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MARCH 2023

Bio-based acrylonitrile for
carbon fiber manufacture / 16

ASCEND program update / 20

Novel processes for hybrid
thermoset-thermoplastic
pultruded parts / 34

New Products

» DLC COATINGS

Coating extends life, performance of polymer components in friction applications

Oerlikon Balzers (Balzers, Liechtenstein) has introduced its advanced tetrahedral amorphous carbon (ta-C) coating, Balinit Milubia, a diamond-like coating (DLC) designed to reduce the coefficient of friction (COF) of ceramic, metallic and polymer components in water environments that are under high loads or subject to extreme friction, wear and contact with other parts, while increasing wear resistance.

Balinit Milubia coatings are said to offer a hardness of 40-60 GPa, suitable for components that are exposed to extreme operating forces over the long term, such as shafts and seals, where friction can cause components to overheat or fail. The ta-C coating is typically applied in a thickness of 0.5-2 μm using physical vapor deposition (PVD) by arc evaporation. This produces ta-C, which has substantially higher abrasive wear resistance than a-C:H alternatives.

For polymer substrates, which are relatively soft and quickly wear, or are damaged in high-contact, high-friction applications, a ta-C DLC coating can provide a coating hardness of up to 50 GPa to increase



Source | Oerlikon Balzers

component durability and lifespan. As polymers are characterized by a low thermal stability — meaning they can melt or deform at the temperatures most PVD coatings require — a ta-C coating can also be applied at temperatures below 150°F (65°C), which is low enough to avoid thermal deformation of most polymers. This coating also attenuates or evacuates electrostatic discharge (ESD) on polymer substrates — a common challenge for traditional coatings, which are difficult to apply over an insulating substrate — and modifies its surface energy. The same process can be used to increase or decrease the wettability of polymers as required. oerlikon.com/balzers/us/en

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