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PET+solid lubrificant (POLYETHYLENE TEREPHTALATE)

MATERIAL DATA SHEET

PET+solid lubrificant is a polyethylene terephthalate compound incorporating a uniformly dispersed solid lubricant. Its specific formulation makes it a premium internally lubricated bearing-grade. It not only has an outstanding wear resistance but offers in comparison with PET an even lower coefficient of friction as well as higher pressure-velocity capabilities. General characteristics:

- High mechanical strength, stiffness and hardness
- Low and constant coefficient of friction
- Very good dimensional stability (better than polyacetal)
- Better resistance to acids than nylon or polyacetal
- Physiologically inert (suitable for food contact)
- Very good creep resistance
- Excellent wear resistance
- Excellent stain resistance
- Good electrical insulating properties
- Good resistance to high energy radiation (gamma- and X-rays)

PROPERTIES	Test methods	Units	VALUES
Color	-	-	Pale grey
Density	ISO 1183-1	g/cm³	1.44
Water absorption:			
- after 24 h immersion in water of 23°C	ISO 62	%	0.06
- at saturation in water of 23°C	-	%	0.47
Thermal Properties			
Melting temperature (DSC, 10°C/min)	-	°C	245
Thermal conductivity at 23°C	-	W/(K.m)	0.29
Coefficient of linear thermal expansion:			
- average value between 23 and 60°C	-	m/(m.K)	65 x 10^{-6}
- average value between 23 and 100°C	-	m/(m.K)	85 x 10^{-6}
Temperature of deflection under load (method A: 1.8 MPa)	ISO 75	°C	75
Max. allowable service temperature in air continuously for 20,000 h	-	°C	100
Flammability according to UL 94 (1.5 / 3 mm thickness)	-	-	HB / HB
Min. service temperature	-	°C	-20
Mechanical Properties at 23°C			
Tension test			
- tensile strength	ISO 527-1/-2	MPa	76
- tensile strain at yield	ISO 527-1/-2	%	4
- tensile strain at break	ISO 527-1/-2	%	5
- tensile modulus of elasticity	ISO 527-1/-2	MPa	3300
Compressive stress at 1 / 2 / 5 % nominal strain	ISO 604	MPa	31 / 60 / 102
Flexural strength	ISO 178	MPa	122
Flexural modulus of elasticity	ISO 178	MPa	3160
Charpy impact strength - unnotched	ISO 179/1eU	kJ/m²	30
Charpy impact strength - notched	ISO 179/1eA	kJ/m²	2.5
Rockwell hardness	ISO 2039-2	-	M 94
Dynamic coefficient of friction	ISO 7148-2		0.15 - 0.22
Wear rate	ISO 7148-2	µm/km	2
Electrical Properties at 23 °C			
Electric strength	ISO 60243	kV/mm	21
Volume resistivity	IEC 60093	Ohm.cm	> 10^{14}
Surface resistivity	IEC 60093	Ohm	> 10^{13}
Dielectric dissipation factor tan δ at 1 MHz	IEC 60250	-	0.014
Relative permittivity ε_r at at 1 MHz	IEC 60250	-	3.2

Note: 1 g/cm³ = 1,000 kg/m³ ; 1 MPa = 1 N/mm² ; 1 kV/mm = 1 MV/m.