

The molecule structure of polyethylene terephthalate can be produced either as an amorphous or semi-crystalline thermoplastic. The amorphous type is crystal clear with lower mechanical stability and inferior sliding properties.

The semi-crystalline types, on the other hand, have a high level of hardness, rigidity and stability with excellent sliding properties and low sliding abrasion. Because of its good creep resistance, low level of moisture absorption and excellent dimensional stability, the material is ideally suited for complex parts with the highest demands on dimensional stability and surface finish. For the reasons mentioned above, only the semi-crystalline type is suitable for sliding applications.

The wear resistance and sliding properties of PET-GL have been improved compared to pure PET by adding a special, homogeneously distributed solid lubricating agent.

The PET semi-finished products that we offer – and from which we also manufacture all finished products – are manufactured from semi-crystalline types in an extrusion process.

Main properties

- High stability
- High rigidity
- High hardness
- Low moisture absorption (at saturation 0.5%)
- Very good creep resistance
- Very high dimensional stability
- Constantly low sliding friction
- Very little sliding abrasion
- Resistant to hydrolysis (up to +70 °C)
- Physiologically safe

Colours

PET: natural, black

PET-GL: light grey.

Sliding properties

PET has excellent sliding properties, very good wear resistance and, in combination with its other properties, is an excellent material for highly loaded sliding applications. This also applies to applications where high levels of humidity or moisture are expected.

The modified type PET-GL is especially suitable for highly loaded sliding applications in dry running operations due to its integrated solid lubricating agent. The solid lubricating agent “self-lubricates” the PET-GL, which gives it excellent sliding properties and highest wear resistance with a much higher load-bearing strength (pv limiting value) compared to pure PET. It also prevents the stick-slip effect. The other properties are equal to those of pure PET.

Polyethylene terephthalate (PET)

Weathering effects

PET is not resistant to UV rays. The material surface changes when subjected to UV rays in combination with atmospheric oxygen. If the material is to be subjected to UV rays for longer periods, a black coloured type is recommended.

Chemical resistance

PET is resistant to weak acids and alkaline solutions, salt solutions, perchlorinated and fluorinated hydrocarbons, oils, fuels, solvents and surface-active substances. Strong polar solvents have an irreversible swelling effect. PET is not resistant to strong acids or alkaline solutions, esters, ketones or chlorinated hydrocarbons.

Behaviour in fire

PET is rated as normal flammable. When the source of ignition is removed, PET continues to burn, forming droplets. The oxygen index (the oxygen concentration required for combustion) at 23% is average compared to other plastics.

Areas of use

- General machine engineering
- Vehicle construction
- Precision mechanics
- Electrical industry
- Information technology

Applications

- Ratchet wheels
- Bushes
- Gears
- Sliding elements
- Insulators
- Casing parts
- Counter components
- Precision bearings
- Cam disks

Machining

PET develops a brittle, flowing chip and is suitable for machining on automatic lathes, but it can also be machined on cutting machine tools. The semi-finished products can be drilled, milled, sawed, planed and turned on a lathe. It is also possible to cut a thread into the material or insert a threaded element. Generally no cooling or lubricating emulsion is necessary.

