

Polypropylene (PP-H)

Technical Datasheet



Strong, Chemically Resistant Engineering Plastics

Service. Quality. Value.

Typical Applications

PP-H: - for pump and valve parts, gaskets, support stands for coating machines and spacers used in plating plant.

PP-ELS: - for applications that require high electrical conductivity.

PP-30GF: - for applications that require higher resistance to deformation – particularly at high temperature – and dimensional stability.

PP-30PET-F: - for brushes and barrels, pump & valve parts that require higher tensile strength but without loss of impact strength. Good sound deadening properties.

Product Description

High-quality general purpose engineering plastic material; the chemical name is polypropylene homopolymer, and it's available in a range of grades and forms to suit many applications.

Technical Description

Smiths' range of extruded Polypropylene includes the following grade options –

Grade	Modification	Purpose
PP-H	None. Colours, natural, light grey. Some sizes available in black.	Component Identification Black will have better UV resistance
PP-ELS	With addition of carbon. Black colour.	Electrically conductive. Black also has better UV resistance.
PP-30GF	With 30% glass glass fibre.	Increased stiffness and dimensional stability.
PP-30PET-F	With 30% PET fibre. Light grey colour.	Increased tensile strength with no loss of impact strength.

Machinability

The machining of polypropylene is uncomplicated, provided the component tolerances allow for polypropylene's relatively high co-efficient of thermal expansion and tensile elongation values. Full machining instructions can be supplied on request.

Chemical Resistance

PP-H has extremely good resistance to acids, alkalis and alcohol, salts in aqueous solutions and many solvents. Slight swelling may be caused by permanent contact with grease, oil and wax, but generally not enough to limit the use of the material. Aromatics and halogenated hydrocarbons will cause a reduction in useful working life. The material has no resistance to strong oxidising agents such as nitric or chromic acids, and halogens.

Product Attributes

Range of grades available

Good tensile strength and high surface hardness

Excellent chemical resistance

Resists stress cracking.

Natural product may be used in contact with foodstuffs

PP-H may be hot air welded

Low density – compared with other engineering plastics.

Minimal absorption of moisture.

Diameter (PP-H)

Product sourced from long-standing manufacturer with ISO accreditation

Customer Benefits

Correct grade selection for application is optimised

Very good all-round product for diverse engineering applications

Low cost assembly

Easy handling, low inertia, energy saving

Aids dimensional stability

Huge components are possible

Consistent quality ensures uniform characteristics in machining & performance

Product Availability *

Extruded round bar

PP-H 10mm to 500mm dia in natural (600mm to 700mm dia in light grey PP-C and 30mm to 60mm in black PP-H)

PP-ELS 20mm to 100mm in black.

PP-30GF 20mm to 150mm in black.

PP-30PET-F 25mm to 100mm in light grey. All in lengths ≤ 2m.

Hollow round bar in PP-H (light grey colour) From 30mm o/d x 15mm i/d to 200mm o/d x 120mm i/d in 2m lengths.

Other products in -PP-H, light grey colour. Square & hexagon bars. Rectangular & square hollow tubes, angles, channels and welding rod. Also handles & hinges for tank fabrication.

* Sizes not stocked are available on relatively short delivery time. 1, 2 or 3m lengths supplied or cut to customer requirements.

Physiological Safety

The FDA (US Food & Drug Administration) has approved the raw materials used for the PP-H grade to allow its use in contact with food – check for any specific limitations required by the FDA.

	PP-H	PP-ELS	PP-30GF	PP-30PET-F	
Mechanical Properties					
Density at 20°C	0.91	0.95	1.14	1.00	g/cm ³
Tensile strength @ yield	30	38	-	31	MPa
@ break	-	-	85	27	MPa
Elongation @ yield	10	4	-	19	%
@ break	≥ 50	No break	3	24	%
Tensile modulus of elasticity	1200	2200	6500	1900	MPa
Flexural strength	-	-	120	-	MPa
Impact strength	No break	No break	22	-	kJ/m ²
Notched impact strength	50	No break	6	51	kJ/m ²
Ball indentation hardness / Rockwell	67	-	110	-	N/mm ²
Hardness (Shore D)	70	80	-	-	-
Electrical Properties					
Volume resistivity	≥ 10 ¹⁶	≤ 10 ⁶	≤ 10 ¹⁴	-	Ohm cm
Surface resistivity	-	≤ 10 ⁶	≤ 10 ¹³	-	Ohm
Dielectric constant @ 1 MHz	2.3	-	2.6	-	-
Dielectric loss factor @ 1 MHz	0.0002	-	-	-	-
Dielectric strength	-	-	40	-	Kv/mm
Tracking resistance - IEC 60112	-	-	KB ≥ 600	-	V
Thermal Properties					
Vicat softening point -VST/B/50	91	-	130	116	°C
-VST/A/50	-	-	160	-	°C
Heat deflection temperature -HDT/B	96	-	155	-	°C
-HDT/A	-	-	140	72	°C
Coefficient thermal expansion	-	-	0.7	-	10 ⁻⁴ .K ⁻¹
Thermal conductivity at 20°C	-	-	0.27	-	W/(m - K)
Service temperatures - upper limit	100	100	100	100	°C
without high mech. load - lower limit	5	5	5	-	°C
Other Physical Properties					
Moisture absorption %	0.01	0.1	-	-	ISO 62
Suitability for bonding	+	+	+	+	-
Physiological indifference according to FDA or EEC 90/128 - natural colour	+	-	-	-	-
Friction coefficient	-	-	-	-	DIN 53375
Flammability according to UL94	HB	HB	HB	HB	UL94
UV stability without additives	0	0	0	0	-

Technical Assistance

Our knowledgeable staff backed up by our resident team of qualified metallurgists and engineers, will be pleased to assist further on any technical topic.

UK Service Centres:

Smiths Belfast **02895 908 897**
 Smiths Biggleswade **01767 604 704**
 Smiths Birmingham **0121 728 4940**
 Smiths Bristol **0117 971 2800**
 Smiths Chelmsford **01245 466 664**
 Smiths Gateshead **0191 469 5428**
 Smiths Horsham **01403 261 981**

Smiths Leeds **0113 307 5167**
 Smiths Manchester **0161 794 8650**
 Smiths Norwich **01603 789 878**
 Smiths Nottingham **0115 925 4801**
 Smiths Redruth **01209 315 512**
 Smiths Verwood **01202 824 347**
 Main Office **0845 527 3331**

Quality & Testing:



www.smithmetal.com info@smithmetal.com