# ENhanced Z11

*Our Solutions Make Your Products Better*

## *RoHS / WEEE / ELV-Compliant High-Phosphorus Electroless Nickel*

Anoplate's **ENhanced Z11** offers all the advantages of high phosphorus electroless nickel to manufacturers without concern over compliance to stringent environmental regulations (e.g. RoHS, WEEE, ELV) that restrict or ban the presence of intentionally added lead or cadmium typically found in the majority of electroless nickel deposits. ENhanced Z11 is the result of Anoplate's commitment to continuously reduce its environmental footprint.

### Benefits

- Highly corrosion resistant electroless nickel plating system employing the latest in chemical innovation, coupled with Anoplate's proprietary plating equipment.
- High-phosphorus composition, typically 10-12% by weight, offering superior corrosion resistance and good wear resistance
- Appealing semi-bright metallic luster with consistent stainless steel-like appearance
- Ultra-smooth deposit with consistently low coefficient of friction and non-magnetic
- Deposits evenly on all surfaces, unlike electroplating baths
- Can be thermally treated to increase hardness of the nickel phosphorus alloy to an equivalent hardness of 66 Rockwell C

**ENhanced Z11** can be applied to a wide variety of materials, including:

- Steels
- Stainless Steels
- Inconel, Monel, Invar, Kovar
- Aluminum (picture shown)
- Brass & Copper

### Typical Applications

**ENhanced Z11** should be applied where maximum corrosion resistance is required. **ENhanced Z11** is an excellent solution for the following applications:

- Engraving and printing rollers
- Turbine engine seals
- Injection molds
- Hydraulic cylinders
- Medical diagnostic equipment

### Physical Properties

| | |
|---|---|
| Composition | Nickel: 88-89.5%<br>Phosphorus: 10.5 – 12%<br>Cadmium: ~0 ppm<br>Lead: <1,000 ppm |
| Appearance: | Semi-bright metallic luster |
| Micro-structure: | Amorphous |
| Magnetic Coercivity: | Non-magnetic |
| Deposit Hardness: | 45 HRC As-deposited<br>66 HRC Heat-treated |
| Electrical Resistivity: | 90-110 µΩ/cm |
| Melting Range: | 880°C |
| Wear Resistance: | 22-24 TWI As-Deposited<br>10-14 TWI Heat-Treated |

### Corrosion Performance

**ENhanced Z11** is an outstanding corrosion preventative coating. While it is routinely tested to 100+ hours of neutral salt fog per ASTM B 117, the coating has been shown to achieve up to 300 hours!

**ENhanced Z11** meets and exceeds the following requirements:

- AMS 2404
- AMS-C-26074 (formerly MIL-C-26074)
- ASTM B 733 Type V

### Film Thickness & Tolerances

**ENhanced Z11** is typically specified for thicknesses in the range of 0.0002"-0.001", but can easily be applied to thicknesses up to 0.003". For extreme corrosion applications, it is recommended for deposit thickness greater than 0.001" per surface.