

# Hytrel® SC969 NC010

## 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, 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® SC969 NC010 is a medium modulus grade with nominal hardness of 63D, contains a non-discoloring stabilizer and can be processed by various thermoplastic processing techniques. Developed for applications such as parts for the healthcare industry.

### SPECIAL CONTROL for HEALTHCARE APPLICATIONS

This product is manufactured according to Good Manufacturing Practice (GMP) principles and generally accepted in food contact applications in the USA when meeting applicable use conditions. This product is also tested against ISO 10993-5 and -11 and selected parts of USP Class VI. For details, individual compliance statements are available from our representative.

### Product information

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

### Rheological properties

Melt volume-flow rate	8.5 cm <sup>3</sup> /10min	ISO 1133
Melt mass-flow rate	9 g/10min	ISO 1133
Temperature	230 °C	
Load	2.16 kg	
Moulding shrinkage, parallel	1.5 %	ISO 294-4, 2577
Moulding shrinkage, normal	1.5 %	ISO 294-4, 2577

### Typical mechanical properties

Tensile Modulus	260 MPa	ISO 527-1/-2
Stress at 5% strain	12 MPa	ISO 527-1/-2
Stress at 10% strain	15 MPa	ISO 527-1/-2
Stress at break	41 MPa	ISO 527-1/-2

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Strain at break	>300 %	ISO 527-1/-2
Charpy impact strength, 23 °C	N kJ/m <sup>2</sup>	ISO 179/1eU
Charpy notched impact strength, 23 °C	120 <sup>[P]</sup> kJ/m <sup>2</sup>	ISO 179/1eA
Charpy notched impact strength, -30 °C	25 kJ/m <sup>2</sup>	ISO 179/1eA
Charpy notched impact strength, -40 °C	15 kJ/m <sup>2</sup>	ISO 179/1eA
Izod notched impact strength, 23 °C	81 kJ/m <sup>2</sup>	ISO 180/1A
Izod notched impact strength, -40 °C	19 kJ/m <sup>2</sup>	ISO 180/1A
Poisson's ratio	0.48	
Brittleness temperature	-100 °C	ISO 974
Shore D hardness, 15s	58	ISO 48-4 / ISO 868
Shore D hardness, max	63	ISO 868
Tear strength, parallel	180 kN/m	ISO 34-1

[P]: Partial Break

### Thermal properties

Melting temperature, 10 °C/min	211 °C	ISO 11357-1/-3
Temp. of deflection under load, 1.8 MPa	45 °C	ISO 75-1/-2
Temp. of deflection under load, 0.45 MPa	85 °C	ISO 75-1/-2
Vicat softening temperature, 50 °C/h, 50N	100 °C	ISO 306
Vicat softening temperature, 50 °C/h 10N	200 °C	ISO 306
Thermal conductivity of melt	0.14 W/(m K)	Internal
Eff. thermal diffusivity	5.44E-8 m <sup>2</sup> /s	Internal
Spec. heat capacity of melt	2160 J/(kg K)	Internal

### Flammability

Burning Behav. at 1.5mm nom. thickn.	HB class	UL 94
Thickness tested	1.5 mm	UL 94

### Other properties

Humidity absorption, 2mm	0.2 %	Sim. to ISO 62
Water absorption, 2mm	0.6 %	Sim. to ISO 62
Density	1220 kg/m <sup>3</sup>	ISO 1183
Density of melt	1040 kg/m <sup>3</sup>	Internal

### Injection

Drying Recommended	yes	
Drying Temperature	100 °C	
Drying Time, Dehumidified Dryer	2 - 3 h	
Processing Moisture Content	≤0.08 %	
Melt Temperature Optimum	240 °C	Internal
Min. melt temperature	235 °C	
Max. melt temperature	260 °C	
Mold Temperature Optimum	45 °C	

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Min. mould temperature	45 °C
Max. mould temperature	55 °C

### Extrusion

Drying Temperature	90 - 110 °C
Drying Time, Dehumidified Dryer	2 - 3 h
Processing Moisture Content	≤0.06 %
Melt Temperature Optimum	230 °C
Melt Temperature Range	225 - 240 °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. Colourants or other additives may cause significant variations in data values. Properties of moulded 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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