

The NASA

LangleyEdge

NASA LANGLEY RESEARCH CENTER

NASA Langley Research Center is actively seeking partnerships and collaborations to commercialize its Thermoplastic Polyimides technologies.

The Market Opportunities

Commercial applications for Thermoplastic Polyimides technology include:

- Semiconductor Manufacture: adhesives for microprocessor frames; flexible cover layers for circuit boards; substrates for thin-film, multilayer flex circuits; and moisture-resistant coatings for semiconductors and remote sensors
- Textiles: additives in cloth to improve texture, durability, and wear
- Aerospace: satellite mirrors, abrasion-resistant coatings, and heat sinks

The Benefits

- Tough, lightweight, and durable
- Moldable, extrudable, and sprayable
- Resistant to solvents, moisture, and temperature extremes
- Easy adherence to glass, ceramics, copper, aluminum, and titanium
- High-strength, high-temperature moldable binder for ceramics and carbon
- No water released during application or drying

The Technology

Thermoplastic Polyimides are extremely tough yet can be readily extruded, melt processed, compression molded, or machined into parts and blended with a wide range of materials. The copolyimides also can be used as a sprayable coating and be filled with graphite, diamond, ceramics, or metals. Self-bonding properties allow the addition

Thermoplastic Polyimides

Rugged, High-Temperature Parts, Coatings, and Films



of fillers that increase hardness and compressive strength, thereby lowering the coefficient of thermal expansion and decreasing friction. Typically, polyimides are processed as amic acids, which release water. Because these polyimides are processable in imidized form, they exhibit outstanding moisture resistance and thermal stability.

The Thermoplastic Polyimides are resistant to hydrocarbons, lubricants, anti-freezes, hydraulic fluids, and detergents. Their ultra-low moisture pickup permits optimal performance in wet environments where temperatures are elevated. These polyimides can be injected or compression-molded in both large and small parts, which can then be further machined or polished.

Additional Information

To discuss in detail how this technology can profit you and your business, please contact:

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