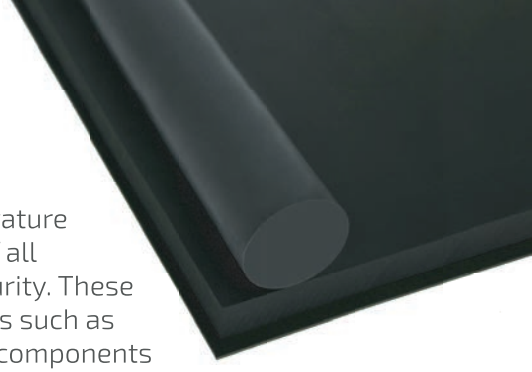
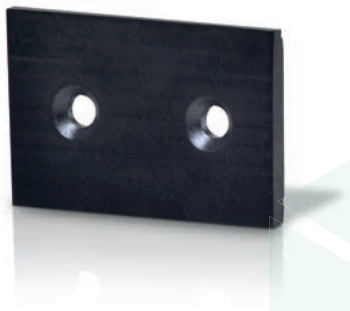
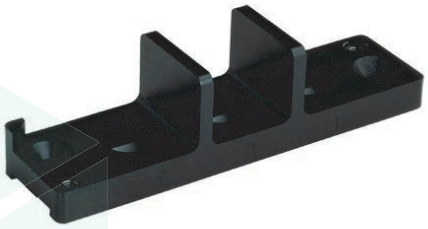
HIGH-PERFORMANCE PLASTICS

DURATRON® CU60 PBI



Semi-crystalline plastic, DURATRON® CU60 PBI offers the highest temperature resistance and the best retention of mechanical properties above 200ºC of all thermoplastics. DURATRON® CU60 PBI is very "clean" in terms of ionic impurity. These characteristics make this material extremely useful for high-tech industries such as the semiconductor and aerospace industries. It is typically used on critical components to lower maintenance costs and obtain valuable production time.





MAIN CHARACTERISTICS

- Extremely high maximum service temperature allowed in the air (310°C in continuous service and 500°C for short periods)
- Excellent retention of mechanical resistance, stiffness and creep resistance over a wide range of temperatures
- Excellent wear resistance and frictional behaviour
- Extremely low coefficient of linear thermal expansion
- Excellent resistance against high energy radiation (gamma rays and X-rays)
- Inherent low flammability
- High purity in terms of ionic contamination
- Good electrical insulation and dielectric properties
- Good resistance to UV rays

APPLICATIONS

- Pump components
- (High-tech) valve seats
- Bearings
- Rollers
- High temperature insulators
- Electrical connectors
- Fixing rings

CHEMICAL RESISTANCE

ELECTRICAL INSULATION

WEAR RESISTANCE

SLIDING PROPERTIES

IMPACT RESISTANCE

TEMPERATURE RANGE

*continuously (20.000H)

