TECAST™ 6PA

Polyamide 6

Ensinger Inc.

Message:

TECAST™ cast nylon, available in a variety of grades, offers a combination of good mechanical properties, excellent bearing and wear characteristics, and the large-size capabilities of the casting process. Its fatigue resistance, noise damping ability, corrosion resistance, and light weight make TECAST™ ideal for metal replacement applications, such as bearings, gears, sheaves, and sprockets. At one-eighth the weight of bronze, TECAST™ is easier to handle and maintain than metals such as iron, aluminum, brass, and bronze, which it typically replaces in industrial wear applications. Other materials that TECAST™ commonly replaces because of its superior performance are laminated phenolics, elastomers, and wood. TECAST™ has excellent wear and abrasion resistance, resulting in extended component life and lower maintenance cost. Its formulations are readily available in rod, plate, and tube. Nonstandard shapes, such as rings, discs, and blocks can be economically produced in small quantities with short lead times. ustom parts can be cast-to-size or near-net-shape with relatively inexpensive tooling.

Its unique combination of strength, wear resistance, toughness, machinability, and corrosion resistance make TECAST™ cast nylon ideal for bearings, thrust washers, bushings, wear pads, sheaves, rollers, gears, sprockets, and wheels. TECAST™ is commonly used in construction equipment, material handling systems, amusement park rides, pulp and paper processing equipment, steel mills and industrial equipment.

TECAST™ 6PA NATURAL: An FDA-compliant cast type 6 nylon used in applications requiring cast nylon advantages without fillers.

TECAST™ 6PA BLACK: A black cast type 6 nylon that is more UV resistant than 6PA natural.

TECAST™ 6PA BLUE: A blue cast type 6 nylon with properties similar to 6PA. Heat stable but with improved heat resistance properties.

General Information					
Features	Noise reduction				
	Machinable				
	Good corrosion resistance				
	Good wear resistance				
	Good wear resistance				
	Fatigue resistance				
	Good toughness				
Uses	Wheels				
	Bushing				
	Gear				
	Industrial application				
	Roller				
	Architectural application field				
	Metal substitution				
	Thrust washer				
	Bearing				
Appearance	Black				
	Blue				
	Natural color				
Forms	Plate				
	Bar				

