Polyacetal (POM)

Polyacetal is a high crystalline thermoplastic with high strength and rigidity as well as good sliding properties and wear resistance with a low level of moisture absorption. Its good dimensional stability, exceptional fatigue resistance as well as excellent machining properties make Polyacetal a versatile design material also for complex components. POM satisfies high surface finish requirements.

Strength, rigidity and dimensional stability can be further improved by adding glass fibres as a filler, although this decreases sliding properties.

A distinction is made between homopolymers (POM-H) and copolymers (POM-C); homopolymers have a higher density, hardness and strength due to their higher degree of crystallinity. However, copolymers have a higher impact resistance, greater abrasion resistance and better thermal/chemical resistance.

The Polyacetal semi-finished products that we offer – from which we also manufacture finished products – are produced from copolymers in an extrusion process.

Main properties
- High strength
- High rigidity
- High hardness
- Good impact resistance, also at low temperatures
- Low level of moisture absorption (at saturation 0.8%)
- Good creep resistance
- High dimensional stability
- Resistant to hydrolysis (up to +60 °C)
- Physiologically safe

Colours
POM-C: natural/black
POM-C + GF: black.

Sliding properties
POM-C has excellent sliding properties and good wear resistance. Combined with its other outstanding properties, POM-C is well suited for use in sliding applications at medium to high loads. This also applies to applications where high levels of humidity or moisture are expected.

Due to the closely spaced static and dynamic coefficient of friction low starting torques can be implemented.
Glass filled types are the exception here as the sliding properties are significantly worse compared to the unfilled types.

Weathering effects
POM-C is not resistant to UV rays. The surface oxidizes when subjected to UV radiation in combination with oxygen and becomes stained or dull. With long-term exposure to UV radiation, the material tends to become brittle.

Polyacetal (POM)

Chemical resistance
POM is resistant to weak acids, weak and strong alkaline solutions, organic solvents and petrol, benzene, oils and alcohols.

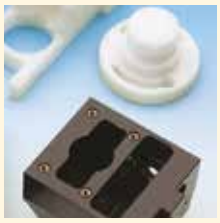
POM-C is not resistant to strong acids (pH < 4) or oxidising materials.

Behaviour in fire
POM-C is rated as normal flammable. When the source of ignition is removed, POM-C continues to burn, forming droplets. During thermal decomposition, formaldehyde can form. The oxygen index (= the oxygen concentration required for combustion) at 15% is very low compared to other plastics.

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

Applications
- Spring elements
- Bushes
- Gears
- Sliding elements
- Insulators
- Pump components
- Casing parts
- Valves and valve bodies
- Counter parts
- Precision parts





Machining
POM-C develops a fragmented chip and is thus ideally suited for machining on automatic lathes, but it is also possible to machine it 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 threads or insert threaded parts in the material. Generally no cooling or lubricating emulsion is necessary.

To limit material deformation due to internal residual stress in semi-finished products, the parts should always be machined from the geometrical centre of the semi-finished product, removing an even quantity of material from all sides.

If maximum dimensional stability is demanded from the finished components, the parts to be manufactured should be rough pre-machined and stored for an interim period or heat treated. The parts can then be completed. More detailed information on interim storage and heat treatment, as well as other information about machining, is provided in the chapter on “Machining guidelines”.