



National Aeronautics and
Space Administration



TECHNOLOGY SOLUTION

Materials and Coatings

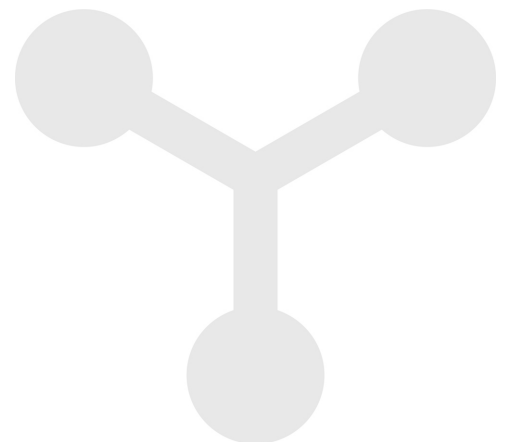
High-Performance Polyimide Powder Coatings

Advanced powder coatings for longer-lasting, improved corrosion control

BENEFITS

- Improved corrosion control
- Temperature resistance
- Chemical resistance
- Electrical stability
- Flame resistance
- Long-lasting protection

NASA Kennedy Space Center seeks partners interested in the further development and commercial application of High-Performance Polyimide Powder Coatings for longer-lasting, improved corrosion control. Through their earlier work with polyimide materials, KSC scientists identified polyimides with much lower melting points than traditional polyimides that were used for insulation. The lower melting points, thermal stability, chemical resistance, and electrical properties of these new polyimides led KSC researchers to develop new polyimide powder coatings that could be used to prevent corrosion. The results of preliminary tests of the coatings and their resistance to salt spray corrosion are very encouraging, and commercial partners are sought for further development.



THE TECHNOLOGY

Powder coatings are used throughout industry to coat a myriad of metallic objects. This method of coating has gained popularity because it conserves materials and eliminates volatile organic compounds. Resins traditionally chosen for powder coatings have low melting points that enable them to melt and flow into a smooth coating before being cured to a durable surface. High-performance resins, such as Teflon, nylon, and polyimide, have not been found suitable for use in powder coatings because of their high melting points.

However, KSC's newly developed polyamic acid resins with low melting points can be used in a powder coating. These polyamic acid resins, when sprayed onto metal surfaces, can be cured in conventional powder coating ovens to deliver high-performance polyimide powder coatings. The polyimide powder coatings offer superior heat and electrical stability as well as superior chemical resistance over other types of powder coatings.



The High-Performance Polyimide Powder Coatings could potentially be used in I-beams to prevent corrosion

APPLICATIONS

The technology has several potential applications:

- Pipes and other infrastructure components
- Machinery
- Exposed metal parts and structures
- Automobile components
- Bridges

PUBLICATIONS

Patent No: 9,688,881

<https://www.powdercoatedtough.com/News/ID/5199/NASA-and-UCF-Collaborate-to-Develop-New-High-Temperature-Powder-Coating>