

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® 8238 is the highest modulus grade, with nominal hardness of 82D. It contains non-discoloring stabilizer. It can be processed by many conventional thermoplastic processing techniques like injection molding and extrusion.

Typical applications:

Cubing, wire and cable, gears, sprockets, electrical connectors and oil field parts.

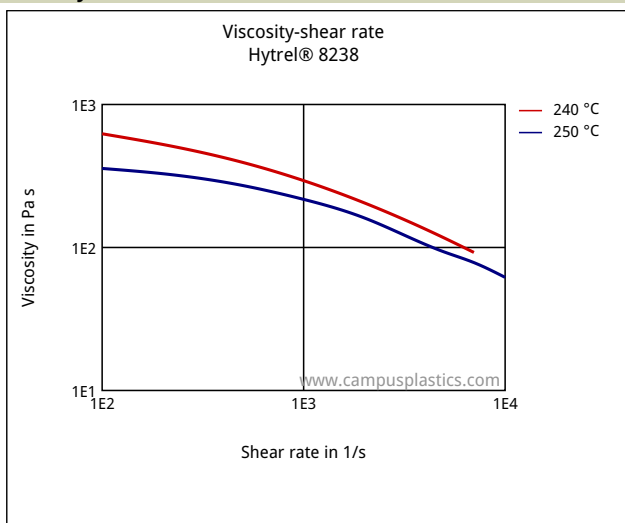
Rheological properties	Value	Unit	Test Standard
Melt volume-flow rate, MVR	11.5	cm ³ /10min	ISO 1133
Temperature	240	°C	ISO 1133
Load	2.16	kg	ISO 1133
Molding shrinkage, parallel	1.6	%	ISO 294-4, 2577
Molding shrinkage, normal	1.6	%	ISO 294-4, 2577
Mechanical properties	Value	Unit	Test Standard
Tensile modulus	1200	MPa	ISO 527-1/-2
Stress at 10% elongation	34	MPa	ISO 527-1/-2
Stress at 100% elongation	26	MPa	ISO 527-1/-2
Stress at break TPE	46	MPa	ISO 527-1/-2
Strain at break TPE	>300	%	ISO 527-1/-2
Charpy notched impact strength, +23°C	10	kJ/m ²	ISO 179/1eA
Charpy notched impact strength, -30°C	5	kJ/m ²	ISO 179/1eA
Tensile notched impact strength, +23°C	57	kJ/m ²	ISO 8256/1
Shore D hardness	70	-	ISO 48-4
Thermal properties	Value	Unit	Test Standard
Melting temperature, 10°C/min	221	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	45	°C	ISO 11357-1/-2
Temp. of deflection under load, 1.80 MPa	45	°C	ISO 75-1/-2
Temp. of deflection under load, 0.45 MPa	105	°C	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	150	°C	ISO 306
Coeff. of linear therm. expansion, parallel	150	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	140	E-6/K	ISO 11359-1/-2
Burning behavior at 1.5 mm nominal thickness	HB	class	IEC 60695-11-10
Thickness tested (1.5)	1.5	mm	IEC 60695-11-10
Yellow Card available	Yes	-	-
Burning behavior at thickness h	HB	class	IEC 60695-11-10

