7696 Route 31
Lyons NY 14489
Voice: 315.946.1213 Fax: 315.946.4456
www.caswellplating.com

PTFE ELECTROLESS NICKEL

PTFE or Teflon is an excellent coating for providing low friction values on parts, especially where two parts are sliding together. It is especially useful on tools, molds, dies, cylinders, gun parts, bearings etc. and provides self lubricating properties to the parts it is applied to.

Our PTFE Electroless Nickel plates a mid-phosphorous nickel plating, with 20-25% PTFE deposits.

The coating is applied in approx 1 hour to steel, copper, brass, bronze, zincated aluminum. Other metals can be plated with other processes first, such as Flash Copper, then plated with PTFE EN.

The EN PTFE system plates at approx 0.2-0.4 mils per hour (0.0002" – 0.0004").

Bath Prep:

Per 1.5 Gal total bath size:

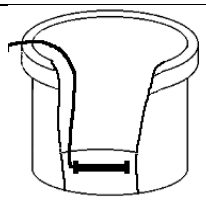
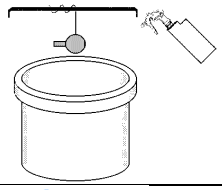
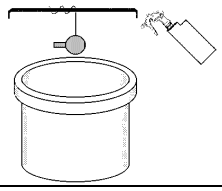
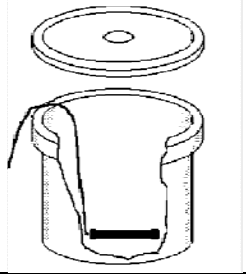
1. Add 8 fl oz Part A
2. Add 28 fl oz Part B
3. Add 156 fl oz Distilled Water
4. Add 1 oz (28gm) (by weight) PTFE Dispersion
5. Add all the fume balls (these help keep heat in the tank)
6. Mark the liquid level with a permanent marker on the outside of the tank.
7. Mix solution with plastic spoon.
8. Refer to the next page for nickel credit calculations and write down your starting credit number on the balance sheet.

Bath Operation:

1. Calculate the surface area of the part in square inches and the time you plan to plate the part.
2. Consider the amount of nickel credits you will be using (# of minutes x surface area in sq inches). For example, if your part is 10 sq inches, and you want to plate for 30 mins, you will use 300 credits (10 x 30)
3. Mix up the required amount of Part A and Part C to replenish all the credits you will use. Refer to next page for instructions.
4. Heat the bath to 190 deg F on a range or hot plate. Monitor the temperature with the included thermometer.
5. Hang your cleaned and waterbreak tested part from a piece of string or wire and immerse in the tank.
6. Plate until desired thickness is reached. Every 10 minutes or so, add a portion of your replenishment mix, and top off with distilled water to the original marked level.
7. While plating, use the part, or a plastic spoon, to keep the solution stirred up. This prevents the PTFE particles from settling to the bottom of the tank. Note: Pump agitation or air agitation is not recommended, as this is too vigorous and damages the PTFE particles.

Replenish Bath:

1. After plating is completed, replenish the bath with your remaining replenisher and top off to original level with distilled water.
2. Refer to the next page for replenishment procedures.

PROCEDURE	SETUP	OPERATING PARAMETERS	EQUIPMENT	SAFETY
1. SURFACE PREPARATION	Buff & Polish for a mirror finish. Bead Blast for a 'flat' finish. Nylon Abrasive wheel buff for a 'scratched brush' look.			
2. DEGREASING		140- 200 deg F No agitation 5 mins immersion 12 oz SP Degreaser 3 gal Distilled water	1 x 5 gal tank 1 x tank lid 1 x lid ring 1 x 200f heater 1 x 2lb SP Degreaser	Wear rubber gloves and goggles. Do not ingest
RINSE IN DISTILLED WATER SPRAY				
WATER BREAK TEST	 *Oil/dirt film makes water bead up*  *No oil/dirt film allows water to cover part*			
OPTIONAL SURFACE PREPARATION	**Aluminum:** Zincate part, rinse, then immediately plate with Regular Electroless Nickel first. Do not allow to dry between plates. **Steel, Iron:** where corrosion may be a problem, plate for 20 mins in Regular Electroless Ni.			
RINSE IN DISTILLED WATER SPRAY				
CALCULATE TOTAL SURFACE AREA AND PLATING TIME CALCULATE CREDITS CHECK for MAXIMUM LOAD 1.5 Gal plating solution = 150 sq inches of plating surface area MAXIMUM! PREMIX REPLENISHER IF NEEDED				
3. Tank Makeup		190 deg F 1.5 gal setup = 8 oz A, 28 oz B, 156 oz Distilled water 1 oz by weight PTFE Dispersion pH = 6.1-6.5 MARK TANK WITH LIQUID LEVEL NOW	1 x Glass Lined Tank 1 x thermometer 1 x Fume Balls	Wear rubber gloves and goggles. Do not ingest
4. Plating Times	**Time** 60 mins.		**Plate Thickness**	0.0002 " – 0.0004"

Tank Size In pints	MAXIMUM LOAD in sq inches	Square inches available	REPLENISH AFTER PLATING SQ INCHES	REPLENISHER Amounts required to make up enough to replenish TOTAL amount of credits in tank		
				Part A	Part C	PTFE Dispersion
12	150	1100	220	1.5 fl oz	3 fl oz	5gm or 0.15 oz by weight
24	300	2200	440	3 fl oz	6 fl oz	10 gm or 0.3 oz by weight
36	450	3300	660	4.5fl oz	9 fl oz	15 gm or 0.45 oz by weight

5. DETERMINE WHEN TO REPLENISH and HOW FREQUENTLY & check temperature
After replenishing:
6. TOP UP TANK TO ORIGINAL LEVEL WITH DISTILLED WATER.

MAXIMUM LOAD
You may ONLY plate a maximum of **150 sq inches of surface area per 1.5 Gal** of plating solution

If this amount is exceeded the bath will start to overwork and plating quality will seriously deteriorate.
Therefore if the part is 300 square inches, you need a MINIMUM 3 Gal Of plating solution.
Of course, if your bath contains MORE solution, this is OK.

NICKEL REPLENISHMENT
In practice, the additions of 'replenishment' should be made during the actual plating process at approximately every 10 minutes. The total amount of replenishment should be calculated and made up beforehand. Ideally, the bath should be maintained at 80% efficiency. Letting the nickel deplete below 70% level will accelerate deterioration of the bath.
Failure to replenish the solution will result in the bath eventually becoming out of balance and unusable.

The Nickel Bath Replenishment is a straightforward matter of adding more nickel from the Concentrate Part A, with an addition of Concentrate Part C and more PTFE dispersion.

A note on bath replenishment.

During the process of plating, a quantity of water will evaporate from the tank. Additions of DISTILLED WATER must be added periodically to maintain the correct dilution of the solution.

Make a note of the waterline when you first make up your solution. To make an addition, first, IF REQUIRED, add a quantity of REPLENISHMENT SOLUTION, and then top up with distilled water.
It is always advisable to add small amounts of both distilled water and replenisher frequently, say every 5 minutes, as this will keep the bath from cooling and becoming unstable.

Keep a note of the temperature when adding Replenishment. The solution should ideally be at 190 deg F when adding to ensure the temperature drop does not go below 185 deg F.

Operating the Kit

Areas not requiring to be plated may be masked with 2 coats of Mask-it. This should be allowed to thoroughly dry between coats, otherwise the hot solution may cause the coating to peel.

Important. Any part that contains copper, brass or bronze must be pre-plated with nickel.