

# ELECTROLESS NICKEL

## MIL-C-26074

CHARACTERISTICS

UNIFORM  
CONSISTENT  
ACCURATE  
FLEXIBLE  
RESISTANT  
DURABLE  
COMPOSITES

Twin City Plating specializes in Electroless Nickel (EN) plating. With more than 10,000 gallons of EN on six plating lines, TCP has one of the largest capacities in the Midwest. Several large plating tanks give TCP the flexibility to process a wide variety of large dimensions as well as small lots.

Electroless Nickel is the coating of choice when engineers face the most challenging applications. Corrosion and wear resistance are two of the greatest contributors to the popularity & growth of Electroless Nickel. Given the uniform nature of the coating and consistency in chemistry, EN helps by limiting and in some cases eliminating costly post-plating operations such as turning and machining to achieve the desired dimensions.

The Electroless Nickel deposit consists of Ni & Phosphorous. By manipulating the phosphorous content, the performance of the coating can be modified to meet the requirements of specific applications.

Electroless Nickel chemistry is also very conducive to adding composite material (PTFE, Boron Nitride, Carbide, and Diamond) to the matrix, to enhance the performance of the coating under specific work load requirements.



	Low Phosphorus	Medium Phosphorus	High Phosphorus
Nickel content	95-99%	92-95%	88-91%
Phosphorus content	1-5%	5-8%	9-12%
Hardness Rc (as plated)	58-62	46-50	44-48
Hardness Rc (heat treated)	68-70	65-68	65-67
Abrasion Resistance	Very Good	Very Good	Very Good
Wear/Galling	Superior	Excellent	Excellent
Corrosion	+ Alkaline	- Acidic Mild Environments	+ Acid Fair in Alkaline
Stress	Compressive in some cases	Tensile	Compressive in most cases
Magnetic Properties	Magnetic	Slightly Magnetic	Non-Magnetic



## TWIN CITY PLATING

## ELECTROLESS NICKEL

### Electroless Nickel | MIL-C-26074

Electroless Nickel (EN) plating, is an auto-catalytic or chemical plating process, has been used across a myriad of industries since the 1950s for its exceptional wear and corrosion capabilities.

**Uniform Thickness.** Being an auto-catalytic process, EN does not rely on the anode/cathode relationship as in electrolytic plating processes - resulting in uniform coating thickness across the surface of the part(s), regardless of shape and size.

**Accuracy and Consistency.** The final deposit thickness of EN is determined based on the length of time the part(s) are submerged in the plating bath. Through careful and meticulous bath maintenance, the final deposit thickness can be maintained within  $.00005'' \pm$ , typical applications only require  $.0001'' \pm$ .

**High Phosphorus EN.** High Phos Electroless Nickel, ENHP, provides superior corrosion resistance capabilities compared to other formulations of EN. ENHP can be heat treated after plating to improve the hardness and adhesion of the deposit.

**Medium Phosphorus EN.** Medium Phosphorus EN, MidPhos EN, is the most readily available type of EN. Provides both corrosion resistance and wear capabilities. MidPhos EN deposits slightly faster than ENHP, resulting in a semi-bright deposit.

**Low Phosphorus EN.** Low Phosphorus EN, LowPhos EN, is the hardest of the EN formulations. Provides excellent corrosion resistance in alkaline environments. Final deposit is bright in appearance.

**RoHS Compliance.** Twin City Plating provides a number of different RoHS Compliant EN formulations. For specific information please contact us.

**Composites.** EN Composite coatings are creating many new opportunities where traditional EN formulations did not fully satisfy customer/industry requirements. Wear-ability, hardness, lubricity – depending on the formulation there may be a Composite EN coating that makes the difference for your application. Call for more details.

### About Twin City Plating

Twin City Plating (TCP) has been providing metal finishing services in the upper Midwest since its inception in the 1930's. During the mid 1960's, then Twin City Chromium Plating Company, TCP moved to its current location. TCP has specialized in Electroless Nickel for nearly 20 years. Working closely with suppliers, TCP has developed and tested advanced formulations of Electroless Nickel, providing customers with a more robust solution to their everyday metal finishing needs. As the times change so do customer requirements. Development of composite Electroless Nickel coatings, early adoption of RoHS compliance, and an eye on emerging technologies and new coatings have all been keys to TCP's success. The addition of Anodize and Hard Coat, Electropolishing, Passivation, and Hard Gold Plating has served to expand TCP's capabilities to better serve its customers.

### SPECIFICATIONS

- MIL-C-26074
- ASTM B733
- AMS 2404

### SUITABLE FOR

- Steel
- Stainless Steel
- Tool Steel
- Aluminum
- Copper
- Bronze
- Brass
- ALBeMet®
- MoldMax®
- Others

### SERVICES AND CAPABILITIES

- Electroless Nickel
- Composites
  - TwinClad® XT
  - PTFE/Teflon®
  - Diamond
  - Carbide
- Anodize
- Hard Coat Anodize
- Teflon® Impregnation
- Passivation (Nitric and Citric)
- Electropolishing
- Hard Gold
- Six plating lines with over 10,000 gallons EN capacity
- Lifting capacity, 2-3 tons
- Expedited same-day or next-day service available

