

PHYSICAL PROPERTIES OF ELECTROLESS NICKEL

- HIGH PHOSPHOR PHYSICAL PROPERTIES

	Typical result
Phosphorus Content, wgt, %	10.5 to 12.0
Melting Point (eutectic)	
°C	880
°F	1620
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
Electrical Resistivity microhm-cm	50 to 100
Magnetic Properties	non-magnetic
Hardness	
Knoop hardness (kg/mm^2)	
50 g load, 3.0 mil deposit, steel	
As plated	450
Heat Treated	
4 hr., 350 °F (177 °C)	480 to 520
1 hr., 750 °F (400 °C)	800 to 830
Wear Properties	
Taber Abraser Wear Test	
Index Value wgt loss mg/1000 cycles	
As plated	15 to 18
Heat Treated 1 hr., 750 °F (400 °C)	4 to 8
Corrosion Related Properties	
Salt Spray Test (ASTM B 117)	
95 °F, (35 °C) 5% NaCl, 1.0 mil deposit.	
Hours to first corrosion spot	
2024 Aluminium	1000+
1010 Carbon Steel	1000+
Nitrate Acid Test	
Conc. Nitric acid 42° Bé, 30 sec., room temp. 1.0 mil, steel	Pass**
Hydrochloric Acid Test	
50% HCl, 3 min., room temp., 1.0 mil, steel	Pass**

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

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