



## PBT

### Polybutylene Terephthalate

#### **Description**

A semi crystalline material, it is a good electrical insulator with good abrasion and chemical resistance. This is a highly engineered material offering excellent mechanical properties. This high rigidity thermoplastic polyester is suitable for fast cycling injection moulding applications due its high crystallinity.

#### **Typical Applications**

Widely used in domestic equipment, electronics, electrical and automotive markets, e.g. pump housings, impellers, gears etc

#### **Types of grade available**

Glass filled  
Flame retardant  
Extrusion  
Moulding

#### **Recycling**

Re grind will have to be dried well

#### **General Processing**

Drying Time	2.5 hours (Some grades process better without drying)
Drying Temperature	120C
Type of Drier	Desiccant
Purging	DYNAPURGE E2
Moisture Absorption	0.03%, 24 hours at room temperature
Other Considerations	Susceptible to hydrolysis if processed in a wet condition

#### **Processing Injection Moulding**

Barrel Settings	220C to 260C
Injection speed	Fast
Injection Pressure	High
Back Pressure	Low
Screw Speed	30 -100 rpm
Tool Temperature	50c
Melt Temperature	220C to 225C
Processing Stability	Processes with narrow temperature range due to sensitivity to thermal degradation
Gate Considerations	Pin, sprue, ring tab and submarine gates can all be used. Gate on the thickest wall section.
Sprue & Runner	Sprues to be as short as possible with radiuses corners.

Considerations	Short, full round runners
<b>Processing Extrusion</b>	
Barrel Settings	260c -270c
Screw	25 -1 minimum
Screen Packs	Yes
Haul-off / Cooling	Water heat to 40-60c
Calibration	Sizing Plate
<b>Mechanical Properties</b>	
Shrinkages	1.1 to 1.8%
Flexural Strength	80 MPA (unfilled grade)
Tensile strength at Yield	30 – 105 MPa
<b>Physical Properties</b>	
Density	1.3 to 1.6
Cold Bend	N/A
Cold Flex	N/A
Elongation at Break	5 -300 MPa
Flexural Modulus	1.5 – 5.2 GPa
General Impact Strength	Good to high
Material Finish	Mat finish
<b>Thermal Properties</b>	
Vicat Softening Temperature	105 -190c
Heat Deflection Temperature	98 -195c
<b>Flammability</b>	
Flammability Rating	V0 rated grades available
<b>Weatherability</b>	
Suitability for outdoor use	Good
<b>Fillers &amp; Additives</b>	
	Flame retardants, glass fibre
<b>Chemical Resistance</b>	
Resistant to	Aliphatic hydrocarbons, alcohols, ethers, oil, petrol
Not resistant to	Sodium hydroxide, , ketones, halogenated hydrocarbons
<b>Food Contact Status</b>	
	Suitable for food contact

<b>Colouring</b>	When dry colouring PBT, the use of a binder (sometimes called dusting oil) is preferred so as to prevent separation of colorant and polymer. A typical binder could be of paraffin oil origin with glycol oil added. If masterbatched, PBT based masterbatches are preferred as universal type masterbatches
<b>REACH &amp; ROHS Compliance</b>	Yes
<b>Bonding</b>	It is possible to solvent bond PBT mouldings to themselves using either hexafluoracetone sesquihydrate or hexafluoroisopropanol but these solvents are highly toxic, Cyanoacrylate monomer and two part epoxy adhesive are also used for gluing PBT
<b>Welding</b>	Commonly welded using techniques such as ultrasonic, hot plate and friction. When friction welding, the applied pressure should be carefully controlled otherwise the presence of too much excess material can contribute to a weak weld being produced

*This information has been provided as a general guide and we suggest that you carry out your own specific tests to be sure that this material is suitable for your application.*