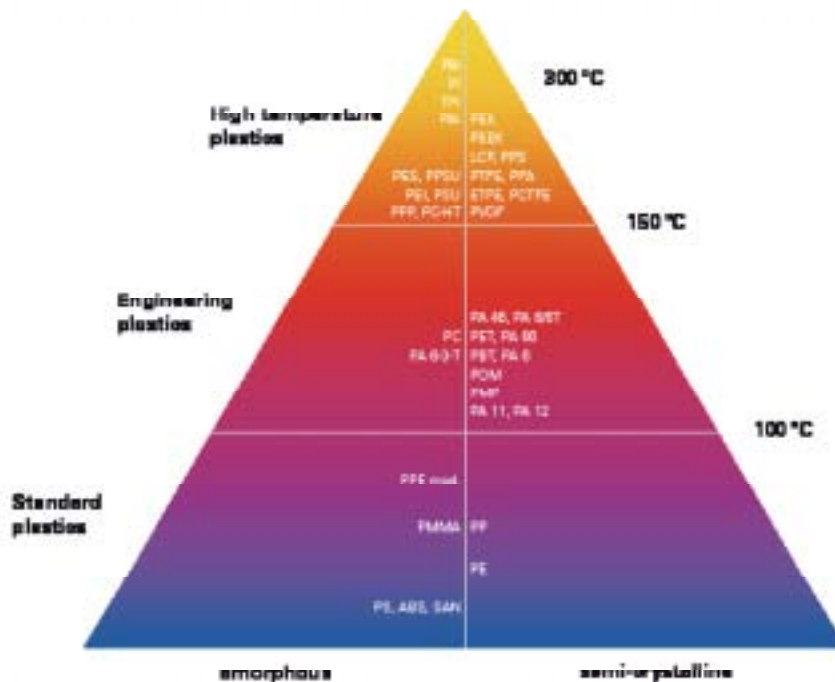


## Semi-Finished Engineering Plastic Products.






# ENSINGER: Semi-finished products for all applications

Versatile usable technical plastics in a broad range of dimensions



- | Standard types
- | Glass fibre reinforced: high strength, stiffness and dimensional stability
- | Glide modified: reduced friction and increased wear resistance
- | Specifications for FDA conformity and contact with food stuffs
- | Elektrically insulating types
- | Black materials: increased UV resistance

Materials are easily machined on conventional equipment. Are you interested in materials and dimensions not mentioned here? Your ENSINGER distributor will have all the information you require.

Material	DIN abbreviation	Raw material	Rods	Plates	Tubes
			 mm	 mm	 mm
TECAPEEK	PEEK	PEEK	5-200	5-100	40/25-360/290
TECAFLON	PVDF PTFE	Teflon	4-300	5-100	
TECANAT	PC	Polycarbonat	4-250	1-100	
TECADUR PET /TECAPET	PET		4-200	1-100	25/18-300/200
TECAMID TECAST	PA 6, PA 6 GF 30, PA 66 PA 6 G	Polyamid Cast Nylon	4-1000	5-200	25/18-710/500
TECAFORM	POM-C, POM-H	Acetal, Delrin	3-250	0,5-100	25/18-505/390
TECAFINE	PE, PP	Polyethylen, Polypropylen	4-300	1-100	30/15-250/200

# TECAFINE PE and PP (PE, PE 5, PE 10, PP)

## Powerful standard plastics for versatile engineering

- | **Low density**
- | **Tough and high tensile strength**
- | **Good resistance to stress cracking**
- | **Very low water absorption**
- | **High chemical resistance to acids, alkalis, solvents and detergents**
- | **Good sliding-friction properties**
- | **Black types have good UV resistance**
- | **Limited temperature resistance**

### Preferred fields

Mechanical engineering and construction, water and sewage management, environmental technology, chemical technology, electro plating, food technology, construction, automotive, packing and paper industry, processing of textiles, electronics, filter technology, telecommunications, precision engineering, domestic appliances.

### Applications

Connectors, housings, fittings, spacer rings, battery cases, cover plates, colouring bobbins, insulating profiles, transport-containers, profiles for acoustic insulation, container lining, guiding profiles, textile bobbins, corrosion gaskets, gear wheels, filter plates, senders for harbour walls, etc.