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TECHNICAL DATASHEET

PROPERTIES	TEST METHODS	UNITS	DURATRON® CU60 PBI
COLOR	-	-	BLACK
DENSITY	ISO 1183-1	g/cm³	1.30
WATER ABSORPTION			
AFTER 24/96H IMMERSION IN WATER OF 23ºC [1]	ISO 62	mg	60/112
AFTER 24/96H IMMERSION IN WATER OF 23ºC [1]	ISO 62	%	0.74/1.37
AT SATURATION IN AIR OF 23ºC / 50% RH	-	%	7.5
AT SATURATION IN WATER OF 23ºC	-	%	14
THERMAL PROPERTIES			
MELTING TEMPERATURE (DSC, 10ºC/MIN)	ISO 11357-1/-3	ºC	NA
GLASS TRANSITION TEMPERATURE (DSC, 20ºC/MIN)[2]	ISO 11357-1/-2	ºC	415
THERMAL CONDUCTIVITY AT 23ºC	-	W/(K.m)	0.40
COEFFICIENT OF LINEAR THERMAL EXPANSION			
AVERAGE VALUE BETWEEN 23-100ºC	-	m/(m.K)	25 x 10^{-6}
AVERAGE VALUE BETWEEN 23-150ºC	-	m/(m.K)	25 x 10^{-6}
AVERAGE VALUE ABOVE 150ºC		m/(m.K)	35 x 10^{-6}
TEMPERATURE OF DEFLECTION UNDER LOAD			
METHOD A 1.8 MPA	ISO 75-1/-2	ºC	425
MAXIMUM ALLOWABLE SERVICE TEMPERATURE IN AIR			
FOR SHORT PERIODS[3]	-	ºC	500
CONTINUOUSLY (MIN. 20.000H)[4]	-	ºC	310
MINIMUM SERVICE TEMPERATURE[5]	-	ºC	-50
FLAMMABILITY[6]			
"OXYGEN INDEX"	ISO 4589-1/-2	%	58
ACCORDING TO UL94 (1.5/3MM DE ESPESSURA)	-	-	V-0/V-0
MECHANICAL PROPERTIES AT 23ºC[7]			
TENSION TEST[8]			
TENSILE STRESS AT YIELD/TENSILE STRESS AT BREAK	ISO 527-1/-2	MPa	NA/130
TENSILE STRENGHT[9]	ISO 527-1/-2	MPa	130
TENSILE STRAIN AT BREAK[9]	ISO 527-1/-2	%	3
TENSILE MODULUS OF ELASTICITY[10]	ISO 527-1/-2	MPa	6000
COMPRESSION TEST[11]			
COMPRESSIVE STRESS AT 1/2/5% NOMINAL STRAIN[10]	ISO 604	MPa	58/118/280
CHARPY IMPACT STRENGTH - UNNOTCHED[2]	ISO 179-1/1eU	KJ/m²	20
CHARPY IMPACT STRENGTH - NOTCHED	ISO 179-1/1eA	KJ/m²	2.5
BALL INDENTATION HARDNESS[13]	ISO 2039-1	N/mm²	375
ROCKWELL HARDNESS[13]	ISO 2039-2	-	E 120
ELECTRICAL PROPERTIES AT 23ºC			
ELECTRIC STRENGTH[14]	IEC 60243-1	kV/mm	28
VOLUME RESISTIVITY	IEC 60093	Ohm.cm	> 10^{14}
SURFACE RESISTIVITY	ANSI/ESD STM 11.11	Ohm/sq.	> 10^{13}
RELATIVE PERMITTIVITY ε : A 100HZ	IEC 60250	-	3.3
RELATIVE PERMITTIVITY ε : A 1MHZ	IEC 60250	-	3.2
DIELECTRIC DISSIPATION FACTOR TAN δ : A 100HZ	IEC 60250	-	0.001
DIELECTRIC DISSIPATION FACTOR TAN δ : A 1MHZ	IEC 60250	-	-
COMPARATIVE TRACKING INDEX (CTI)	IEC 60112	-	-

NOTE: 1 g/cm³ = 1000 kg/m³ ; 1 MPa = 1 N/mm² ; 1 KV/mm = 1 MV/m

(1) According to method 1 of iso 62 and done on discs ø 50x3 mm **(2)** The figures given for this properties are only attributed to amorphous rather than semi-crystalline materials. **(3)** For short exposure periods only (a few hours) in applications where only very low loads are applied to the material. **(4)** Temperature which it resists for a minimum period of 20,000 hours. After this time, there is a decrease of about 50% in tensile strength compared to the original value. The given temperature values are based on the thermal oxidation degradation which causes a reduction of the properties. In the meantime, the maximum permissible service temperature depends in many cases essentially on the deduction and magnitude of the mechanical stresses to which the material is subject. **(5)** As the impact strength decreases with decreasing temperature, the minimum permissible service temperature is determined by the extent of impact to which the material is subjected. The values given are based on unfavorable impact conditions and can not therefore be considered absolute limits. **(6)** These assessments are derived from the technical specifications of the manufacturers of the raw materials and do not allow the determination of the behavior of the materials under fire conditions. There is no yellow card for these formats. **(7)** Most of the figures given by the mechanical properties of the extruded materials are mean values of the tests done on specimens machined with ø 40-60 mm. With the exception of hardness tests, the best specimens were taken from an area between the center and outer diameter, with their length in the longitudinal direction (parallel to the direction of extrusion). **(8)** Specimen testing: Type 1b. **(9)** Speed test: 5 or 50 mm / min. **(10)** Speed test: 1 mm / min. **(11)** Test specimens: cylinders ø 8x16 mm. **(12)** Pendulum used: 4J. **(13)** Test on 10 mm thick specimens. **(14)** Test on 1 mm thick specimens.

The dielectric strength of the Ketron Peek 1000 (black) Ppsu 1000 black may be considerably lower than the figures listed in the table referring to non-black materials.
It should be noted that the values of the compression properties of the Duratron 4503 PAI and 4501 PAI alloys may differ significantly.