NORTHFORGE

MATERIALS AND COMPOSITES

MATERIALS ENGINEERING

Nanoparticles in Composites

NorthForge disperses nanoparticles in resin to tailor how composite parts manage heat, loads and surface contact.



Thermal Conductivity & Insulation

Nanofiller selection can help spread heat along a panel or limit heat transfer through it. Either approach can help manage surface hot spots and reduce the infrared signature under defined operating conditions.



Flexural Modulus

Well-dispersed rigid nanofillers can increase the resin matrix's resistance to bending. In a reinforced laminate, fiber type, orientation and layup also contribute to stiffness.



Impact Resistance

Selected nanoscale tougheners can absorb energy or disrupt crack growth during an impact. This can help limit cracking and chipping in parts exposed to knocks, drops or repeated handling.



Surface Lubricity

Lamellar nanofillers can reduce sliding friction at the surface. This can help guides, bushings and moving interfaces slide more easily, depending on the mating material, load and operating conditions.



Fire Resistance

Certain nanofillers can promote a protective char layer that slows heat release during burning. Fire performance is evaluated on the finished composite at the thickness required for the application.



Wear Resistance

Properly selected and dispersed nanofillers can slow material loss from abrasion or repeated sliding. This helps contact surfaces retain their shape and finish over longer service intervals.



Osmotic Blister Prevention

Dispersed nanoplatelets can slow water migration through the resin. That can lower the risk of osmotic blistering in hulls and other composites exposed to prolonged immersion.

Discuss your application with NorthForge.

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