Seacole Specialty Chemical

Technical Data Sheet

ACTI/Plate DM-10A

A Pre-Cleaner and Conditioner for Copper and Dielectric Surfaces Prior to Direct Metallization

Product Description

ACTI/Plate DM-10 Cleaner Conditioner (DM-10) is a two-part, non-chelated alkaline liquid that removes finger prints, light copper oxidation and soiling from copper surfaces, and conditions plastic and glass surfaces to be activated using the ACTI/Plate DM process. DM-10 is equally effective preparing a variety laminates for catalyst absorption including difunctional, multifunctional, polyimide, and Teflon. Additionally, DM-10 is extremely concentrated and easy to waste treat, reducing the cost to operate the process.

Performance Features

- ACTI/Plate DM-10 is non-chelated, simplifying waste treatment of spent baths.
- ACTI/Plate DM-10 is highly concentrated, reducing operating costs and simplifying make-up.
- ACTI/Plate DM-10 is equally effective preparing plastic, glass, and resin systems including difunctional, multifunctional, polyimide, and Teflon, for subsequent absorption of palladium catalyst.
- ACTI/Plate DM-10 will effectively clean light oils and copper oxidation assuring a uniform copper microetch.

Physical Specifications

Parameters	DM-10A	DM-10B
Physical State	Liquid	Solid
Appearance	Light Yellow Solution	White Pellet
Odor	Slight	Odorless
Freeze/Thaw Stability	Protect From Freezing	Stable
Specific Gravity	1.1	2.2
pH	> 9	> 14 (1% Solution)
Flash Point	>140°F	None

Equipment Requirements

Equipment: Constructed or Lined with Stainless Steel, Glass Or Polypropylene.
Heaters: Constructed or Lined with Stainless Steel Or Teflon.
Filters: Polypropylene Or Glass Are Acceptable. Do Not Use Carbon Filters.
Pumps: Should Be Rated For Hot Caustic Solutions.

Product Make-Up

ACTI/Plate DM-10 consists of two components, DM-10A and DM-10B; and is employed at 1.0% by volume and 0.6% by volume respectively. To prepare a working bath of ACTI/Plate DM-10, follow the procedure below.

1. Thoroughly rinse the tank and inspect for cleanliness, paying special attention to the heaters and heater sheathings.
2. Fill the clean process tank with water to 50% of its final operating volume.
3. Slowly add required amount of ACTI/Plate DM-10B (6g/l or 22.7g/gal.) and stir to dissolve.
4. Add required amount of ACTI/Plate DM-10A (1 gallon per 100 gallons of bath).
5. Fill tank to operating level and mix thoroughly.
6. Heat the solution to 160°F.
7. Use a filter and recirculating pump to assure uniform heating of the bath, and elimination of hot or cold spots. Circulation is essential to keep conditioner dispersed. The DM-10 bath may become gray if not filtered continuously through a one micron or finer polypropylene filter.
8. Keep tank covered to prevent evaporation of water while heated.

Operating Parameters

Concentration	0.75-1.25% By Volume Of ACTI/Plate DM-10A Conditioner In A Deionized Water Solution Containing 6 G/L Of ACTI/Plate DM-10B
Temperature	160-175°F Do Not Operate Below 160°F.
Application Method	Immersion Or Flood
Time	5 - 10 Minutes (5 Minutes Preferred)

NOTE: To minimize water evaporation and prevent unnecessary contamination, cover the ACTI/Plate DM-10 Conditioner solution when not in use. Check the temperature of the ACTI/Plate DM-10 Conditioner bath at least once every shift.

Control Replenishment

Chemical Additions	Add 1 Gallon Of Prepared ACTI/Plate DM-10 Conditioner (1% By Volume ACTI/Plate DM-10A In 6 G/L Dm-10b Solution) Per 1000 Square Feet Processed
Bath Life Expectancy	750-1000 Square Feet Of Work Processed Per Gallon Of Operating Bath Or Discard Monthly, Whichever Comes First

Measuring the Concentration (g/L) of ACTI/Plate DM-10B

The percent by volume (% v/v) of ACTI/Plate DM-10A in a working bath can be measured using the procedure below.

Equipment Required	Reagents Required
Buret, 50 ml	Hydrochloric Acid Standardized 0.10 N
Erlenmeyer Flask, 250 ml	Bromocresol Green/Methyl Red Indicator (3:1)
Pipet, 5 ml	

Procedure

1. Pipet a 5 ml of sample of bath into a 250 ml Erlenmeyer flask containing 50 ml of deionized water.
2. Add approximately 10 drops of bromocresol green/methyl red indicator and mix.
3. Begin titrating with the standardized hydrochloric acid from a clear green to a clear pink endpoint. Record the mls of titrant required to reach the endpoint.

Calculation

$$\frac{A \times B \times 40}{C} = \text{g/L ACTI/Plate DM-10B}$$

Where
A = mls of titrant used
B = N of titrant (0.10)
C = sample volume in mls

To make additions, add ACTI/Plate DM-10B on a gram/liter basis to increase the concentration to 6.0 g/L.

Measuring the Percent by Volume (%v/v) ACTI/Plate DM-10A

The percent by volume (% v/v) of ACTI/Plate DM-10A in a working bath can be measured using the procedure below.

Equipment Required	Reagents Required
Buret, 50 ml	Potassium Dichromate Standardized 0.20 N
Iodine Flask, 250 ml	Potassium Iodide 10% W/V In Water
Pipettes, 1 ml and 25 ml	Sodium Thiosulfate Standardized 0.10 N
	Starch Indicator
	Sulfuric Acid 1:1 In Water

Procedure

1. After the ACTI/Plate DM-10B concentration has been measured, and its concentration in the working bath properly adjusted, pipet a 1 ml of sample of the bath into a 250 ml stoppered iodine flask.
2. Using a pipet, add 25 ml of the potassium dichromate, 0.20N, to the flask followed by approximately 20 ml of dilute sulfuric acid. Stopper the flask and swirl to mix. Allow the sample to stand for 40-50 minutes, mixing occasionally.
3. Add approximately 10 drops of the potassium iodide, 10% solution, and mix well.
4. Immediately begin titrating with the standardized sodium thiosulfate from a dark brown to a straw yellow-green. Add approximately 5 mls of starch indicator. The sample will turn dark purple. Continue titrating to a clear blue-green endpoint. Record the mls of titrant required to reach the endpoint.

Calculation

$$\frac{(A \times B) - (C \times D)}{1.23 \times E} = \%\ \text{v/v ACTI/Plate DM-10A}$$

Where	A	=	N of the potassium dichromate (0.20)
	B	=	volume of potassium dichromate (25 ml)
	C	=	N of sodium thiosulfate (0.10)
	D	=	volume of titrant required
	E	=	sample volume in mls

To make additions, add ACTI/Plate DM-10A on a percent by volume basis to increase the concentration to 1.0%.

Safety and Handling

Read and understand this products MSDS before handling.

Waste Treatment

Individual users should verify the nature of spent solutions to assure compliance with local, state, and federal regulations. Contact Seacole for specific details and/or further waste treatment recommendations.

Ordering Information

ACTI/Plate DM-10A is available in 1 gallon bottles.

13505 Industrial Park Blvd. Plymouth, MN 55441