

Ultra-high Molecular Weight Polyethylene Fiber (UHMWPE)



Ultra-high molecular weight polyethylene fiber (UHMWPE) is also known as high-strength high-modulus polyethylene fiber. It is currently one of the three high-performance fibers. It has excellent characteristics such as high strength, high modulus, low density, wear resistance, acid and alkali resistance, and ultraviolet resistance, and its molecular weight is 1 million - 5 million. The UHMWPE rope we produce is comparable in strength to steel wire rope of the same diameter, but only weighs 1/7 of steel wire rope. The high strength and light weight make it easy to handle, saving time and manpower. The use of UHMWPE rope for underwater work is a good choice, as it is less dense than water, and the unit can be used at any depth.

White Filament Specification Parameters

Size (Den/F)	Liner Density (Dtex)	Fracture Strength (cN/Dtex)	Elongation at Break (%)	Modulus (cN/Dtex)
10D/5F	11	39	3.5	1550
20D/10F	22	38	3.5	1500
30D/15F	33	37	3.5	1500
50D/20F	55	36	3.5	1500
75D/40F	82	35	3.5	1500
100D/40F	111	34	3.5	1500
150D/60F	165	34	3.5	1450
200D/120F	220	34	3.5	1400
400D/240F	444	32	3.5	1300
1000D/240F	1100	32	3.5	1200
1500D/480F	1670	31	3.5	1050

Color Filament Specification Parameters

Picture	Size (Den/F)	Color
	30D/15F	Black
	50D/20F	Black
	100D/40F	Black
	200D/120F	Black/Grey
	400D/240F	Black/Grey/Red/Orange/Yellow/Army Green/Blue
	1000D/240F	Black
	1500D/480F	Black

Short Fiber Specification Parameters

Picture	Size
	6mm
	12mm
	18mm
	21mm
	30mm

Abrasion resistance and bending resistance

Processability	Remained Strength
Abrasion Resistance Circle index before breakage	>110 x 10 ³
Bending resistance Circle index before breakage	>240 x 10 ³
Cohesion strength (g/d)	10~15
Looping strength (g/d)	12~18

Physical Properties

Properties Name	Index
Moisture regain	No
Hot water shrinkage	< 1%
Hydrophilicity	No
Acid resistance	Fine
Alkali resistance	Fine
Resistance to many chemical reagents	Fine
Anti-UV	Durable
Melting Point	135 - 145°C
Thermal conductivity	20w/mk
Coefficient of thermal expansion	-12 x 10 ⁻⁶ /K
Resistance	> 10 ¹⁴ Ω
Dielectric constant (22°C, 10GHz)	2.25
Dielectric strength	900kV/cm
Dissipation factor	2 x 10 ⁻⁴
Creep deformation (22°C, 20% Load)	1 x 10 ⁻² % (Per day)

Lightfast Properties

Assay method	Remained Strength
Exposed to ultraviolet radiation for 1500 hrs	90%

Tensile Fatigue Resistance

Assay method	Remained Strength
The data were taken from a thousand times of circulating load tests.	100%

Chemical Properties

Properties Name	Strength Retention after 6-month infiltration (%)
Distilled water	100
Sea water	100
10% Detergent	100
Kerosene	100
Gasoline	100
Glacial acetic acid	100
10% Phosphoric acid	100
Toluene	100
29% Ammonium hydroxide	100
29% NH ₄ OH	100
(5mol/L) NaOH	100
(1mol/L) HCL	100

Lightfast Properties

Assay method	Remained Strength
Exposed to ultraviolet radiation for 1500 hrs	90%

