

# Hi-Tec Plating, Inc.

## Technical Data Sheet

### “TDNC”™

### Physical Properties of the Deposit

Phosphorus Content, wt %	7.0 to 8.0
Melting Point (eutectic)	1620° to 1760° F 880° to 960° C
Coefficient of Thermal Expansion, $\mu\text{m}/\text{m}/^\circ\text{C}$	13 to 15
Thermal Conductivity, $\text{cal}/\text{cm}/\text{sec}/^\circ\text{C}$	0.0105 to 0.0135
Electrical resistivity, micro ohm-cm	50 to 100
Magnetic Properties	Slightly Magnetic

#### Hardness

Knoop hardness ( $\text{kg}/\text{mm}^2$ )	
50 g load, 3.0 mil deposit, steel	
As-plated	450
Heat Treated @	
4 hr, 350°F (177°C)	460 to 480
1 hr, 750°F (400°C)	860 to 900

#### Wear Properties

Taber Abraser Wear Test Index Value	
Wt. loss mg/1000 cycles	
As-plated	15 to 18
Heat Treated @ 1hr, 750°F (400°C)	4 to 8

#### Corrosion Related Properties

Salt Spray Test* (ASTM B117) 95°F, (35°C)	
5% NaCl, 1.0 mil deposit, hours to first corrosion spot	
2024 Aluminum	100 hours
1010 Carbon Steel	100 hours

#### Nitric Acid Test

Conc. Nitric Acid 42 °Baumé	
30 sec, room temperature, 1.0 mil, steel	Fail**

#### Hydrochloric Acid Test

50% HCl, 3 min., room temperature	Pass**
1.0 mil, steel	

\*ASTM test is performed on a flat panel. More complex or roughened parts may show initial spotting in fewer hours. ASTM B117 salt spray test is a porosity test and is only effective as a screening tool to show the differences afforded by alternative processes. It is not, however, a quantitative corrosion test.

\*\* Fail is indicated by any significant discoloration of the deposit.