TECHNICAL DATA SHEET

GINPLATE ACTIVATOR 442

ACTIVATOR FOR PLATING ON PLASTICS PROCESS

Ginplate Activator-442 is an Acid Activator used to prepare ABS Plastics for obtaining uniform, adherent, electroless coating of Nickel or Copper. It is an easy to use liquid concentrate which is added to water and hydrochloric acid to make-up the operating solution. Ginplate Activator-442 is used in cycles for plating on plastics to promote the formation of Electroless deposits with good conductivity on the parts to be plated with no plating on the rack coating. It can be used prior to Electroless Copper, Electroless Nickel i.e. Ginplate Ni 414, and other chemical plating baths.

HOW TO USE GINPLATE ACTIVATOR - 442

OPERATING CONDITIONS

Concentration

Water	:	Six parts
HCL AR Grade	:	1 part
Ginplate Activator 442	:	1 part
		(all parts by volume).
Time	:	1.5 - 5 minutes
Temperature	:	Room temperature
Activity	:	80 - 100% (100% optimum)
Acidity	:	18-21% by volume

Operation

After conditioning in Ginplate Conditioner-474, the plastic parts to be plated are immersed in 30% by volume Hydrochloric Acid and then processed in Ginplate Activator-442 solution for 2-3 minutes at room temperature. After thorough rinsing, the parts are immersed in the post-activator, a 30% by volume solution of Hydrochloric Acid for 3 minutes prior to Electroless Plating in Ginplate Electroless Nickel Ni-414 or Electroless Coper.

Post Activator

In plating on plastic operations, parts are immersed in a post-activator solution consisting of one part by volume concentrated Hydrochloric Acid and two parts by volume water, following immersion in Ginplate Activator-442 solution. For optimum results, it is important that the post-activator solution should be maintained at optimum level by regular analysis using the analytical procedure out-lined under “control”. In addition, it is recommended that the post-activator solution be discarded when it begins to turn yellowish-brown in colour and fresh solution made up.

Equipment
Ginplate Activator-442 may be contained in glass, polyethylene or PVC tanks reinforced with fibre glass or PVC-lined steel tanks.

Control
For optimum results and maximum solution life, the Ginplate Activator-442 solution should be maintained on the basis of regular analysis using the test procedure outlined below. The activity of Ginplate Activator-442 content should be determined first and the required addition of Activator-442 concentrate made before analysing for acidity.

ANALYSIS FOR CONCENTRATION OF GINPLATE ACTIVATOR-442 OPERATING SOLUTION

Practical in-shop control of the concentration of Ginplate Activator-442 in the operating solution is provided by the Ginplate Activator-442 test set. While the accuracy of the test set is well within practical limits, it is not intended to be a precision analytical device.

Prepare a standard bath as follows :

Distilled water : 75 ml
HCl (AR Grade) : 12.5 ml
Activator 442 : 12.5 ml

Prepare test standards from above as follows :
in 75 ml comparison tubes.

Pri. Std.	30% HCl	Activity
10 ml	65 ml	100%
9 ml	66 ml	90%
8 ml	67 ml	80%
7 ml	68 ml	70%

Procedure :

1. Transfer 65 ml of 30% HCl solution to the 75 ml comparision bottle.
2. Pipette 10 ml of the Ginplate Activator-442 operating solution into 75 ml comparision bottle, cap it, mix and allow to stand for 30 seconds.
3. Compare the developed colour to that of the coloured standards - this is best observed against a white background.

Replenishment

Obtain the percentage activity from the colour standard that most closely matches the sample, use the following table for replenishment additions :

Percentage Activity	Additions of Ginplate Activator - 442 (ml/lit)
100	0
90	12.5
80	25.0
70	37.5
60	50.0
50	62.5

Additions are to be made with Ginplate Activator-442 liquid concentrate and not with Ginplate Activator-443 additive.

ANALYSIS FOR ACIDITY

Apparatus Needed

1 ml pipette
50 ml burette
250 ml Erlenmeyer Flask

Reagents Needed

0.1N Sodium Hydroxide solution (standardised against hydrochloric or Sulphuric Acid of known concentration) Methyl Orange indicator.

Procedure

1. Pipette 1 ml of the sample of Ginplate Activator-442 working solution into a 250 ml Erlenmeyer flask.
2. Add about 100 ml of deionized water.
3. Add 3 drops of Methyl Orange indicator (or Phenolphthalein indicator).
4. Titrate with 0.1N Sodium Hydroxide to a yellow-end point (pink end point if phenolphthalein is used).

Calculation

ml of NaOH titrated x normality of NaOH x 8.36 = % by volume concentrated Hydrochloric Acid.

Replenishment

The normal percentage by volume of concentrated HCl should be 20%. For each 1% below 20%, add 12 ml of concentrated Hydrochloric Acid AR Grade per litre of operating solution.

ANALYSIS FOR ADDITIVE

Apparatus Needed

10 ml pippette
50 ml burette
100 ml graduated cylinder
500 ml Erlenmeyer Flask

Reagents Needed

50% Hydrochloric Acid Solution
0.1N Iodine Solution
Starch Indicator Solution

Procedure

1. Pipette 10 ml sample of the Ginplate Activator-442 operating solution into a 500 ml Erlenmeyer Flask.
2. Add 50 ml of 50% Hydrochloric Acid Solution.
3. Add 100 ml of distilled water and several drops of starch indicator solution.
4. Titrate with 0.1N Iodine solution to a permanent blue-black end-point.

Calculations

ml Iodine titrated x normality of Iodine x 14.06 = ml Ginplate Activator 443 Additive in operating solution.

Replenishment

The normal concentration of Ginplate Activator-443 Additive should be maintained within 15 - 30 ml per ltr. Add 1 ml/lit Ginplate Additive-443 to increase by 1 ml/lit.

ANALYSIS FOR ACIDITY IN POST - ACTIVATOR SOLUTION

Apparatus Needed

5 ml pipette
50 ml burette
250 ml Erlenmeyer Flask

Reagents Needed

0.1N Sodium Hydroxide, i.e. 40 gms./ltr.
Methyl Orange Indicator

Procedure

1. Pipette 5 ml sample of the post-activator solution into the 250 ml Erlenmeyer Flask.
2. Add about 100 ml of de-ionised water.
3. Add 3 drops of Methyl Orange Indicator
4. Titrate with 1.0 N NaOH to a yellow-end point.

Calculation

ml of NaOH titrated x normality of NaOH x1.67= % by volume concentrated Hydrochloric Acid.

Replenishment

Percentage by volume of concentrated Hydrochloric Acid should be 25%. For each 1% below 25%, add 15 ml concentrated HCl AR Grade per ltr. of working solution.

Waste Treatment

Ginplate Activator-442 working solution is highly acidic and after dilution with water, must be neutralised with dilute caustic soda to a pH of 6 - 8 prior to discharge.

CAUTION

The Ginplate Activator-442 liquid concentrate, Ginplate Activator-443 Additive and the Ginplate Activator-442 operating solution are strongly acidic and normal precautions such as rubber gloves and aprons as well as safety glasses should be used when handling them. In case of contact with the skin or eyes, flush with cold water and obtain medical attention.

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