

TECATOR 5013

Chemical Designation: Polyamideimide

DIN Abbreviation: PAI

Colour, Filler: Mustard

TECATOR is a, high performance thermoplastic for very demanding applications and which excels particularly in cryogenic applications.

Main characteristics:

- High thermal resilience at cryogenic temperatures and up to 270°C
- Very rigid, strong and tough
- High long term stability
- High fatigue strength
- Extremely high creep resistance
- Good chemical resistance to conventional solvents, lubricants, fuels and acids
- Very resistant to high energy radiation
- Flame retardant UL- VO
- Easily machined

Preferred fields: Cryotechnology, electronic and electrical engineering, precision engineering, mechanical engineering, medical technology, vacuum technology, aircraft and aerospace industries, automotive engineering,

Applications:

- Switch and connector parts
- Valve seats and balls
- Plain bearings and bushes
- Discs
- Piston rings
- Sliding tracks
- Ball bearings
- Insulation parts
- Mechanically and thermally stressed parts

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The following information corresponds with our current knowledge and indicates our products and possible applications. We cannot give a legally binding guarantee of certain properties or the suitability for a specific application. Existing commercial patents must be observed. A definitive quality guarantee is given in our general conditions of sales. Unless otherwise stated, these values represent averages taken from injection moulding samples. We reserve the right of technical alterations.

Properties	Unit	Test method ASTM	
Mechanical			
Density	g/cm ³	D 792	1.42
Tensile strength at yield	MPa	D 1708	147
Tensile strength at break	MPa	D 1708	137
Elongation at break	%	D 1708	21
Modulus of elasticity in tension	MPa	D 638	3800
Modulus of elasticity in flexure	MPa	D 790	3750
Hardness Rockwell	MPa	D 785	86
Impact strength	kJ/m ²	D 785 (Notched)	142
Creep rupture strength after 1000 hrs with static load	MPa		
Time yield limit for 1% elongation after 1000 hrs.	MPa		
Coefficient of friction against hardened and ground steel $p = 0,05 \text{ N/mm}^2, v = 0,6 \text{ m/s}$	–		
Wear conditions as above	µm/km		
Thermal			
Crystalline melting point	°C		
Glass transition temperature	°C		275
Heat distortion temperature Method A	°C	D 648 (1.8 MPa)	278

Properties	Unit	Test method DIN EN 150 / ASTM	
Thermal			
Max. service temperature short term	°C		270
Max. service temperature long term	°C		260
Coefficient of thermal conductivity	W/(m · K)	C 177	0.24
Specific heat	J/(g · K)		0.32
Coefficient of thermal expansion	10 ⁻⁶ /K	E 831	3.1
Electrical			
Dielectric constant at 10 ⁵ Hz		D 150	3.9
Dielectric loss factor at 10 ⁵ Hz		D 150	0.031
Specific volume resistance	Ω · cm	D 257	>10 ¹⁸
Surface resistance	Ω	D 257	>10 ¹⁸
Dielectric strength 1 mm	kV/mm	ASTM 149	23.6
Tracking resistance			
Miscellaneous			
Moisture absorption: Equilibrium in standard atmosphere (23 °C / 50 % relative humidity)	%	ASTM D 570	2.5
Water absorption at saturation at 23 °C	%	AATM D 570	4.5
Resistance to hot water, washing soda			resistant
Flammability according to UL standard 94			VO
Resistance to weathering			not resistant

TECATOR absorbs water easily. Parts must be dried prior to rapid exposure of temperatures above 200°C (drying procedure 24 hrs per 3mm thickness at 150°C)

ENSINGER: Production and stock programme

- Semi-finished product, finished parts, injection moulded parts and profiles in more than 500 materials and modifications.
- Engineering plastics: PA extruded or cast, POM, PC, PET, PBT, PPE, PP, PE
- High temperature plastics: PI, TPI, PEEK, PPS, PES, PPSU, PEI, PSU, PVDF, PCTFE, PTFE
- Stock length: Standard 3 metres. Cast rod and sheet 2 mts. Tube up to 3.5 mts. PE, PP, PVC, and PTFE 2 mts
- Pressed/sintered semi-finished product: PI, PEEK, PPS, PTFE/PI and modifications, as well as PCTFE in special sizes ie, large discs, tubes and rings with diameters up to about 1400 mm
- Material modifications: eg. glass, carbon and aramid fibre, talc, MoS₂, graphite, PTFE, PE, silicone oil, internal lubrication