

# ZYLON® / PBO

**Zylon® / Polybenzoylate (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. Zylon strength members are custom-designed for each application. Contact Cortland to discuss your needs with a technical sales representative.

## 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

## Type approved product



cortlandinternational.com

CL\_RT\_035\_0126

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

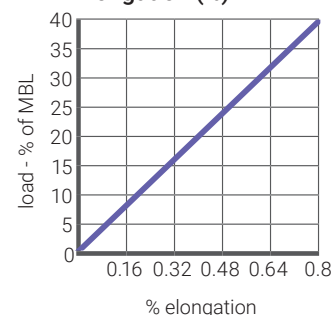
\* Melting or composition

## Technical Information

|                         |                                                             |
|-------------------------|-------------------------------------------------------------|
| Specific gravity        | 1.54–1.56*                                                  |
| Melting point           | Does not melt, decomposes at 1200°F (649°C)                 |
| Critical temp.          | 400–750°F (204–399°C) depending on humidity & exposure time |
| Coefficient of friction | NA                                                          |
| Elongation at break     | 2.5–3.5%                                                    |
| UV resistance           | poor                                                        |
| Wet abrasion            | fair/poor                                                   |
| Dry abrasion            | good/fair                                                   |

\* value based on data supplied by the fiber manufacturer for new, dry fiber

**Zylon®/PBO  
Elongation (%)**



**CORTLAND**  
INTERNATIONAL™