

Thermoplastic

Thermoplastics are plastics that melt when their temperature is raised above the softening point, allowing them to be deformed while warm. The material then hardens again upon cooling. This process can be repeated as often as desired. In contrast to thermo-set plastics, no chemical reactions at all occur during processing.

Thermoplastics can be divided into amorphous and semi-crystalline plastics. The less pronounced texture formation of amorphous materials allows the creation of transparent parts by injection molding, including parts with glass-like clarity. Semi-crystalline thermoplastics have an internal structure that results in parts with superior mechanical properties and application temperatures.

Due to the great variety of thermoplastics and the options for modifying them, it is possible to create “custom-made” structural materials. It is possible to vary their mechanical properties, chemical resistance, and temperature resistance while applying a very wide range of colors.

Short code	PA 6	PTFE
Designation	Polyamide	Polytetrafluoroethylene
Yield stress in MPa	80 / 50	4
Tensile strength in MPa	- / -	20
Tensile modulus in MPa	3000 / 1500	600
Ball impression hardness in MPa	150 / 70	26
Temperature resistance:		
Max. short-term	180 °C	300 °C
Max. longer-term	80 °C	260 °C
Min. application temp.	-40 °C	-200 °C
Resistance to: *		
Oils, greases	+	+
Solvents: Tri	+	+
Per	+	+
Acid: Weak	o	+
Strong	-	+
Alkalines: Weak	+	+
Strong	o	+
Gasoline	+	+
Alcohol	+	+
Hot water	o	+
UV light / weathering	o	+
Burning behavior (UL 94)	HB	V-0
General information	<p>Polyamide 6 (semi-crystalline) provides universal materials for functional mechanical parts in machines.</p> <p>Polyamides are: - Cold-resistant - Impact-resistant with high peak load capacity - Wear-resistant</p>	<p>Polytetrafluoroethylene is characterized above all by very low friction coefficients and high chemical and thermal resistance.</p> <p>PTFE is generally used to produce sliding bearings, guides, seals, non-stick coatings, and insulators.</p>

* + Resistant, o Limited resistance, - Not resistant

All information is intended only as general guide values and applies to typical representatives of the respective material group without any claim to completeness. The material properties can be changed with additives and other modifications and are heavily altered by environmental influences.

They should never be used as the sole basis for designs. In other words, the data is no substitute for the testing required to determine the suitability of a material for a given use.

No guarantee is provided or liability accepted for any information provided here.