

## WHY UHMWPE?

### Key Features

- Excellent strength to weight ratio
- High abrasion resistance
- UV Stable
- Chemically inert except for strong oxidizing acids
- Resistant to fatigue & internal friction

### Disadvantages

- Poor temperature resistance
- Susceptible to creep
- Flammable

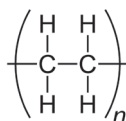
### FIBER-LINE® PROCESS FOR UHMWPE

- Coating
- Twisting
- Precision Winding

### FIBER-LINE® UHMWPE PRODUCTS

- Strength Members
- Industrial Fabric Yarn
- Synthetic Wire Rope
- Windshield Removal Cord

### Molecular Structure



### Chemical Name

Ultra High Molecular Weight Polyethylene (UHMWPE).

### Manufacturer

Honeywell™, DSM™, Various other suppliers.

### History

UHMWPE was first polymerized in the 1950's.

The first UHMWPE fibers were commercialized in the late 1970's.

### Composition

UHMWPE is a type of polyolefin that is composed of very long chains of polyethylene with a very high % of parallel orientation and high level of crystallinity. The extremely long polymer chains enable load transfer by strengthening intermolecular interactions. UHMWPE fibers are manufactured in a gel spinning process.

### Deniers

50 – 5400 denier.

### Types

Spectra : S900, S1000.

Dyneema: SK62, SK65, SK75.



**UHMWPE BARE FIBER PERFORMANCE**

<i>Abrasion Resistance</i>	<i>Yarn on Yarn Abrasion</i>	<i>Ultraviolet (UV) Resistance</i>	<i>Flame Resistance</i>	<i>Chemical Resistance (Acid)</i>	<i>Chemical Resistance (Alkali)</i>	<i>Chemical Resistance (Organic Solvent)</i>
✓	✓	✓	X	✓	✓	✓

**UHMWPE DATA**

**Standard Tenacity**

<i>Property</i>	<i>UOM</i>	<i>Value</i>
<i>Breaking Tenacity</i>	g/d	28.0
<i>Specific Gravity</i>	Ratio	0.97
<i>Elongation @ Break</i>	%	3.6
<i>Tensile Modulus</i>	g/d	850
<i>Moisture Regain*</i>	%	<0.1
<i>Creep**</i>	%	1.7 - 5.0
<i>Shrinkage***</i>	%	Melts
<i>Melt Point</i>	°C	147
<i>Decomposition Temp.</i>	°C	TBD

**High Tenacity**

<i>Property</i>	<i>UOM</i>	<i>Value</i>
<i>Breaking Tenacity</i>	g/d	38.0
<i>Specific Gravity</i>	Ratio	0.97
<i>Elongation @ Break</i>	%	3.1
<i>Tensile Modulus</i>	g/d	1250
<i>Moisture Regain*</i>	%	<0.1
<i>Creep**</i>	%	1.7 - 5.0
<i>Shrinkage***</i>	%	Melts
<i>Melt Point</i>	°C	147
<i>Decomposition Temp.</i>	°C	TBD

\* Equilibrium moisture regain @ 55% RH    \*\* Creep @ 40%-58% ultimate tensile strength    \*\*\* Shrinkage in dry air @ 177 C for 30 minutes

This data is provided for informational purposes only, and does not constitute a specification. FIBER-LINE® makes no warranty, express or implied, that the product conforms to these values. Contact your FIBER-LINE® representative for exact product details which conform to your specific requirements.

## ABOUT FIBER-LINE®

For over 25 years, FIBER-LINE® has provided science-driven expertise that improves the performance and the end-use processing of high performance fibers. Our products enable the search for new energy reserves and extend the life of fiber optic telecommunication cables. They also add important characteristics, such as SWELLCOAT® water-blocking, water repellence, adhesion, color, and wear and UV-resistance to these and many other applications. We believe that our ongoing commitment to protect the environment, to remain at the forefront of fiber and coating technology, and to 'treat others as we want to be treated' will continue to drive the success of our customers, shareholders, and employees.



### LOCATIONS

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