#### TECAFINE PE (PE)

very low water absorption, easily welded, resistant to diluted acids and cleaning detergents

#### TECAFINE PE 5 (PE)

good sliding and friction properties, wear resistant

#### TECAFINE PE 10 (PE)

easily welded, resistant to sediments and muds, high toughness under cold conditions

#### TECAFINE PP (PP)

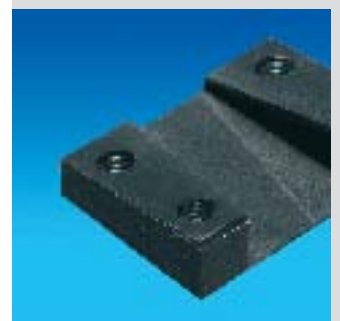
very low water absorption, easily welded, resistant to non-oxidating acids, alkalis and cleaning detergents



Guide runner made from TECAFINE PE



TECAFINE PE. Atomization nozzle for the suspension of



Sliding element made of TECAFINE PE 5 black. Sliding partner: stainless steel. Abrasive sediments in a sewage plant require good resistance to abrasion, impact strength and UV resistance

# TECAMID/TECAST (PA 6, PA 66, PA 6 G)

Tough high performance plastics with reliable wear resistance

- | Good sliding properties with high wearresistance
- | Good chemical resistance to many oils,greases, petrol, etc. |
- | Good machinability
- | Easily bonded and welded
- | Non-reinforced grades electrically insulating
- | Available in exceptional dimensions

## Preferred fields

Mechanical engineering, precision engineering, automotive industry, transport and conveyor technology, packing and paper industry, printing machines, bottling technology, domestic appliances, electronics, construction and agricultural machinery etc.

## Applications

Gear wheels, bearings, sliding rail, conveyor screws, bushings, spindle nuts, cam discs, rope pulleys, rolls, buffer pads, wipers, chain guide, calander bowls, etc.

### TECAMID 6 (PA 6)

Very tough and impact resistant. Good chemical resistance.

### TECAM 6 MO (PA 6)

Good UV resistance and surface hardness. Good machinability and dimensional stability.

### TECAMID 6 GF 30 black (PA 6 GF 30)

Very high strength. Good UV stability. Increased heat resistance.

### TECAMID 66 (PA 66)

Good bondability and weldability. Electrically insulating and very good-machinability.

### TECAMID 66 MH black (PA 66)

Good UV resistance. Very good sliding properties.

### TECAMID 66 GF 30 black (PA 66 GF 30)

Glass fibre-reinforced polyamide with very high strength. Good UV stability and increased heat resistance.

### TECAST T (PA 6 G)

Low-stress cast semi-finished product. Very good machinability.

### TECAST TM black (PA 6 G)

Good UV stability. High surface hardness.



Rope pulley. TECAST prevents abrasion of steel ropes. Abrasive resistant for applications in heavy duty



Valve flange TECAMID 6: Low thermal expansion, good chemical resistance.



Conveyor screw made of lubricated TECAST



Reducer bushing TECAMID 66 MH: Good UV resistance, increased surface hardness.

# TECAFORM (POM-C, POM-H)

The versatile engineering plastic with high strength and dimensional stability.

- | High strength and hardness
- | Low water absorption
- | Good sliding properties
- | High wear resistance
- | Very good machinability
- | Good UV resistance of black grades

## Preferred fields

Mechanical engineering, transport and conveyor technology, precision engineering, food and medical technology, automotive, electronics, process technologies, packing and paper industry, textile technology, jig manufacturing, domestic appliances etc.

## Applications

Bearings, sliding rails, gear wheels, connectors, carriers, insulators, housings, roller, seals, spring elements, wipers, chain guide, thermoinsulating profiles, dough elements etc.

### TECAFORM AH (POM-C)

Good chemical resistance also in hot water. High resilience. High toughness also at below freezing temperatures.

### TECAFORM AD (POM-H)

High mechanical strength and stiffness. Very good machinability.

### TECAFORM AH sw (POM-C)

Good UV stability. Very good machinability.

### TECAFORM AH GF 30 (POM-C)

Glassfibre-reinforced acetal with very high strength and high heat resistance.

### TECAFORM AH LA blau (POM-C)

Very good sliding and abrasion values. Low water absorption



Cam guide TECAFORM AD: High dimensional stability, good sliding-friction values.



Camera housing. TECAFORM AH is UV resistant for all year out door applications. Tough. Good machinability.



Fibre guide made of aus TECAFORM AH coloured. FDA conformity and dimensional stability, wear resistant

## TECANAT (PC)

The transparent, dimensionally stable engineering plastic.