March Absorption (23°C, 24 hr) 1.2	Physical	Nominal Value	Unit	Test Method
Paradiness Nominal Value Unit Test Method Rockwell Hardness (R-Scale, 23°C) 115	Specific Gravity	1.15 - 1.16	g/cm³	ASTM D792
Rockwell Hardness (R-Scale, 23°C) 115 ASTM D785 Mechanical Nominal Value Unit Test Method Tensile Modulus 2410 MPa ASTM D538 Tensile Elongation (Break, 23°C) 68.9 MPa ASTM D638 Tensile Elongation (Break, 23°C) 2410 MPa ASTM D790 Elexural Modulus (33°C) 86.2 MPa ASTM D790 Flexural Strength (33°C) 86.2 MPa ASTM D790 Flexural Strength (33°C) 86.2 MPa ASTM D790 Coefficient of Friction ¹ (vs. Itself - Dynamic) 0.26 ASTM D780 ASTM D780 Coefficient of Friction ¹ (vs. Itself - Dynamic) 0.26 ASTM D780 ASTM D780 Wear Factor ² (0.28 MPa, 0.25 m/sec) 40.0 10^8 mm³/N·m ASTM D780 Wear Factor ² (2.02 MPa, 0.25 m/sec) 40.0 10^8 mm³/N·m ASTM D780 Unnotated Izod Impact (23°C) 32 J/m ASTM D648 Unnotated Izod Impact (23°C) 32 J/m ASTM D648 Delection Temperature 20 °C ASTM	Water Absorption (23°C, 24 hr)	1.2	%	ASTM D570
Mochanical Nominal Value Unit Test Method Tensile Modulus 2410 MPa ASTM D638 Tensile Strength (Vield, 23°C) 68.9 MPa ASTM D638 Tensile Elongation (Break, 23°C) 25 % ASTM D790 Flexural Modulus (23°C) 2410 MPa ASTM D790 Coefficient of Friction 1 (vs. Itself - Dynamic) 0.26 MPa ASTM D790 Coefficient of Friction 1 (vs. Itself - Dynamic) 0.26 ASTM D790 ASTM D790 Wear Factor 2 (0.28 MPa, 0.25 m/sec) 400 10^-8 mm³/N · m ASTM D790 Wear Factor 2 (0.28 MPa, 0.25 m/sec) 400 10^-8 mm³/N · m ASTM D3702 Impact Nominal Value Unit Test Method Unnotched Izod Impact (22°C) 32 J/m ASTM D646 Deflection Temperature Under Load 188 °C ASTM D648 0.45 MPa, not annealed 188 °C ASTM D648 1.8 MPa, not annealed 93.3 °C ASTM D648 Melting Temperature 20 °C ASTM D648	Hardness	Nominal Value	Unit	Test Method
Tensile Modulus	Rockwell Hardness (R-Scale, 23°C)	115		ASTM D785
Tensile Strength (Yield, 23°C) 68.9 MPa ASTM D638 Tensile Elongation (Break, 23°C) 25 % MPa ASTM D638 Flexural Modulus (23°C) 2410 MPa ASTM D790 Flexural Strength (23°C) 86.2 MPa ASTM D790 Coefficient of Friction 1 (vs. Itself-Dynamic) 0.26 MPa ASTM D790 Tensile Elongation (Break, 23°C) 400 In0~8 mm²/N·m ASTM D790 Tensile Elongation (Break, 23°C) 400 In0~8 mm²/N·m ASTM D870 Tensile Elongation (Break, 23°C) 32 J/m ASTM D870 Tensile Elongation (Break, 23°C) 32 J/m ASTM D256 Thermal Nominal Value Unit Test Method Unnotched Izod Impact (23°C) 32 J/m ASTM D256 Thermal Nominal Value Unit Test Method Unit Test Method Unit Test Method Delection Temperature Under Load 0.45 MPa, not annealed 188 °C ASTM D648 18.8 MPa, not annealed 93.3 °C ASTM D648 Melting Temperature 220 °C ASTM D648 Melting Temperature 220 °C ASTM D648 Melting Temperature 1670 J/kg/°C Maximum Service Temperature Intermittent 149 °C Long Term 93 °C UL 7468 Electrical Nominal Value Unit Test Method Volume Resistivity 1.0€+14 chrs.·cm ASTM D257 Delectric Strength 20 ASTM D440 Volume Resistivity 1.0€+14 chrs.·cm ASTM D257 Delectric Strength 3(23°C, 60 Hz) 3.70 Unit Test Method Volume Resistivity Nominal Value Unit Test Method Flame Rating Be Volume Volume ASTM D149 Dielectric Strength Nominal Value Unit Test Method Additional Information Data obtained from extruded shapes material: NOTE 1. 40 psi, 50 fpm 4. 40 psi, 50 fpm	Mechanical	Nominal Value	Unit	Test Method
