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**PI Rods**

Polyimide rod is a high-performance polymer material with polyimide (PI) as the main component, which is made into rod form by high temperature and high pressure process. Its molecular structure contains imide-based chain links, belonging to the aromatic heterocyclic polymer compounds, with high temperature resistance, high strength, excellent insulation and other characteristics.

**Core advantages**

- **High temperature stability**

Wide range of long-term use temperature (-200℃ to 300℃), resistant to extreme high temperature environment, no significant melting point.

- **Excellent insulation properties**

Low dielectric constant (about 3.4), high dielectric strength, suitable for high-voltage electrical and electronic equipment.

- **Excellent mechanical properties**

Tensile strength up to 343 MPa (e.g. Kinel 5504), high hardness, good wear resistance, excellent dimensional stability.

- **Chemical resistance and self-lubrication**

Resistant to acid, alkali and solvent corrosion, some modified materials have self-lubricating properties, reducing friction loss.

- **Environmental protection and safety**

Non-toxic, self-extinguishing, low smoke emission during combustion, in line with environmental requirements.

**Main Applications**

- **Aerospace**

Used for manufacturing high temperature structural parts, engine parts, seals, etc., which are resistant to extreme temperature and high load environment. For example: spacecraft heat insulation parts, rocket parts, etc.

- **Electronic information industry**

Used as an insulating material for circuit boards, electronic packages, etc., to meet the insulating needs of high-voltage, high-frequency environments. Examples: FPC (flexible circuit board) substrates, electronic component support structures.

- **Biomedical field**

Used for medical device components due to its good biocompatibility and sterilization resistance. Examples: surgical instruments, medical device housings.

- **Automotive industry**

Used for high-temperature and high-pressure parts such as engine covers and brake systems to enhance durability and thermal stability.

- **Precision instruments and machinery**

Used as wear-resistant, low-friction bearings, gears and other transmission parts for high-precision equipment.

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**Summary**

Polyimide rods have become key materials in aerospace, electronics, automotive and other fields by virtue of their unique comprehensive performance. Its high-temperature stability, insulation and mechanical strength make it a significant advantage in replacing traditional metal materials (such as aluminum, bronze), while meeting the demand for lightweight and high performance.

| Item | Acceptance requirements | Unit |
|---|---|---|
| Color | Brownish yellow | / |
| Rockwell hardness | 45-65 | HRE |
| Notch impact strength | ≥100 | $Kj/m^2$ |
| Tensile strength | ≥100 | MPa |
| Elongation at break | ≥8.0 | % |
| Bending strength | ≥100 | MPa |
| Modulus of elasticity | ≥2600 | MPa |
| Density | 1.41 | $g/cm^3$ |
| Water absorption | 0.16 | % |
| Surface resistivity | $>10^{12}$ | Ω/sq |