Hytrel® 8238 - TPC Celanese

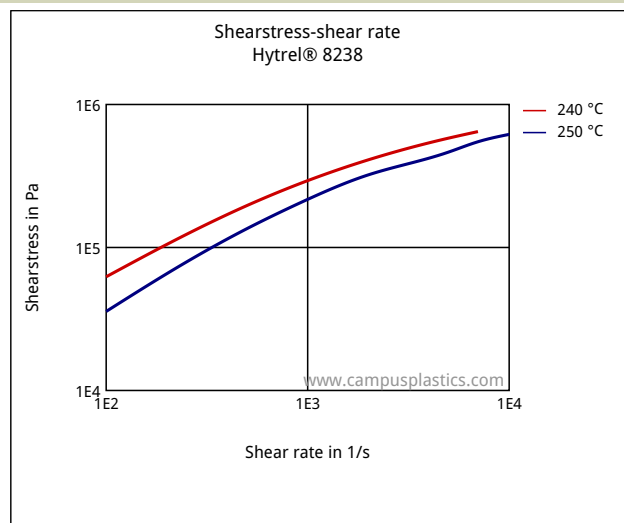
Thickness tested (h)	0.9	mm	IEC 60695-11-10
Yellow Card available	Yes	-	-
Oxygen index	22	%	ISO 4589-1/-2
Electrical properties	Value	Unit	Test Standard
Relative permittivity, 100Hz	4	-	IEC 62631-2-1
Relative permittivity, 1MHz	3.7	-	IEC 62631-2-1
Dissipation factor, 100Hz	100	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	175	E-4	IEC 62631-2-1
Volume resistivity	>1E13	Ohm*m	IEC 62631-3-1
Surface resistivity	>1E15	Ohm	IEC 62631-3-2
Electric strength	21	kV/mm	IEC 60243-1
Comparative tracking index	600	-	IEC 60112
Other properties	Value	Unit	Test Standard
Water absorption	0.6	%	Sim. to ISO 62
Humidity absorption	0.2	%	Sim. to ISO 62
Density	1280	kg/m ³	ISO 1183

Diagrams

Viscosity-shear rate

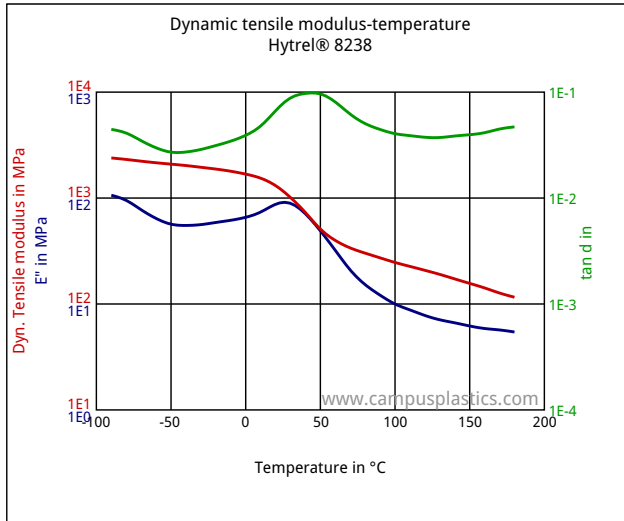


Shearstress-shear rate

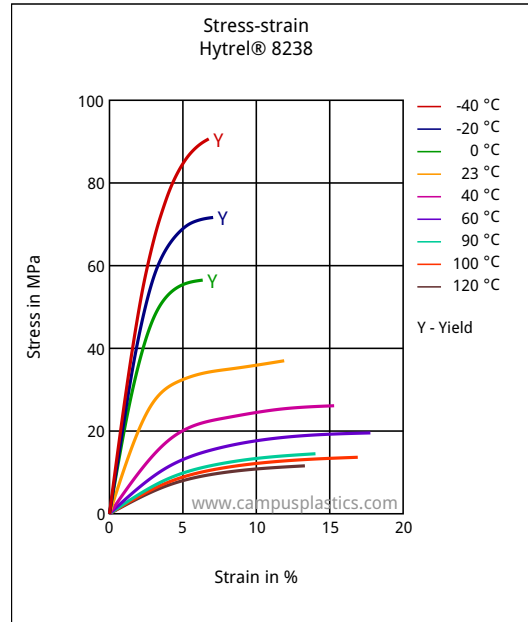


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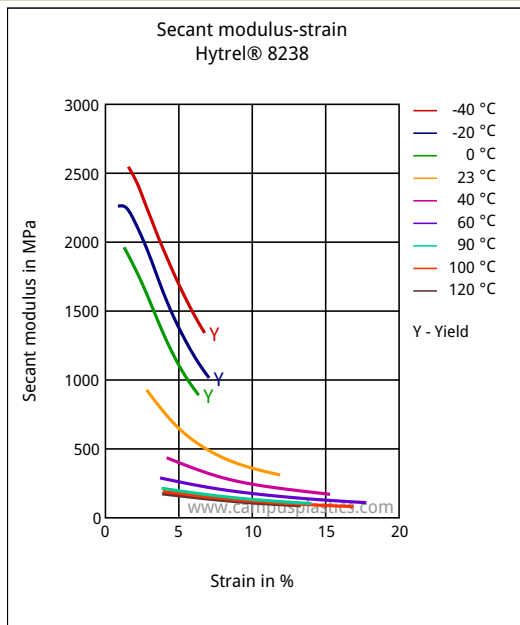
Dynamic tensile modulus-temperature



