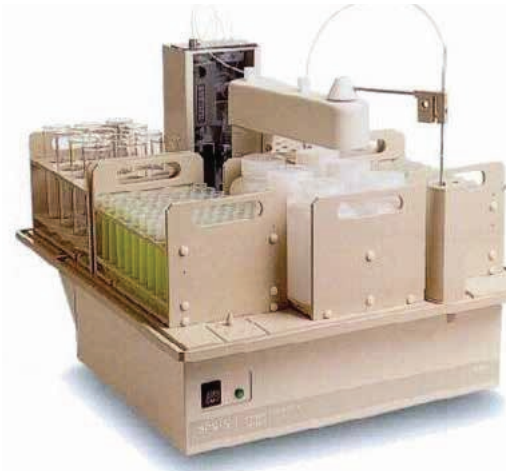
ENGINEERING PLASTIC PRODUCTS

POLYPROPYLENE - POLYSTONE® PP



POLYSTONE®PP-H a good choice for mechanical and structural applications. POLYSTONE®PP-H polypropylene is one of the most cost effective and widely used general purpose EPP's available. It is a stiff and hard polyolefin, with high heat resistance and excellent chemical resistance at elevated temperatures. Used extensively in the chemical process industry it is also highly resistant to aqueous solutions of salts, acids and alkalis. POLYSTONE®PP-H can be readily formed with excellent toughness at room temperature. It is an easily weldable thermoplastic which makes it ideal for tanks, fittings and vessels for the mineral processing, mining and galvanizing industries. Has very low permeability to water vapour and gasses.

PROPERTIES:

- Good mechanical strength - a hard, stiff and readily workable material. (More rigid than PE).
- Good impact resistance at room temperature - robust and tough.
- Very high chemical resistance.
- Moisture resistance – excellent for food and chemical applications.
- Higher scratch resistance than HDPE.
- Thermoformable and weldable – ideal for fabrication.
- Operating temperature of -20 °C (short term only) to 130 °C.
- Higher melting temperature (between 160 °C – 165 °C).

APPLICATIONS:

Food or corrosive storage vessels, cooling or scrubbing towers, pipe flanges, tanks and tank linings for chemical storage, electroplating barrels, fume cupboards, pump bodies, water treatment, plating tanks and hoods.

DESIGN NOTES:

Take care when designing with PP. Consideration should be given to its coefficient of linear expansion, modulus of elasticity and compressive strength. It can be butt welded, extrusion welded or hot gas welded. Stretched backed sheets can be bonded to metal structures with an adhesive.

Gauteng Engineering Plastics
The Right Application is Key

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POLYSTONE® PP			
PROPERTIES	TEST METHOD	UNIT OF MEASURE	NATURAL/ BLACK
GENERAL			
DENISTY	DIN EN ISO 1183-1	g/cm³	0,96
WATER ABSORPTION	DIN EN ISO 62	%	<0.01
FLAMABILITY 3mm	DIN 4102	3mm	B2
FLAMABILITY 6mm	UL 94	6mm	HB
MECHANICAL			
TENSILE STRENGTH	DIN EN ISO 527-1	MPA	27
ELONGATION AT BREAK	DIN EN ISO 527-1	%	>50
E MODULUS	DIN EN ISO 527-1	MPA	1 200
NOTCHED IMPACT STRENGTH	DIN EN ISO 179-2	kJ/m²	N/A
BALL INDENTATION HARDNESS	NOT APPLICABLE	MPA	N/A
SHORE HARDNESS	DIN EN ISO 868/15sek	SCALE D	65
THERMAL			
MELTING TEMPERATURE	NOT APPLICABLE	°C	135
THERMAL CONDUCTIVITY	DIN 52612-1	W/(m.K)	0,40
SPECIFIC THERMAL CAPACITY	NOT APPLICABLE	kJ/(kg.K)	1,9
COEFFICIENT OF LINEAR THERMAL EXPANSION	DIN 53752	10^{-6}K-1	150…230
LONG TERM SERVICE TEMPERATURE	GUIDELINE ONLY	°C	-100…80
SHORT TERM SERVICE TEMPERATURE	GUIDELINE ONLY	°C	100
HEAT DEFLECTION TEMPERATURE	DIN EN ISO 306 VICAT B	°C	79
ELECTRICAL			
DIELECTRIC CONSTANT	IEC 60250	N/A	2,3
DIELECTRIC DISSIPATION FACTOR	IEC 60250	N/A	2.10^-4
SPECIFIC VOLUME RESISTIVITY	IEC 60093	Ω.cm	>10^14
SURFACE RESISTIVITY	IEC 60093	Ω	>10^14
DIELECTRIC STRENGTH	IEC 60243	kV/mm	45

When machining thermoplastic stock shapes, remember...

- Thermal expansion is up to 10 times greater with plastics than metals.
- Plastics lose heat more slowly than metals, so avoid localized overheating.
- Softening (and melting) temperatures of plastics are much lower than metals and plastics are much more elastic than metals.

Getting started

- Positive tool geometries with ground peripheries are recommended.
- HSS/Tip tooling with polished top surfaces is suggested for optimum tool life and surface finish.
- Use adequate chip clearance to prevent clogging.
- Adequately support the material to restrict deflection away from the cutting tool.

Coolants

Coolants are generally not required for most machining operations, but are strongly suggested during drilling operations, especially with notch sensitive materials such as Nylon, PET-P, PAI, PBI and glass or carbon reinforced products.

In addition to minimizing localized part heat-up, coolants prolong tool life. For optimum surface finishes and close tolerances, non-aromatic, water soluble coolants are suggested. General purpose petroleum based cutting fluids, although suitable for many metals and plastics, may contribute to stress cracking of amorphous plastics such as Polycarbonate.

Because of these differences, you may wish to experiment with fixtures, tool materials, angles, speeds and feed rates to obtain optimum results.

GENERAL NOTE:

The data shown fall within the normal parameters of product properties. They should only be used as a guide to initial materia selection for the relevant application and for material specification limits. Further technical information is available for specific application requirements. When no value is listed, insufficient details were available to present a usable value.