



PTFE particles trapped throughout the high-phosphorous electroless nickel deposit giving improved wear and release throughout the life of the part.

TM 117C is a better concept in coating technology. A true stable composite of Nickel phosphorous & PTFE. Giving a unique range of engineered properties.

TM 117C deposit is a true composite consisting of 12-25% by volume of PTFE particles dispersed in our high phosphorous electroless nickel matrix; the PTFE content can be varied depending on the application. A moderately reflective gun metal gray color makes this functional coating attractive! It is hard, ductile and corrosion resistant, with excellent friction characteristics. The polytetrafluoroethylene (PTFE) particles have a nominal diameter of 0.4 micron & are uniformly distributed through the matrix. Accordingly, unlike impregnated coatings (TM 117P) as the composite is worn, a constant supply of new particles is exposed, maintaining a low coefficient of friction.

USER BENEFITS

- **Provides excellent release for straight, no draft cores and cavities**
- **Enhances resin flow increasing cycle time**
- **Helps maintain gloss levels**
- **Reduces or eliminates the need for spray on release agents**
- **Uniform thickness eliminating post process modification**
- **Excellent non-sticking properties**
- **Can be plated on aluminum & other non-ferrous materials**
- **Uniform dispersion of PTFE particles throughout the coating**

Caution: PTFE particles are damaged at temperatures over 600 degrees F. For high temperature applications see UltraKoat.



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PTFE is one of the most lubricious materials available. Unfortunately, it is also quite soft & can have poor wear & abrasion resistance on its own. The combination of a polymer with a strong, hard, ductile supporting matrix of TM 103 high phosphorous electroless nickel helps to overcome this problem & provides a wear resistant composite with excellent frictional properties. The coating may be heat treated to either harden the electroless nickel, or sinter the PTFE & produce a glazed, anti-stick surface. Some typical properties of TM 117C are listed below.

PROPERTIES: **TYPICAL VALUE:** **HEAT TREATED:**
As Plated 590 degrees F

Coefficient of Frictions		
Ring: Chromium Steel	0.2-0.3	0.2-0.5
Ring: TM 117C	0.1-0.2	0.1-0.7

Corrosion Resistance		
Salt Spray	1000 hours	500+ hours
Nitric Acid Test (30 Sec.)	Passes	N/A
Hydrochloric Test (3 min.)	Passes	Passes

Composition		
Nickel, % by Wt.	84-85	84-85
Phosphorous, % by Wt.	10-12	10-12
PTFE, % by Wt.	3-5	3-5
PTFE, % by Vol.	10-20	10-20

Temperature Limits		
For PTFE		
Decomposition °F	600	600
For Electroless Nickel		
Melting Point °F	1630	1630

Coefficient of Thermal Expansion		
(micro. In/in/°F)	6.7	6.7
(micro. m/m/°C)	12.1	12.1

Thermal Conductivity		
(cal/cm/sec/°C)	0.01	0.01

Electrical Resistivity		
microohm-cm	130-200	130-200

Magnetic Properties		
	Non-Magnetic	Slightly Magnetic

Hardness		
Knoop Hardness (kg/mm)		
100g load, 3.0 mil deposit	400-460	550-630

Wear Resistance		
Taber Abraser Wear Test		
Wt. loss mg/1000 cycles	33-55	6-8
Pin & Ring Wear Test		
Pin: TM 117 C, 250 Knoop (100)		
Ring: Chromium Steel	40	20
Ring: TM 117C	1	2