UHMWPE: Product Information:

(Ultra-high-density polyethylene)

About

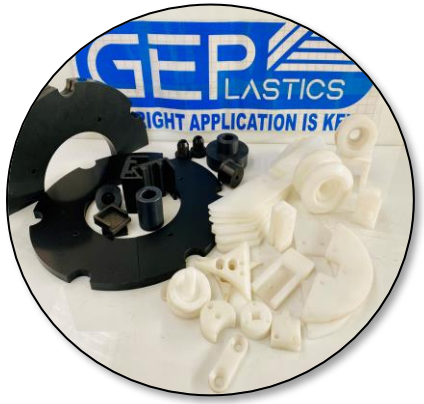
Ultra-high-density polyethylene (HDPE) is a versatile thermoplastic polymer known for its durability, toughness, and resistance to chemicals and moisture. It belongs to the polyethylene family and is synthesized through the polymerization of ethylene monomers. It is also mainly used in the food industry as it is food grade.

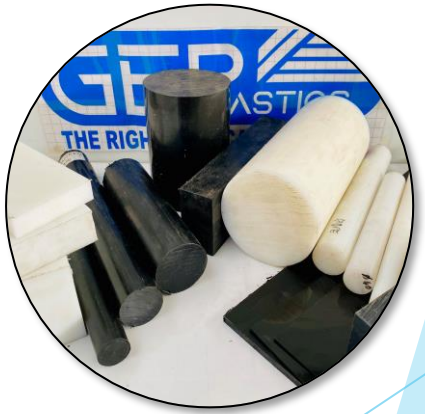
Properties

1.High Strength-to-Density Ratio: UHMWPE exhibits a higher strength and rigidity relative to its density than normal HDPE, making it a stronger and tougher material suitable for a wide range of applications. A higher coefficient of friction and excellent wear and abrasion resistance properties.
2.Chemical Resistance: HDPE is resistant to many chemicals, acids, bases, and solvents. It is inert to most substances, which makes it suitable for use in environments where exposure to aggressive substances is a concern.
3.Impact Resistance: HDPE has excellent impact strength, even at low temperatures. It can withstand repeated impacts and shocks without fracturing, which is beneficial for applications requiring toughness and durability.
4.Weather Resistance: HDPE is resistant to UV radiation and weathering, making it suitable for outdoor applications without significant degradation over time.
5.Low Moisture Absorption: HDPE has low water absorption, which contributes to its dimensional stability and resistance to moisture-related issues such as swelling or warping.
6.Recyclability: HDPE is widely recycled and categorized under resin code 2. Its recyclability contributes to its popularity as an environmentally friendly material choice.

Applications

General mechanical construction, bottling, canning and packaging machinery, chemical and electroplating industry, cryogenic equipment and storage for bulk materials. Sheave inserts, wheels and pullies.





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	PROPERTIES	TEST METHOD	UNIT Of MEASURE	VALUE
General	DENISTY	DIN EN ISO 527/D638	g/cm³	0,93
	WATER ABSORPTION	DIN EN ISO 62	%	< 0,05
	FLAMABILITY	-	-	HB
Mechanical	TENSILE STRENGTH	DIN EN ISO 527/D638	MPA	19
	ELONGATION AT BREAK	DIN EN ISO 527	%	>50
	E MODULUS	DIN EN ISO 527/D638	MPA	750
	IMPACT STRENGTH	DIN EN ISO 179/D256	kJ/m²	No break
	BALL INDENTATION HARDNESS	DIN EN ISO 2039-1	MPA	36
	SHORE HARDNESS	DIN EN ISO 868	SCALE D	62
Thermal	MELTING TEMPERATURE	NOT AVAILIBLE	°C	130
	THERMAL CONDUCTIVITY	-	W/(K m)	0,35-0,43
	SPECIFIC THERMAL CAPACITY	NOT AVAILIBLE	J/(kg.K)	1,7- 2
	COEFFICIENT OF LINEAR THERMAL EXPANSION	DIN 53483/D696	10^{-5}K	200
	LONG TERM SERVICE TEMPERATURE	GUIDELINE ONLY	°C	120
	SHORT TERM SERVICE TEMPERATURE	GUIDELINE ONLY	°C	80
Electrical	SURFACE RESISTIVITY	IEC 60093	Ω	10^{14}
	DIELECTRIC STRENGTH	IEC 60243-1	kV/mm	<45

STOCK SHAPES | MACHINED PARTS AND COMPONENTS | APPLICATIONS DEVELOPMENT

Machining

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

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.

General

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, nonaromatic, 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.

Due to 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.

GEP LASTICS

THE RIGHT APPLICATION IS KEY

Experts in engineering plastics and application design.

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