Tensile Elongation (Break, 23°C) 25 % MPa ASTM D638 Flexural Modulus (23°C) 2410 MPa ASTM D790 Flexural Strength (23°C) 86.2 MPa ASTM D790 Coefficient of Friction ¹ (vs. Itself - Dynamic) 0.26 S S MPa ASTM D790 Wear Factor ² (0.28 MPa, 0.25 m/sec) 400 10°-8 mm²/N·m ASTM D3702 Impact Nominal Value Unit Teet Method Unnotched Izod Impact (23°C) 32 J/m ASTM D256 Thermal Nominal Value Unit Teet Method Unnotched Izod Impact (23°C) 32 J/m ASTM D648 Deflection Temperature Under Load Unit Teet Method Unit Teet Method Deflection Temperature Under Load 188 °C ASTM D648 1.8 MPa, not annealed 188 °C ASTM D648 Melting Temperature 220 °C ASTM D648 Melting Temperature 220 °C ASTM D648 Melting Temperature 1670 J/kg/°C Maximum Service Temperature Intermittent 149 °C Long Term 93 °C UL 7468 Electrical Nominal Value Unit Test Method Volume Resistivity 1.0E+14 ohns-cm ASTM D257 Dielectric Strength Pasis Pas	Tensile Modulus	2410	MPa	ASTM D638
Electrial Modulus (23°C)	Tensile Strength (Yield, 23°C)	68.9	MPa	ASTM D638
Reaural Strength (23°C) 86.2 MPa	Tensile Elongation (Break, 23°C)	25	%	ASTM D638
Coefficient of Friction ¹ (vs. Itself - Dynamic) 0.26 ASTM D1894 Wear Factor ² (0.28 MPa, 0.25 m/sec) 400 10^-8 mm³/N · m ASTM D3702 Impact Nominal Value Unit Test Method Unnotched Izod Impact (23°C) 32 J/m ASTM D256 Thermal Nominal Value Unit Test Method Deflection Temperature Under Load 188 °C ASTM D648 0.45 MPa, not annealed 188 °C ASTM D648 1.8 MPa, not annealed 93.3 °C ASTM D648 Welting Temperature 220 °C ASTM D696 Schedific Heat 1670 J/kg/°C ASTM D696 Maximum Service Temperature Intermittent 149 °C UL 7468 Electrical Nominal Value Unit Test Method Volume Resistivity 1.0£+14 ohms·cm ASTM D257 Dielectric Strength 20 kV/mm ASTM D150 Flammability Nominal Value Unit Test Method Plane Rating	Flexural Modulus (23°C)	2410	MPa	ASTM D790
Dynamic) 0.26 ASTM D1894 Wear Factor ² (0.28 MPa, 0.25 m/sec) 400 10^-8 mm³/N·m ASTM D3702 Impact Nominal Value Unit Test Method Unnotched Izod Impact (23°C) 32 J/m ASTM D256 Thermal Nominal Value Unit Test Method Deflection Temperature Under Load ASTM D648 ASTM D648 0.45 MPa, not annealed 188 *C ASTM D648 1.8 MPa, not annealed 93.3 *C ASTM D648 Melting Temperature 220 *C ASTM D648 Specific Heat 1670 J/kg/*C ASTM D696 Specific Heat 1670 J/kg/*C ASTM D696 Maximum Service Temperature Intermittent 149 *C UL 7468 Electrical Nominal Value Unit Test Method Volume Resistivity 1.0E+14 ohms·cm ASTM D150 Flammability Nominal Value Unit Test Method Dielectric Strength 20 kV/mm ASTM D1	Flexural Strength (23°C)	86.2	MPa	ASTM D790
Impact Nominal Value Unit Test Method Unnotched Izod Impact (23°C) 32 J/m ASTM D256 Thermal Nominal Value Unit Test Method Deflection Temperature Under Load 188 °C ASTM D648 0.45 MPa, not annealed 188 °C ASTM D648 1.8 MPa, not annealed 93.3 °C ASTM D648 Melting Temperature 220 °C ASTM D648 CLTE - Flow 7.2E-5 cm/cm/°C ASTM D696 Specific Heat 1670 J/kg/°C ASTM D696 Maximum Service Temperature 149 °C UL 746B Long Term 93 °C UL 746B Electrical Nominal Value Unit Test Method Volume Resistivity 1.0E+14 ohms·cm ASTM D257 Dielectric Strength 20 kV/mm ASTM D149 Dielectric Constant ³ (23°C, 60 Hz) 3.70 Unit Test Method Flame Rating HB Unit Test Method	Coefficient of Friction ¹ (vs. Itself - Dynamic)	0.26		ASTM D1894
