ 含酒精的标准燃油(优先使用4号ISO 1817 燃油) (23°C)
- ✓ 柴油(优先使用F类ISO 1817液体) (23°C)
- ✓ 柴油(优先使用F类ISO 1817液体) (90°C)
- ✗ 柴油(优先使用F类ISO 1817液体) (>90°C)

盐溶液

- ✓ 氯化钠溶液(10g/100g) (23°C)
- ✗ 次氯化钠溶液 (10g/100g) (23°C)
- ✓ 碳酸钠溶液 (20g/100g) (23°C)
- ✓ 碳酸钠溶液 (2g/100g) (23°C)
- ✓ 氯化锌溶液 (50g/100g) (23°C)

其它

- ✓ 乙酸乙酯 (23°C)
- ✗ 过氧化氢 (23°C)
- ✗ DOT4号刹车油 (130°C)
- ✗ 乙二醇水溶液 (50g/100g) (108°C)
- ✓ 油酸 (50g/100g) + 橄榄油 (50g/100g) (23°C)
- ✓ 水 (23°C)
- ✓ 去离子水 (90°C)
- ✓ 酚溶液(5g/100g) (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).

联系杜邦以获得材料安全物性数据表、一般指南和/或其他关于排风、处理、清洗、干燥等的相关信息。除非特别指定，ISO机械性能测试样条厚度为4mm (Hytrel® 2mm)，IEC电性能测试样品厚度为2mm，所有的ASTM性能测试样条厚度为3.2mm，测试温度为23°C。

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To find out more, visit [DuPont Performance Polymers](#) or contact nearest DuPont location.

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警告：不要用于涉及永久植入人体的医疗应用。

如果需要其他医疗方面的应用，请联系杜邦销售代表并阅读医疗应用警告H-50103-5。

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