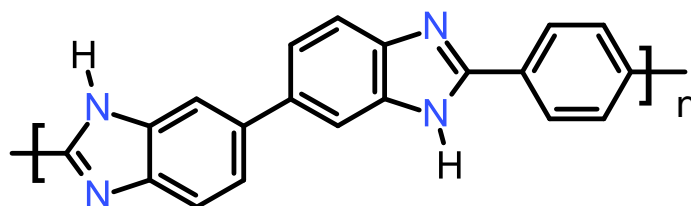


Organic Nano Electronic (ONE=1) Materials for those who understand quality

### Technical Data Sheet

1M Material: PBI1  
Chemical Family: Polybenzimidazole (PBI)  
Chemical Structure:



PBI1

Appearance: Linen to straw fiber-like solid  
Molecular weight: Mn~20K, PDI~2 (estimated, and can be custom made)  
Solubility: Hot DMAc, and other selected solvents  
Purity: 99% (NMR)

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## PBI1, polybenzimidazole

### Typical Parameters ( Reference)

Dielectric strength:	550 V/mil ASTM D 149
Hardness:	50 (Rockwell A, ASTM D 785)
Inherent Viscosity:	0.8 dL/g
Transition Temperature:	T <sub>g</sub> 425 °C (DMA)

### Properties of PBI

- **Thermal Stability:** PBI stands out for its exceptional thermal stability, with an impressive continuous service temperature of up to 260°C and the ability to withstand intermittent temperatures up to 760°C.
- **Chemical Resistance:** This polymer is inherently resistant to a broad spectrum of chemicals, including acids, bases, solvents, and fuels.
- **Mechanical Strength:** PBI demonstrates superior mechanical properties, including high tensile strength and modulus, even at elevated temperatures.

### Specific Applications of PBI

1. **Aerospace and Automotive:** PBI's exceptional thermal stability and mechanical properties make it an excellent material for components in aircraft and automotive engines. Its ability to withstand high temperatures makes it ideal for use in insulation pads, gaskets, seals, and other components that are exposed to extreme heat.
2. **Chemical Industry:** In the chemical industry, PBI's chemical resistance properties make it a suitable choice for linings, seals, and gaskets that come into contact with aggressive chemicals.
3. **Protective Clothing:** PBI's inherent non-flammability and heat resistance have led to its use in protective clothing for firefighters and military personnel. PBI fabrics can provide crucial seconds of protection from heat and flames, allowing individuals to escape from dangerous situations.
4. **Astronaut Suits:** The National Aeronautics and Space Administration (NASA) uses PBI in the outer shell of astronaut suits. The material can withstand the intense heat and radiation in space, offering a high level of safety.

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