



Zylon® / PBO

High strength fiber with excellent thermal stability

Zylon® Polybenzoyloate (PBO) is a rigid-rod isotropic crystal polymer that is spun by a dry-jet wet spinning process. Zylon / PBO was first developed in the 1980's and studies suggest the mechanical strength to be more than two times stronger than any other commercialized synthetic fiber. It is also the first organic fiber whose cross-sectional strength outperforms both steel and carbon fiber. Its high creep resistance and tensile strength potentially makes Zylon / PBO as one of the strongest synthetic fibers in the overall fibers market.

PBO fibers are light and flexible and are ideal for heat and flame-resistant applications, but its strength decreases in exposure to light, high temperatures, and high humidity. Therefore, it is recommended to use a protective / solid cover to hinder degrading caused by UV and other environmental influences. Cortland is one of the few manufacturers globally that can extrude a thermoplastic jacket over Zylon / PBO that protects the fiber inside.

Due to the unique characteristics of this fiber, PBO is used in critical and highly engineered applications, where its specific properties are key for performance.

Features

- Excellent strength & modulus properties
- Excellent flame resistance
- Excellent thermal stability
- Excellent resistance to creep

Disadvantages

- Very poor UV resistance
- Poor compressive strength
- Poor yarn-on-yarn abrasion resistance (CBOS or dynamic applications)

Applications

- High performance strength members
- Defense and military applications
- Aerospace applications
- Nautical backstays
- Recreational tension members

	Tensile Strength			Tensile Modulus			Elongation at Break	Density	Moisture Regain	LOI	Heat Resistance*	
	cN/dtex	g/d	GPa	cN/dtex	g/d	GPa	%	g/cm3	%		°C	°F
ZYLON-AS (regular)	37	42	5.8	1150	1300	180	3.5	1.54	2	68	650	1202
ZYLON-HM (high modulus)	37	42	5.8	1720	2000	270	2.5	1.56	0.6	68	650	1202
p-Aramid	19	22	2.8	750	850	109	2.4	1.45	4.5	29	550	1022
m-Aramid	4.7	5.3	0.65	124	140	17	22	1.38	4.5	29	400	752
Steel Fiber	3.5	4	2.8	260	290	200	1.4	7.8	0	-	-	-
Carbon Fiber	20	23	3.5	1310	1480	230	1.5	1.76	-	-	-	-
PBI	2.7	3.1	0.4	40	45	5.6	30	1.4	15	41	550	1022
Polyester	8	9	1.1	110	125	15	25	1.38	0.4	17	260	500

* Melting or composition