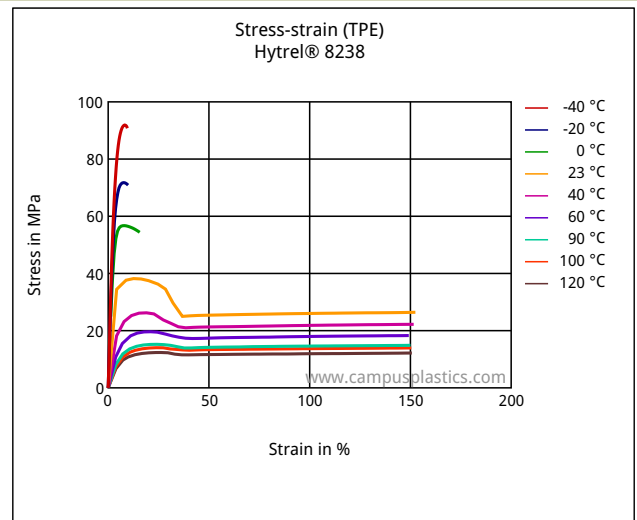
Stress-strain



Secant modulus-strain



Stress-strain (TPE)



Characteristics

Processing

Injection Molding, Film Extrusion, Profile Extrusion, Sheet Extrusion, Other Extrusion, Casting, Thermoforming

Delivery form

Pellets

Special Characteristics

Light stabilized or stable to light

Regional Availability

North America, Europe, Asia Pacific, South and Central America

Hytrel® 8238 - TPC

Celanese

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 (60°C)
- 🚫 ISO 1817 Liquid 2 (60°C)
- 🚫 ISO 1817 Liquid 3 (60°C)
- 🚫 ISO 1817 Liquid 4 (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)

Salt solutions

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-  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)
-  Deionized water (90°C)
-  Phenol solution (5% by mass) (23°C)

NOTICE TO USERS: Values shown are based on testing of laboratory test specimens and represent data that fall within the standard range of properties for natural material. These values alone do not represent a sufficient basis for any part design and are not intended for use in establishing maximum, minimum, or ranges of values for specification purposes. Colorants or other additives may cause significant variations in data values. Properties of molded parts can be influenced by a wide variety of factors including, but not limited to, material selection, additives, part design, processing conditions and environmental exposure. Other than those products expressly identified as medical grade (including by MT® product designation or otherwise), Celanese's products are not intended for use in medical or dental implants. Regardless of any such product designation, any determination of the suitability of a particular material and part design for any use contemplated by the users and the manner of such use is the sole responsibility of the users, who must assure themselves that the material as subsequently processed meets the needs of their particular product or use. To the best of our knowledge, the information contained in this publication is accurate; however, we do not assume any liability whatsoever for the accuracy and completeness of such information. The information contained in this publication should not be construed as a promise or guarantee of specific properties of our products. It is the sole responsibility of the users to investigate whether any existing patents are infringed by the use of the materials mentioned in this publication. Moreover, there is a need to reduce human exposure to many materials to the lowest practical limits in view of possible adverse effects. To the extent that any hazards may have been mentioned in this publication, we neither suggest nor guarantee that such hazards are the only ones that exist. We recommend that persons intending to rely on any recommendation or to use any equipment, processing technique or material mentioned in this publication should satisfy themselves that they can meet all applicable safety and health standards. We strongly recommend that users seek and adhere to the manufacturer's current instructions for handling each material they use, and entrust the handling of such material to adequately trained personnel only. Please call the telephone numbers listed for additional technical information. Call Customer Services for the appropriate Materials Safety Data Sheets (MSDS) before attempting to process our products.

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