

# ERTALYTE®

## Polyethylene Terephthalate (PET)

### Main Characteristics:

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

Quadrant stock shapes made of crystalline thermoplastic Polyester, are marketed under the trade names ERTALYTE® (virgin grade) and ERTALYTE® TX (filled grade).

### ERTALYTE®

(PET)

Colours: Natural (white) and Black

The specific properties of this virgin crystalline PET make it specially suitable for the manufacture of mechanical precision parts which have to sustain high loads and/or are subject to wear.

### ERTALYTE® TX

(PET + Solid Lubricant)

Colour: Pale grey

ERTALYTE® TX is a Polyethylene Terephthalate compound incorporating a uniformly dispersed solid lubricant. Its specific formulation yields a premium internally lubricated bearing grade.

ERTALYTE® TX has not only an outstanding wear resistance, but offers in comparison with ERTALYTE® an even lower coefficient of friction as well as higher Pressure-Velocity capabilities.

# ERTALYTE® (PET-P)

ERTALYTE® offers a unique combination of physical properties compared to nylon or acetal. It has better wear and abrasion resistance, wet or dry, as well as significantly better dimensional stability. It is ideal for tight tolerance wear parts.

- Good resistance against acids (down to pH 1)
- Very good creep resistance
- Physiologically inert
- Good UV resistance
- Continuous temperature 100°C (max 160°C)
- Low dynamic coefficient of friction
- Very good dimensional stability
- Excellent wear resistance

## Common Applications:

Bearings; Thrust washers; Slideways; Gears; Rollers; Pump components.

## Delivery Programme

	min	max
Rod 1m long diameter (mm)	10	210
Rod 3m long diameter (mm)	10	150
Tube 1m & 3m long outer diameter (mm)	20	200
inner diameter (mm)	12	160
Sheet 1m & 2m long width (m)	1.0	
thickness (mm)	2.0	6.0
Plate 1m & 3m long width (mm)	610	
thickness (mm)	8.0	100
Colours: Natural (white) and Black		

## Technical Specification

Property	ISO Method	Units	Values
Density	1183	g/cm <sup>3</sup>	1.39
Water absorption			
• Saturation in air (23°C/50% RH)	~	%	0.25
• Saturation in water (23°C)	~	%	0.50
Tensile strength* <sup>1</sup>	527	N/mm <sup>2</sup>	90
Tensile modulus of elasticity* <sup>1</sup>	527	N/mm <sup>2</sup>	3700
Elongation at break* <sup>1</sup>	527	%	15
Impact - Charpy* <sup>1</sup>	179/1eU	kJ/m <sup>2</sup>	>50
Impact - Izod notched* <sup>1</sup>	180/2A	kJ/m <sup>2</sup>	2
Hardness	Rockwell	~	M96
	Shore D	~	~
Melt point	~	°C	255
Max allowable service temperature in air			
• for short periods	~	°C	160
• continuously for 20,000 hrs	~	°C	100
Linear thermal expansion coefficient	~	K <sup>-1</sup> x 10 <sup>-5</sup>	6.0
Thermal conductivity	~	W/(K.m)	0.29
Flammability* <sup>2</sup> (6mm thickness)	~	~	HB
Volume resistivity* <sup>1</sup>	IEC93	Ω.cm	>10 <sup>15</sup>
Dielectric strength* <sup>1</sup>	IEC243	kV/mm	22
Outside applications			
• UV resistance	~	~	A
Acids - strong (pH<3)	~	~	B
Alkalis - strong (pH>11)	~	~	C
Chlorinated hydrocarbons	~	~	A/B
Hot water	~	~	B

'A' - Acceptable service

'B' - Limited service

'C' - Unacceptable

\*<sup>1</sup> - Measured on dry test specimens (where applicable)

\*<sup>2</sup> - Tests completed by DSM EPP using UL test methods

# ERTALYTE® TX Bearing Grade PET-P (PET-P+Lubricant)

The specific formulation of ERTALYTE® TX gives a premium internally lubricated bearing grade material, that has excellent wear resistance, as well as high Pressure-Velocity capabilities.

- Good resistance against acids (down to pH 1)
- Very good creep resistance
- Physiologically inert
- Good UV resistance
- Continuous temperature 100°C (max 160°C)
- Low dynamic coefficient of friction
- Very good dimensional stability
- Excellent wear resistance

### Common Applications:

Bearings; Thrust washers; Slideways; Gears; Rollers; Pump components.

### Delivery Programme

	min	max
Rod 1m long diameter (mm)	10	200
Rod 3m long diameter (mm)	10	100
Tube 1m & 3m long outer diameter (mm)	20	200
inner diameter (mm)	12	160
Plate 1m & 3m long width (mm)	610	
thickness (mm)	8.0	100
Colour: Light grey		

### Technical Specification

Property	ISO Method	Units	Values
Density	1183	g/cm <sup>3</sup>	1.44
Water absorption			
• Saturation in air (23°C/50% RH)	~	%	0.23
• Saturation in water (23°C)	~	%	0.47
Tensile strength* <sup>1</sup>	527	N/mm <sup>2</sup>	76
Tensile modulus of elasticity* <sup>1</sup>	527	N/mm <sup>2</sup>	3450
Elongation at break* <sup>1</sup>	527	%	7
Impact - Charpy* <sup>1</sup>	179/1eU	kJ/m <sup>2</sup>	>30
Impact - Izod notched* <sup>1</sup>	180/2A	kJ/m <sup>2</sup>	2.5
Hardness	Rockwell	~	M94
	Shore D	~	~
Melt point	~	°C	255
Max allowable service temperature in air			
• for short periods	~	°C	160
• continuously for 20,000 hrs	~	°C	100
Linear thermal expansion coefficient	~	K <sup>-1</sup> x 10 <sup>-5</sup>	6.5
Thermal conductivity	~	W/(K.m)	0.29
Flammability* <sup>2</sup> (6mm thickness)	~	~	HB
Volume resistivity* <sup>1</sup>	IEC93	Ω.cm	>10 <sup>15</sup>
Dielectric strength* <sup>1</sup>	IEC243	kV/mm	21
Outside applications			
• UV resistance	~	~	A
Acids - strong (pH<3)	~	~	B
Alkalis - strong (pH>11)	~	~	C
Chlorinated hydrocarbons	~	~	A/B
Hot water	~	~	B

'A' - Acceptable service

'B' - Limited service

'C' - Unacceptable

\*<sup>1</sup> - Measured on dry test specimens (where applicable)

\*<sup>2</sup> - Tests completed by DSM EPP using UL test methods