- | Extremely tough
- | Transparent
- | Weldable and bondable
- | Good electrical insulating properties

### Preferred fields

Mechanical engineering, medical and food technology, electronics, light technology, construction, transport and conveyor technology, automotive, precision engineering, domestic appliances.

### Applications

transparent function models, housings, connectors, connector profiles, sight glasses, insulators, covers, optical parts, light domes, weather proof elements.

## TECADUR/TECAPET (PET)

Excellent machining with optimum electrical insulating properties

- | Low thermal expansion
- | High strength and hardness with good toughness
- | Good chemical resistance to acids
- | Wear resistant and good sliding properties
- | Very good electrical insulating properties
- | Dimensionally stable
- | Very low water absorption
- | Good machinability
- | Easily bonded and welded

### Preferred fields

Mechanical engineering, transport and conveyor technology, precision engineering, food and medicine technology, automotive, electronics, domestic appliances, precision engineering

### Applications

Connectors, sliding rails, carriers, housings, rolls, bearings, gear wheels, insulators, dough elements, seals, plug parts, connector plates, distance profiles, support rings,

### TECADUR PET (PET)

Low thermal expansion. Very good sliding properties.

### TECAPET (PET)

Very good machinability. Creep resistant and non-abrasive.

### TECAPET TF (PET)

Very good sliding friction properties.



Liquid media container TECANAT PC: Safe for use with food stuffs, dimensionally stable, low water absorption.



Distributor block TECANAT PC: High purity, extremely tough, dimensionally precise.



Insulating flange TECADUR PET: Very good electrical properties, dimensionally stable.



Roller TECADUR PET: Good sliding friction values, good machinability.

## TECAFLON (PTFE, PVDF)

Chemically resistant high-temperature plastics with good UV stability

- | Exceptionally high resistance to chemicals
- | High resistance to stress cracking
- | Suitable for use even at low temperatures
- | Very good sliding properties (no slip-stick effect with PTFE)
- | Outstanding electrical insulation, even for high-frequency applications
- | Very good UV resistance

### Preferred fields

Chemical processing technology, mechanical engineering, transport and conveyor technology, electrics and electronics, solar technology, food and medicine technology

### Applications

Pumps, housings, filter plates, valve housings, connectors, container linings, insulators, flanges, rolls, sliding parts, dough elements, seals, tubes.

## TECAPEEK (PEEK)

The high-temperature plastic with an outstanding combination of thermal, mechanical and electrical properties

- | Continuous operating temperature up to + 260°C and briefly even up to + 300°C
- | Outstanding mechanical properties even at high temperatures
- | Outstanding resistance to chemicals
- | Hydrolysis resistance even above + 200°C
- | Electrically insulating even with high voltages
- | Excellent sliding properties
- | Resistant to high-energy radiation

### Preferred fields

Automotive, electronics and electrics, semiconductor technology, vacuum technology, food and medicine technology, mechanical engineering, textile industry, chemical processing, aerospace technology

### Applications

Gear wheels, sliding rails, bearings, ball valve seals, bushings, pump housings, doser pistons, light plugs, connectors, etc.

### TECAFLON PTFE

Exceptionally high resistance to chemicals. Very good sliding friction properties. Suitable for soft mating partners like steel and aluminium, operating temperature up to 250 °C

### TECAFLON PVDF

Good chemical resistance and enhanced strength. Very good weldability, service temperature up to 150 °C

### TECAPEEK (PEEK)

Continuous operating temperature up to + 260°C. Outstanding mechanical properties even at high temperatures.

### TECAPEEK PVX (PEEK)

Very good sliding and friction values. Suitable for bearing parts subject to high loads.



Fixing flange. TECAFLON PVDF: Very good chemical resistance, high compressive strength.



Pump cover. TECAFLON PVDF: Good ultrasonic weldability, elastic properties.



