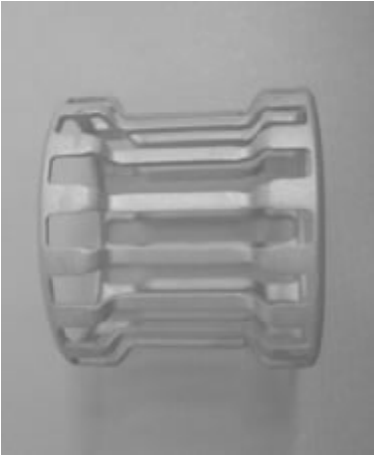


## Electroless Nickel Micro Crystalline to Amorphous Hard Nickel Phosphorus Coating:



*Roller cage plated uniformly on all surfaces with 0.0005 electroless nickel.*

Electroless Nickel plating (EN), also known as autocatalytic nickel, is a micro crystalline to amorphous, hardenable nickel-phosphorous alloy coating. It offers a good barrier coating corrosion resistance. EN is generally applied to a thickness range of 25 to 150 microns (0.0001" to 0.0015") typically does not require further surface finishing, machining or grinding after plating.

The autocatalytic reaction between nickel and reducing agent in the plating bath deposits nickel onto metal substrates without the use of anodes and electrical current, hence the name "electroless". Since no high or low current densities exist, a very uniform thickness of deposits over irregular shapes can be achieved.

Phosphorous content in the coating can range from 5% to 12%. U.S. Chrome offers "Mid-Phos" (5% to 8%P) and "High-Phos" (10% to 12%) EN plating) services.

EN can be heat treated at relatively low temperatures (400° to 450°C) to achieve higher hardness (up to 1000 HVN); however, corrosion resistance is reduced.

For many applications EN is applied as a barrier coating under Hard Chromium to provide the ultimate in corrosion and wear resistance

### Features & Benefits:

1. Excellent corrosion resistance - dependent on phosphorous content 48-100 hours per ASTM B-117 are typical.
2. Durability good - but wear resistance is less than hard chromium.
3. Deposits nickel uniformly - on any part geometry due to no current density distribution inherent in electrolytic processes.
4. USC offers a proprietary method - for applying EN to aluminum alloys.

### Design Recommendations:

[See Design Recommendation page](#)

### Typical Applications:

Plastic & glass molds, bearings, gears, medical parts, oil & gas, and aircraft components.



#### Properties:

- Hardness varies from 500-600HV (as plated) to 850-950HV (after heat treatment) depending on phosphorous content.
- Usual Temperature Limitation of 1000 degrees F 540 degrees C



*Medical device plated with a duplex coating of 0.0003 electroless nickel and 0.0003 hard chromium.*

#### For more information contact us:

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