

# Engineered Plastics

## UHMW



The most dense, best wearing, and most slippery of all the polyethylenes, UHMW is short for Ultra-High-Molecular-Weight. It is used widely in wear applications such as chain guides, dump chute liners, and wear strips. Even with abrasive materials it will last longer than steel. It can be cut, drilled, and machined easily. UHMW should not be used for dimensionally critical parts, as it has a relatively high thermal expansion rate. Available in white, which is food grade, a recycled black, and a variety of specialty formulations.

Cut to Size	All in-stock thicknesses and types
48" x 120" sheet	1/8", 3/16", 1/4", 3/8", 1/2", 3/4", 1"
Round Rod	1/2, 3/4", 1", 1 1/4", 1 1/2", 2", 3", 4"

## Nylon 101

Nylon 101 is a strong, rigid, extruded 6/6 nylon that is available in a natural, off-white that is food grade, or a graphite filled GS grade. It is a general purpose engineering plastic suitable for machining structural parts. The GS grade offers slightly better strength, rigidity and dimensional stability. Compared to Acetron, Nylon machines less easily, but is a better choice for applications where abrasive materials are used or impact might be a factor. Nylon is available in many other specialty formulations.

Cut to Size	All in-stock thicknesses and types
Sheet Stock	Assorted Pieces, 1/4" to 1", or special order
Round Rod	1/2", 3/4", 1", 1.25", 1.5", 2" & more

*At PlasticWorks, we always have lots of engineered plastic off-cuts*



## Acetron (Delrin)

Acetron GP is an extruded acetal copolymer. It is easily machinable to tight tolerances and makes finished parts with low friction and good wear resistance. Acetron GP is also completely non-porous throughout its thickness, and maintains excellent dimensional stability even in wet environments. It is approved for direct contact with food. These properties make it the preferred material for many food, electrical, and medical applications.

Cut to Size	All in-stock thicknesses and types
Sheet Stock	1/4", 1/2", 1" and assorted pieces to 1.5"
Round Rod	1/4", 1/2", 3/4", 1", 1.25", 1.5", 2" & more

## High Density Polyethylene

HDPE is a non-porous, chemical resistant plastic that is food grade when un-pigmented, easy to cut, drill, and machine. It is commonly used in corrosion resistant tanks, water tanks and material handling liners. Suitable for use anywhere a sturdy, easy to clean plastic is needed. It is also found in many injection molded parts. Like other polyethylenes, HDPE cannot be strongly bonded unless welded or mechanically fastened. Available in white and limited colours, smooth both sides.

Sheet & Rod Stock	Natural HDPE by order only*
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\* Arenaboard, Starboard, and Sanalite are all HDPE and kept in stock

## Teflon

Teflon is the most slippery of plastics. In addition to its low co-efficient of friction, Teflon is also highly resistant to most chemicals, has excellent dielectric properties, and performs in an outstanding range of temperatures. Teflon's service range is from well below zero up to 260° C. But, where Teflon's properties are not needed, UHMW can often be used for about 10% of the price.

Sheet Stock	As sorted pieces and by order
Round Rod	By order only

## Special Order

There are hundreds of specialty plastics engineered for specific uses. Let our staff find you the right plastic for your application!

# Properties of Plastics

### CLEAR SHEET

	Acrylic	Polycarbonate	Twinwall	PET-G	Vinyl
Rigidity	High	Medium	Medium	Medium	V Low
Strength (1)	Good 10X	Best 100x	Best 100x	Better 50x	N/A
Texture	Smooth	Smooth	Slightly Ribbed	Smooth	Smooth
Food Contact (2)	Food Contact	Food Contact	NO	Food Area	Food Area
UV Stable or Stabilized	Best	Better	Better	NR	Best
Service Temperature	90 Deg C	135 Deg C	135 Deg C	65 Deg C	60 Deg C
Forming Temperature	160 Deg C	204 Deg C	N/A	150 Deg C	N/A
Weldable	NO	NO	NO	NO	NO
Solvent Weld	YES	YES	N/A	YES	YES
Brittle	GOOD (3)	BEST	BEST	BEST	Flexible

N/A = Not Applicable, NR = Not Recommended

(1) The 10X, 100X numbers refer to the approximate strength relative to glass.

(2) Most smooth plastics made with new material will pass inspection for food preparation areas

(3) Acrylic can crack if improperly handled or drilled, please talk to your salesperson for additional information

### UTILITY

	ABS	Arenaboard	Sanalite	Marineboard	PVC
Rigidity	Medium	Medium	Medium	Medium	Med High
Strength (1)	Better 30X	Better 30X	Better 30X	Better 20X	Good 20X
Texture	Pebbled/Smooth	Smooth	Pebbled	Pebbled	Smooth
Food Contact (2)	Not Recommend	Food Area	Food Contact	Food Area	Food Area
UV Stable or Stabilized	Yes	Optional	Yes, One Side	No	Yes
Service Temperature	80 Deg C	100 Deg C	100 Deg C	100 Deg C	90 Deg C
Forming Temperature	165 Deg C	160 Deg C	160 Deg C	160 Deg C	165 Deg C
Weldable	YES	YES	Yes	YES	YES
Solvent Weld	YES	NO	NO	NO	NO
Brittle	BETTER	BEST	BEST	BEST	BETTER

N/A = Not Applicable, NR = Not Recommended

(1) The 10X, 100X numbers refer to the approximate strength relative to glass.

(2) Most smooth plastics made with new material will pass inspection for food preparation areas

### ENGINEERED

	HDPE	UHMW	NYLON	ACETRON	TEFLON	UNITS
Tensile Strength	4000	2500	10500	9500	2500	PSI
Compressive Strength	2400	2400	12000	15000	1700	PSI
Impact Strength, Notched Izod	3	NO BREAK	0.06	1	3	Ft/lb/in
Density (vs water, specific gravity)	0.965	0.942	1.14	1.42	2.2	
Coefficient of Friction	0.3*	0.16	0.25	0.25	0.09	
Continuous Service Temperature (air)	100	120	132	84	287	Degrees C
Dielectric Strength	500	710	400	420	450	Volt / Mil
Water Absorption	<.01%	0.01%	0.30%	0.20%	0%	
Formable	YES	NO	NO	NO	NO	
Forming Temperature	160	n/a	n/a	n/a	n/a	Degrees C
Weldable	YES	NO	NO	NO	NO	
Hardness (Shore "D" Scale Durometer)	D65	D66	D85	D85	D65	
Solvent Glueable	NO	NO	NO	NO	NO	

\* These numbers are estimated from other information

All Chart Information: E & OE