Unnotched Izod Impact (23°C) 32 J/m ASTM D256 Thermal Nominal Value Unit Test Method Deflection Temperature Under Load 188 °C ASTM D648 0.45 MPa, not annealed 188 °C ASTM D648 1.8 MPa, not annealed 93.3 °C ASTM D648 Melting Temperature 220 °C ASTM D648 CLTE - Flow 7.2E-5 cm/cm/°C ASTM D696 Specific Heat 1670 J/kg/°C ASTM D696 Maximum Service Temperature "C UL 7468 Electrical Nominal Value Unit Test Method Volume Resistivity 1.0E+14 ohms·cm ASTM D257 Dielectric Strength 20 kV/mm ASTM D149 Dielectric Constant ³ (23°C, 60 Hz) 3.70 KV/mm ASTM D150 Flammability Nominal Value Unit Test Method Flammator and the method of t	Wear Factor ² (0.28 MPa, 0.25 m/sec)	400	10^-8 mm³/N·m	ASTM D3702
Nominal Value	Impact	Nominal Value	Unit	Test Method
Deflection Temperature Under Load 0.45 MPa, not annealed 188 °C ASTM D648 1.8 MPa, not annealed 93.3 °C ASTM D648 Melting Temperature 220 °C ASTM D648 Melting Temperature 220 °C ASTM D696 Specific Heat 1670 J/kg/°C ASTM D696 Specific Heat 149 °C UL 746B Long Term 93 °C UL 746B Electrical Nominal Value Unit Test Method Volume Resistivity 1.0E+14 ohms-cm ASTM D557 Dielectric Strength 20 kV/mm ASTM D149 Dielectric Constant ³ (23°C, 60 Hz) 3.70 KV/mm ASTM D150 Flame Rating HB Unit Test Method Additional Information Data obtained from extruded shapes materials WL 94 NOTE 40 psi, 50 fpm 40 psi, 50 fpm	Unnotched Izod Impact (23°C)	32	J/m	ASTM D256
0.45 MPa, not annealed 188 °C ASTM D648 1.8 MPa, not annealed 93.3 °C ASTM D648 Melting Temperature 220 °C ASTM D2133 CLTE - Flow 7.2E-5 cm/cm/°C ASTM D696 Specific Heat 1670 J/kg/°C Maximum Service Temperature Flatermittent 149 °C Long Term 93 °C UL 7468 Electrical Nominal Value Unit Test Method Volume Resistivity 1.0E+14 ohms·cm ASTM D257 Dielectric Strength 20 kV/mm ASTM D149 Dielectric Constant ³ (23°C, 60 H2) 3.70 KV/mm ASTM D150 Flammability Nominal Value Unit Test Method Flame Rating HB UL 94 Additional Information Data obtained from extruded shapes material. NOTE 1. 40 psi, 50 fpm 2. Against Steel	Thermal	Nominal Value	Unit	Test Method
1.8 MPa, not annealed	Deflection Temperature Under Load			ASTM D648
Melting Temperature 220 *C ASTM D2133 CLTE - Flow 7.2E-5 cm/cm/*C ASTM D696 Specific Heat 1670 J/kg/*C Maximum Service Temperature	0.45 MPa, not annealed	188	°C	ASTM D648
CLTE - Flow 7.2E-5 cm/cm/°C ASTM D696 Specific Heat 1670 J/kg/°C Maximum Service Temperature Intermittent 149 °C Long Term 93 °C UL 746B Electrical Nominal Value Unit Test Method Volume Resistivity 1.0E+14 ohms·cm ASTM D257 Dielectric Strength 20 kV/mm ASTM D149 Dielectric Constant ³ (23°C, 60 Hz) 3.70 KV/mm ASTM D150 Flammability Nominal Value Unit Test Method Additional Information Data obtained from extruded shapes material. NOTE 1. 40 psi, 50 fpm 2. Against Steel	1.8 MPa, not annealed	93.3	°C	ASTM D648
Specific Heat 1670 J/kg/*C Maximum Service Temperature Intermittent 149 °C Long Term 93 °C UL 746B Electrical Nominal Value Unit Test Method Volume Resistivity 1.0E+14 ohms·cm ASTM D257 Dielectric Strength 20 kV/mm ASTM D149 Dielectric Constant 3 (23°C, 60 Hz) 3.70 KV/mm ASTM D150 Flammability Nominal Value Unit Test Method Flame Rating HB Unit Test Method Additional Information Data obtained from extruded shapes material: NOTE 1. 40 psi, 50 fpm 2. Against Steel	Melting Temperature	220	°C	ASTM D2133
