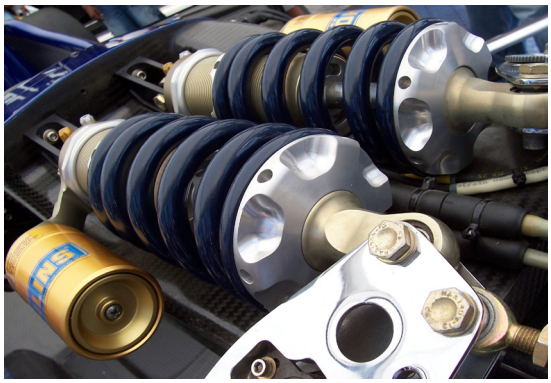
RP-50 Polyimide

RP-50 is a new, high-temperature polyimide coating system that posesses excellent dielectric properties.

RP-50 Characteristics:

- High heat resistance (-150ºF to +575ºF)
- High Tg (+541ºF or 283ºC)
- Excellent dielectric properties
- Low moisture absorption
- Excellent adhesion to metal substrates
- Adhesion to Kapton, Nomex®, and many other engineered polymers
- Resistant to microcracking
- Resistant to chemical corrosion



RP-50 Applications:

High -temperature coating system for:

- Insulating electrical wire
- Electrical motor varnish
- Protecting Kapton circuits
- High-strength dielectric coating for harsh and corrosive environments
- Bonding interface for polyimide foams

RP-50 was developed and patented by NASA Langley Research Center to solve performance problems in extreme heat, chemical, and corrosive environments without microcracking or blistering. **RP-50** is now commercially available worldwide due to a successful technology transfer between NASA and **Unitech, Inc.** of Hampton, Virginia, USA.

Unitech, Inc. 228-B Patterson Avenue, Hampton, VA 23669 USA
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Solvent and Moisture Absorption

Solvent and moisture absorption of RP50 Film (Exposed 7 days at room temperature)

Fluid	% Absorption (% weight gain)
Jet fuel	0.00%
Lubricating oil	0.00%
Hydraulic fluid	0.00%
Alkaline cleaning solution	0.50%
Water	0.00%
Seawater	0.00%

Test Data

Fracture toughness (G_{Ic})	1050 J/m^2 (compared with epoxy 32 J/m^2)
Adhesion (ASTM D3359, Tape test)	Aluminum- 5B (100%) Cold-Rolled Steel- 5B (100%)
Impact (ASTM D2794, Resistance of organic coatings to the effects of Rapid Deformation)	Pass 160 in/lb direct Pass 160 in/lb reverse impact
Flexibility (ASTM D522, Mandrel bend test of organic coatings)	Pass 1/4”
Dielectric constant	2.9 at 10GHz
Dielectric strength	RP50 at 4.0 mil film thickness will hold 3,300 volts

Cure Cycle

A typical cure cycle for RP50 film:
10 minutes @ 125ºC, raise temperature to 175ºC and hold for 10 minutes, raise temperature to 225ºC and hold for 10 minutes, raise temperature to 275ºC and hold for 10 minutes, raise temperature to 325ºC and hold for 20 minutes.

*Cure times may vary due to total film thickness applied

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