NEUTRALIZER PM-954

For Industrial Finishing Applications

DESCRIPTION

Neutralizer PM-954 is used in the Crownplate™ Process and PM System for plating-on-plastics. When used after the rinses following chromic acid etch, Neutralizer PM-954 reduces residual hexavalent chromium and prepares the etched plastic surface for catalysis.

ADVANTAGES

- Excellent removal of chrome residues from plastics
- Simplicity of make-up and replenishment
- Low cost
- Consistent, predictable performance

BATH MAKE-UP

Chemicals Required	Metric	(U.S.)
Deionized water	875 ml/l	(87.5% v/v)
Concentrated HCl (23°Baumé)	100 ml/l	(10% v/v)
Neutralizer PM-954	25 ml/l	(2.5% v/v)

MAKE-UP PROCEDURE

1. Add deionized water to a clean tank.
2. Slowly add concentrated hydrochloric acid, 23°Baumé, and mix thoroughly.
3. Add Neutralizer PM-954 and mix thoroughly.
4. Dilute to working volume with deionized water.

BATH OPERATION

Immersion time:	2–5 minutes
Temperature:	21–57°C (70–135°F)
Normality:	0.6–1.2N
Agitation:	Mild mechanical and air agitation is recommended
Filtration:	Use 5–10 µm polypropylene cartridge filtration
Rinsing:	Thorough rinsing is recommended

BATH MAINTENANCE

1. Maintain bath volume with deionized water.
2. Maintain Neutralizer PM-954 concentration between 1–3% by volume.
3. Maintain the normality of the working solution at 0.6–1.2N.

BATH CONTROL PROCEDURE

I. Principle

A sample is treated with excess ferric ions and the ferrous ions produced are titrated with ammonium ceric sulfate using N-phenylanthranilic indicator.

II. Equipment

a) 10 ml Pipette

b) 250 ml Erlenmeyer flask

c) Two 50 ml Graduated cylinders

d) Hotplate

III. Reagents

a) Ammonium ferric sulfate, approximately 15%: to 450 ml of deionized water, add 25 ml of sulfuric acid (S.G. 1.55, approximately 20N) and 75 gm of ammonium ferric sulfate $NH_4Fe(SO_4)_2 \cdot 12H_2O$; Stir to dissolve

b) Phosphoric acid, 10% by volume; dilute 50 ml of orthophosphoric acid (S.G. 1.70, about 85%) to 500 ml with deionized water

c) N-phenylanthranilic acid indicator, 0.1%; dissolve 0.5 gm of indicator in 3 ml of 1N NaOH and dilute to 500 ml with water

IV. Titrant

Ammonium ceric sulfate, 0.10N

V. Procedure

a) Pipette 10 ml Neutralizer PM-954 bath into a 250 ml Erlenmeyer flask and add 30 ml of ammonium ferric sulfate solution.

b) Heat to boiling and boil for five minutes.

c) Cool rapidly to room temperature, add 20 ml of phosphoric acid (10%) and add a few drops of N-phenylanthranilic acid indicator.

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d) Titrate immediately with ammonium ceric sulfate (0.10N) from the pale-yellow to purple end point.

VI. Calculation

$$\% \text{ Neutralizer PM-954} = \frac{\text{ml titrant x N titrant x 20.518}}{\text{aliquot (10 ml)}}$$

Maintain the Neutralizer PM-954 concentration in the working solution between 1–3%. To raise the concentration 1% by volume, add 1.0 gallon of Neutralizer PM-954 concentrate for every 100 gallons working solution.

NORMALITY CONTROL PROCEDURE

I. Principle

A sample is titrated to a phenolphthalein end point with sodium hydroxide.

II. Equipment

a) 10 ml Pipette

b) 250 ml Erlenmeyer flask

c) 50 ml Burette

III. Reagents

Phenolphthalein indicator, 0.1% in 95% ethanol

IV. Titrant

Sodium hydroxide, 1.00N, standardized

V. Procedure

a) Pipette 10 ml of Neutralizer PM-954 bath into a 250 ml Erlenmeyer flask and dilute to 100 ml with DI water.

b) Add 10–15 drops of Phenolphthalein indicator solution and titrate with 1.00N NaOH solution to the first pink end point.

VI. Calculation

$$\text{Normality} = \frac{\text{ml titrant x N titrant}}{\text{aliquot (10 ml)}}$$

Maintain the normality of the working bath at 0.6–1.2N. To raise the normality of the bath 0.1N, add 0.83 gallons hydrochloric acid, 23°Baumé.

PRODUCT DATA

Neutralizer PM-954

Color:	Water-white liquid
pH:	3.0 (approx.)
Specific gravity:	1.1 (approx.)

EQUIPMENT

Tank and Plumbing:	CPVC, polyethylene, polypropylene and Teflon are suitable construction or lining materials
Racks:	PVC plastisol coated; or 316 stainless steel can be used if mild corrosion is acceptable
Heaters:	Quartz or Teflon coated
Filtration:	A 25 micron polypropylene cartridge is recommended
Ventilation:	Recommended
Agitation:	Mild mechanical agitation is recommended

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HANDLING PRECAUTIONS

Before using this product, consult the Material Safety Data Sheet for details on product hazards, recommended handling precautions and product storage.

CAUTION! May be harmful if swallowed. Avoid contact with skin and eyes. Handle with care. Wear chemical goggles, gloves and protective clothing.

CAUTION! When using immersion heaters, failure to maintain proper volume level can expose tank and solution to excessive heat resulting in a possible combustion hazard, particularly when plastic tanks are used.

STORAGE

Store Neutralizer PM-954 only in upright, original containers in a dry area at 10–32°C (50–90°F). Store away from alkaline materials. Do not store in sunlight. Keep container sealed when not in use.

WASTE TREATMENT

Spent Neutralizer PM-954 solutions may contain hexavalent chromium and are strongly chelated. A used bath may be treated according to Rohm and Haas Electronic Materials Waste Treatment Procedure WT 77-5. It is the user's responsibility to verify that this procedure complies with federal, state and local laws and regulations for wastewater discharge.

Due to the nature of Neutralizer PM-954, disposal of it, or residues therefrom, should be made in compliance with federal, state and local environmental laws.

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ELECTRONIC MATERIALS

Circuit Board Technologies

CMP Technologies

Microelectronic Technologies

Packaging and Finishing Technologies

For locations and information please visit; **http://electronicmaterials.rohmhaas.com**

UNITED STATES

Marlborough, MA
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