Maximum Service Temperature Intermittent 149 °C Long Term 93 °C UL 746B Electrical Nominal Value Unit Test Method Volume Resistivity 1.0E+14 ohms·cm ASTM D257 Dielectric Strength 20 kV/mm ASTM D149 Dielectric Constant ³ (23°C, 60 Hz) 3.70 Vmm ASTM D150 Flammability Nominal Value Unit Test Method HB UL 94 Additional Information Data obtained from extruded shapes material. NOTE 1. 40 psi, 50 fpm 2. Against Steel	CLTE - Flow	7.2E-5	cm/cm/°C	ASTM D696
Intermittent 149 °C Long Term 93 °C UL 746B Electrical Nominal Value Unit Test Method Volume Resistivity 1.0E+14 ohms·cm ASTM D257 Dielectric Strength 20 kV/mm ASTM D149 Dielectric Constant ³ (23°C, 60 Hz) 3.70 Vinit Test Method Flammability Nominal Value Unit Test Method Flame Rating HB UL 94 Additional Information Data obtained from extruded shapes material: NOTE 1. 40 psi, 50 fpm 2. Against Steel	Specific Heat	1670	J/kg/°C	
Long Term 93 °C UL 746B Electrical Nominal Value Unit Test Method Volume Resistivity 1.0E+14 ohms·cm ASTM D257 Dielectric Strength 20 kV/mm ASTM D149 Dielectric Constant 3 (23°C, 60 Hz) 3.70 KV/mm ASTM D150 Flammability Nominal Value Unit Test Method Flame Rating HB UL 94 Additional Information Data obtained from extruded shapes material: NOTE 1. 40 psi, 50 fpm 2. Against Steel	Maximum Service Temperature			
Electrical Nominal Value Unit Test Method Volume Resistivity 1.0E+14 ohms·cm ASTM D257 Dielectric Strength 20 kV/mm ASTM D149 Dielectric Constant ³ (23°C, 60 Hz) 3.70 ASTM D150 Flammability Nominal Value Unit Test Method Flame Rating HB UL 94 Additional Information Data obtained from extruded shapes material. NOTE 1. 40 psi, 50 fpm 2. Against Steel	Intermittent	149	°C	
Volume Resistivity 1.0E+14 ohms·cm ASTM D257 Dielectric Strength 20 kV/mm ASTM D149 ASTM D150 Flammability Nominal Value Unit Test Method UL 94 Additional Information Data obtained from extruded shapes material. NOTE 1. 40 psi, 50 fpm 2. ASTM D150 ASTM D	Long Term	93	°C	UL 746B
Dielectric Strength 20 kV/mm ASTM D149 Dielectric Constant ³ (23°C, 60 Hz) 3.70 Flammability Nominal Value Unit Test Method Flame Rating HB Additional Information Data obtained from extruded shapes material. NOTE 1. 40 psi, 50 fpm 2. Against Steel	Electrical	Nominal Value	Unit	Test Method
Dielectric Constant ³ (23°C, 60 Hz) 3.70 Flammability Nominal Value Unit Test Method Flame Rating HB UL 94 Additional Information Data obtained from extruded shapes material. NOTE 1. 40 psi, 50 fpm Against Steel	Volume Resistivity	1.0E+14	ohms·cm	ASTM D257
Flammability Nominal Value Unit Test Method Flame Rating HB UL 94 Additional Information Data obtained from extruded shapes material. NOTE 1. 40 psi, 50 fpm 2. Against Steel	Dielectric Strength	20	kV/mm	ASTM D149
Flame Rating HB UL 94 Additional Information Data obtained from extruded shapes material. NOTE 1. 40 psi, 50 fpm 2. Against Steel	Dielectric Constant ³ (23°C, 60 Hz)	3.70		ASTM D150
Additional Information Data obtained from extruded shapes material. NOTE 1. 40 psi, 50 fpm 2. Against Steel	Flammability	Nominal Value	Unit	Test Method
Data obtained from extruded shapes material. NOTE 1. 40 psi, 50 fpm 2. Against Steel	Flame Rating	НВ		UL 94
NOTE 1. 40 psi, 50 fpm 2. Against Steel	Additional Information			
1. 40 psi, 50 fpm 2. Against Steel	Data obtained from extruded shapes mat	erial.		
2. Against Steel	NOTE			
	1.	40 psi, 50 fpm		
3. 50% RH	2.	Against Steel		
	3.	50% RH		

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