ADVANCED SURFACE TECHNOLOGIES

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PEN-TUF®/EN

PTFE Co-Deposited or Infused with Electroless Nickel

Co-Deposited PEN-TUF®/EN

PEN-TUF®/EN is an Electroless Nickel Composite coating containing particles of PTFE evenly dispersed in a Nickel Phosphorous matrix. The PTFE particles are suspended in the Electroless Nickel bath and so they are uniformly co-deposited during the plating process. By combining the lubricity of PTFE with many features of Electroless Nickel, PEN-TUF®/EN is able to meet a broad range of engineering applications. PTFE is one the most lubricious materials available and, when co-deposited with Electroless Nickel, it provides a superior wear coating with a coefficient of friction around 0.1. The Electroless nickel content of the PEN-TUF®/EN coatings ensures uniform coating thickness, corrosion resistance and durability. Typical thickness of the coating ranges between 0.0001"-0.0004". If a thicker coating is required, an undercoat of Electroless Nickel can be applied. Co-Deposited PEN-TUF®/EN meets the AMS2454 2021-12 specification.

Infused PEN-TUF®/EN

AST Infused PEN-TEF®/EN is an ideal coating for mold release and corrosion resistance applications. It is a Mid-Phosphorous Electroless Nickel coating that is sprayed with PTFE which is then baked into the pore structure to give exceptional release properties. Typical coating thickness is 0.0003"-0.002".

Physical Properties

Property/Coating Type	Co-Deposited PEN-TUF®/EN	Infused PEN-TUF®/EN
Composition		
Nickel	84-85% by weight	
Phosphorous	9-11% by weight	7-9% by weight
PTFE	8-9% by weight / 23-25% by volume	
PTFE Particle Diameter	0.3-0.4 µ-meter	
Density	6.5 g/cm3	
Hardness		
Hardness (As Plated)	32-35 RC	54-58 RC
Hardness (Heat Treated)	42-46 RC (300℃ for 4 hrs.)	
Other Properties		
Coefficient of Friction - Wet	0.07-0.10 (white oil)	
Coefficient of Friction - Dry	0.1-0.2	
Wear Resistance	High speed/low load Slow speed/moderate load	
Abrasion Resistance (Tabor Abrader Test)	CS-10 Wheel/1000g load Weight loss = 20 mg/1000 cycles	
Corrosion Resistance		100 hours Salt Spray at 0.0003”