XTALIC

XTRONIC® BL

Enhanced Waterproofing Performance

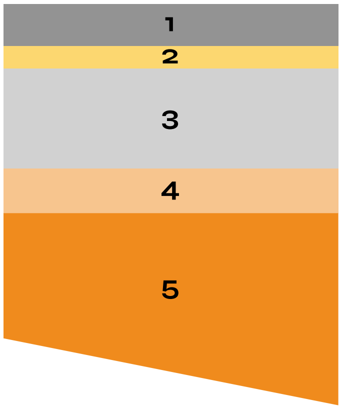
Powered immersion corrosion is a significant issue in smartphones, wearables, and other devices potentially exposed to moisture. It occurs when liquid enters a connector and, under electrical bias, forms an unintended electrochemical cell that rapidly corrodes metal contacts and leads to premature device failure. XTRONIC BL offers a proven materials solution to this challenge, resulting in longer-lasting connectors, improved product reliability, and reduced repair or warranty costs.

As a nanostructured nickel tungsten alloy, XTRONIC BL delivers exceptional corrosion resistance and mechanical durability while maintaining compact design requirements. It acts as a stable barrier layer beneath precious metal finishes, preventing metal dissolution and protecting against electrochemical degradation under electrical bias.

Benefits

- **Up to 5x improved wear durability compared to traditional coatings**
- **Order of magnitude enhancement in immersion corrosion performance for waterproof designs**
- **Drop-in compatibility with existing high volume manufacturing infrastructure**
- **Proven scalability, with tens of billions of units deployed globally**
- **Compatible with overmolding, pogo pins and USB-C style contacts**

XTRONIC® BL Stack



- **1 Precious Metal Top Coat**
  - Conductivity
  - Water splitting
- **2 Strike Layer for Adhesion**
- **3 XTRONIC BL**
  - Powered corrosion resistance
  - Hardness and wear durability
  - Diffusion barrier
- **4 Copper**
  - Smoothing Layer
- **5 Copper Base Metal**

For more information: www.xtalic.com/xtronic | sales@xtalic.com

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Key Features

Nanostructured nickel tungsten composition for engineered grain stability

Hardness of 680 HV for high wear resistance

Low and stable contact resistance (<10 mΩ) over time

Superior corrosion resistance, including powered immersion environments

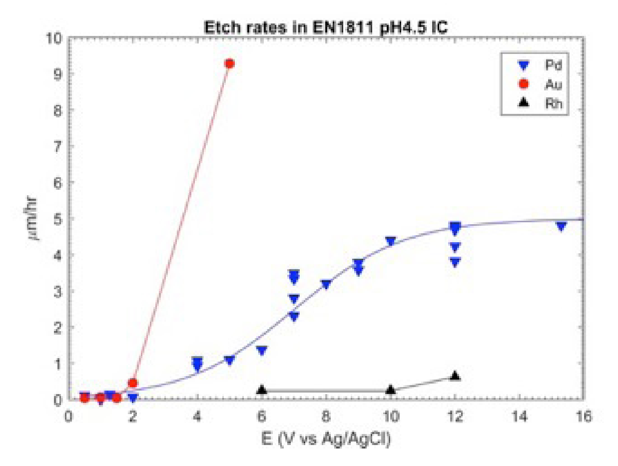
Compatible with high-speed reel-to-reel, rack, and barrel plating lines

Wide operating temperature tolerance — up to 700°C

XTRONIC Advantage

Traditional nickel and gold coatings begin to degrade under electrochemical bias, with gold dissolving near 2 volts and conventional nickel at similar thresholds. XTRONIC BL's nanostructured composition remains stable at higher voltages (3–3.5V and beyond), protecting both the substrate and outer coatings from electrochemical attack.

When XTRONIC BL is paired with a precious metal that can hydrolyze water (Pt, Rh, Pd), the stack substantially outperforms traditional finishes in powered immersion corrosion tests and wear durability. Immersion corrosion occurs when moisture enters a connector and, under electrical bias, creates an electrochemical reaction that rapidly dissolves or damages the metal surfaces. This combination of XTRONIC BL and a water-splitting precious metal provides a coating that achieves an optimal balance of hardness, corrosion resistance, and stable electrical performance.



Graph shows the etch rates that occur in various precious metals when tested in artificial sweat under electrical bias.

Manufacturing Capabilities

XTRONIC is produced using Xtalic's advanced pulse reverse electroplating technology, ensuring engineered nanostructure and consistent performance. The alloy is suitable for plating thicknesses from 0.1 to 20 microns and can be applied using:

- High-speed reel-to-reel plating
- Rack and barrel plating
- Selective plating

Applications

- Mobile phones
- Tablets
- Accessories
- Wearables
- Automotive connector systems for harsh environments
- Ruggedized connectors

Environmental Benefits

- Significant CO_2 reductions linked to precious metal mining avoidance
- Tungsten sourced from ethical and recycled supply chains
- Supports ESG goals while lowering total cost of ownership and warranty claims