Connector housing. TECAPEEK: Very good electrically insulating. Wear resistant and dimensionally stable



Transport pinion. TECAPEEK MT: Suitable for use with foodstuffs, resistant to sterilisation

# Material standard values.

Trade name	DIN-Abbrev.	Mechanical properties					Thermal properties				Electrical properties			Miscellaneous data				
		$\rho$ g/cm <sup>3</sup>	$\sigma_s$ MPa	$\sigma_R$ MPa	$\epsilon_R$ %	$E_z$ MPa	$E_B$ MPa	$H_K$ MPa	HDT/A °C	°C	°C	$\alpha$ 10 <sup>-6</sup> 1/K	$R_D$ Ω---cm	$E_d$ kV/mm	Stufe	W(H <sub>2</sub> O) %	-	
TECAPEEK	PEEK	1,30	95		25	3000	4100	M99	o. Br.(c)	140	300	260	5,0	10 <sup>16</sup>	20		0,1	V0
TECAFLON PTFE	PTFE	2,18	25		>50	700		30	o. Br.(c)	55	260	260	12	10 <sup>16</sup>	48	KA 3c KB >600	<0,05	V0
TECAFLON PVDF	PVDF	1,78	50		>30	2000	2000	80	o. Br.(c)	95	150	150	13	10 <sup>14</sup>	40	KA 1	<0,05	V0
TECAMID 66	PA 66	1,14	80/60*		40/150*	3100/ 2000*	2830	170/ 100*	o. Br.(c)	100	170	100	8	10 <sup>12</sup>	28*/ 30	CTI 600	2,8	HB
TECAMID 66 MH	PA66	1,14	75		>25	2500		107 <sup>(2)</sup>	o. Br.(c)	105	170	100	12 <sup>(2)</sup>	7*10 <sup>13(2)</sup>			2,6	HB
TECAST T	PA 6 G	1,15	85/60*		3/50*	3300/ 1700*		90/ 160	o. Br.(c)	95	180	100	6	10 <sup>12</sup> 5x10 <sup>14</sup>	50	KA 3c KA 3b	2,5	HB
TECAST TM	PA 6 G	1,15	75		40/60*	2800		145			170	100	9,5				2,5	HB
TECAM 6 MO	PA 6 G	1,14	75		>25	2700		107/ 85* <sup>(2)</sup>	o. Br.(c)	100	160	100	18 <sup>(2)</sup>	6x10 <sup>13(2)</sup>			3	HB
TECAMID 6	PA 6	1,13	85/60*		70/ 200*	3000/ 1800*		160/ 70*	o. Br.(c)	75	160	100	8	10 <sup>13</sup>	20*/50	CTI 600	3	HB
TECAMID 6 GF 30	PA 6 GF 30	1,35		140/ 110*	2,5/5*	8500/ 6000*		147 <sup>(2)</sup>	55(c)	210	180	100	2-3 <sup>(2)</sup>	9x10 <sup>13(2)</sup>			2,1	HB
TECANAT	PC	1,20	60			2300		100	o. Br.(c)	135	140	120	7	10 <sup>13</sup>	27	KA 1	0,15	HB
TECADUR PET	PET	1,37	80			2800		95	o. Br.(c)	95	170	110	7	10 <sup>13</sup>	60	KC 350	0,25	HB
TECAPET	PET	1,37	88			3200		95	40(c)	95	170	110	7	10 <sup>13</sup>	60	KC 350	0,25	HB
TECAFINE PP	PP	0,91	30		>50	1600		80	o. Br.(c)	65	130	100	17	>10 <sup>14</sup>	>40	KA 3c KC >600	<0,1	HB
TECAFINE PE 10	PE-UHMW	0,93	17	40	>50	650	800	35	o. Br.(c)	42	120	90	20	10 <sup>14</sup>	45	KA 3c KB >600	0,01	HB
TECAFINE PE 5	PE-HMW	0,95	25	40	>50	1100	900	52	o. Br.(c)	44	120	90	20	10 <sup>15</sup>	>150	KC >600	0,01	HB
TECAFINE PE	PE-HD	0,96	25			1000	1000- 1400	50	o. Br.(c)	42-49	90	90	13-15	>10 <sup>15</sup>	>50	KA 3c	<0,05	HB

Note: For polyamides the values strongly depend on the humidity contents.  
\* humid, after storage in standard atmosphere 23°C 50 RH (DIN 50 014) until saturation.

- n. b.= not broken  
(1) When plastics are listed under „additives and colour“ as available „also in black“, the electrical properties are not valid for the black variant.  
(2) Testing on semi-finished products.  
(3) Impact resistance is measured with different methods. The values in the following tables are marked with the following letters:  
(c) Charpy: DINENISO 179; a<sub>n</sub> kJ/m<sup>2</sup>  
(ai) Izod: ASTM D 256; a<sub>n</sub> J/m  
(di) Izod: DINENISO 180; a<sub>n</sub> kJ/m<sup>2</sup>  
(k) Notch impact strength: DINENISO 179; a<sub>n</sub> kJ/m<sup>2</sup>\*

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