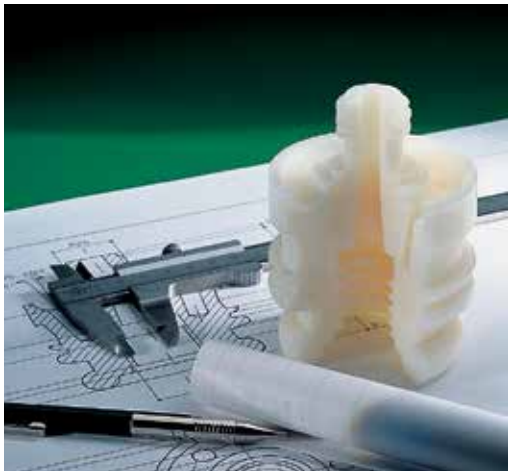
ENGINEERING PLASTIC PRODUCTS

POLYETHYLENE - MATROX® FC1000 & G15 UHMWPE



UHMWPE Ultra High Molecular Weight Polyethylene - Molecular weight +9 million g/mol

POLYSTONE® MATROX® FC1000 is a general UHMWPE suited to engineered applications where its unique properties of excellent impact strength, sliding and abrasion resistance are required.

PROPERTIES:

- Impact Strength - virtually unbreakable.
- Light weight - easy to handle without special equipment.
- Physiologically inert - approved for food applications.
- Electrical insulation - Excellent insulation.
- Weatherproof - it doesn't absorb water.
- Chemical resistance - resists corrosive chemicals (Sulphuric Acid, Caustic Soda).
- Abrasion resistance - rated better than Carbon Steel for sliding abrasion applications.
- Low coefficient of friction - it does not require lubrication.

APPLICATIONS:

Material Handling, Mechanical Bearing Parts, Wear Parts, Food Machinery Equipment.

AVAILABLE ON REQUEST:

- Matrox® X: For use with coarse grained solids. A premium product with the highest hardness and resistance to wear
- Matrox® U110: Suitable for longer term use at higher temperatures (up to 190 deg C)
- Matrox® Ex60: Permanently anti-static for use in highly explosive environments
- Matrox® SE: Has flame inhibiting qualities (self extinguishing) (UL94, class V0) Also has anti-static properties

DELIVERY PROGRAMME

Ex Stock from Maizey branches:
Sheets | Rods | Finished Components

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ENGINEERING PLASTIC PRODUCTS

Stock Shapes and Finished Components
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POLYSTONE® FC1000				
PROPERTIES	**TEST METHOD**	**UNIT OF MEASURE**	**FC1000**	**G15**
GENERAL				
DENISTY	DIN EN ISO 1183-1	g/cm³	0,93	0,93
WATER ABSORPTION	DIN EN ISO 62	%	<0.01	<0.01
FLAMABILITY 3mm	DIN 4102	3mm	B2	B2
FLAMABILITY 6mm	UL 94	6mm	HB	HB
TRI-BOLOGY				
CO-EFFICIENT OF SLIDING FRICTION	ISO 179	mJ/mm²	0,1	0,1
WEAR RESISTANCE	SAND SLURRY	VOLUME LOSS	80	80
MECHANICAL				
TENSILE STRENGTH	DIN EN ISO 527-1	MPA	20	21
ELONGATION AT BREAK	DIN EN ISO 527-1	%	>200	>201
E MODULUS	DIN EN ISO 527-1	MPA	680	680
NOTCHED IMPACT STRENGTH	DIN EN ISO 179-2	kJ/m²	N/A	N/A
BALL INDENTATION HARDNESS	NOT APPLICABLE	MPA	N/A	N/A
SHORE HARDNESS	DIN EN ISO 868/15sek	SCALE D	63	63
THERMAL				
MELTING TEMPERATURE	ISO 11357-3	°C	135	135
THERMAL CONDUCTIVITY	DIN 52612-1	W/(m.K)	0,40	0,40
SPECIFIC THERMAL CAPACITY	DIN 52612	kJ/(kg.K)	1,9	1,9
COEFFICIENT OF LINEAR THERMAL EXPANSION	DIN 53752	10^{-6} K-1	150…230	150…230
LONG TERM SERVICE TEMPERATURE	GUIDELINE ONLY	°C	-250…80	-250…80
SHORT TERM SERVICE TEMPERATURE	GUIDELINE ONLY	°C	130	130
HEAT DEFLECTION TEMPERATURE	DIN EN ISO 306 VICAT B	°C	79	79
ELECTRICAL				
DIELECTRIC CONSTANT	IEC 60250	N/A	2,3	3,3
DIELECTRIC DISSIPATION FACTOR	IEC 60250	N/A	1.10^<4	1.10^<4
SPECIFIC VOLUME RESISTIVITY	IEC 60093	Ω.cm	>10^14	>10^14
SURFACE RESISTIVITY	IEC 60093	Ω	>10^14	>10^14
DIELECTRIC STRENGTH	IEC 60243	kV/mm	45	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 material 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.