



TI-CADMIUM PLATING SOLUTION FILTRATION AND TITANIUM ADDITION

Proprietary Ti-Cad solutions are used in the aircraft and other industries requiring cadmium deposits with superior corrosion resistance properties on high strength steel parts.

The bath is usually operated at room temperature. Because of the nature of the bath and the fact that the parts have undergone a thorough cleaning, a relatively light dirt load can be expected. Tank turnovers of 1-2 times per hour are recommended.

MEDIA REQUIREMENT

A special requirement of this bath is a larger than usual surface area in the filter, since the filter media must be precoated. A mixture of titanium paste and filter aid is recirculated from the slurry tank into the filter. Hydrogen peroxide is added periodically to dissolve the titanium as required.

A general rule of thumb in industry is that one pound of titanium paste and one pound of a coarse filter aid such as #545 Johns-Manville or #FW60 Eagle Picher require 10 sq.ft. of filter area, and six pounds of paste are needed for each 1,000 gallons of solution. Therefore, a 1,000 gallon bath would require 60 sq.ft. of filter surface. The requirements for other bath sizes would be calculated proportionately.

PREPARATION

Prepare a mixture containing 1 pound of titanium paste, 5 fluid ounces of 35% hydrogen peroxide, and 2 ounces of sodium hydroxide to 1 gallon of deionized water. Blend thoroughly and allow to age overnight or for a minimum of 8 hours. The slurry should be covered to prevent contamination, but must be vented to allow the escape of gases. Adhere to this mixture ratio for the initial charge of the filters, and all subsequent additions required. The initial charging of the filter should allow at least 1 pound of titanium paste per 10 sq.ft. of filtration area.

Each gallon of titanium stock solution should be mixed thoroughly with 32 to 48 ounces of filter aid, and slowly added through the filter slurry tank. For the original charge of the new bath, an additional quantity of 5 fluid ounces of hydrogen peroxide per 100 gallons of solution should be stirred directly into



the plating bath to assist in the initial build-up of the titanium content.

Note: This hydrogen peroxide addition is not necessary with subsequent additions of titanium stock solution to the filter cake. For safety's sake, it is suggested that the vent valve back to the slurry tank be left in a slightly open position. This would automatically release any gases which might be formed during the addition of the hydrogen peroxide.

OPERATION

Once the filter is precoated, it will usually operate for months with only periodic hydrogen peroxide additions to bring the titanium up to its required level in the solution. After the titanium paste has been depleted, the filter should be cleaned and a new cake of filter aid and paste prepared.

The filter should be set up for constant operation and could be maintained with recirculation on the slurry tank if the operator does not wish to recirculate on the plating tank. This will provide constant pressure across the filter media and prevent the cake from falling.

A SERFILCO filtration system is available for plating tanks of virtually any size. Suitable materials of construction include polypropylene, CPVC and PVC vessels; Teflon® and Neoprene® 'O'-rings and seals.

CHAMBER - The filter chamber has a CPVC cover and base, PVC shell with hold-down bracket, Neoprene 'O'-ring in cover and base, non-metallic internals, and swing bolt closures with cleanable sleeves suitable for precoating with filter aid as required.

PUMP - SERFILCO 'HE' centrifugal pump, molded CPVC sleeved pump shaft, Neoprene 'O'-ring, with enclosed impeller, Type 21 double water flushed external mechanical seal (Neoprene, carbon, ceramic).

MOTOR - 230-380-460/3/50-60 TEFC, 3450 RPM, wired 230/3/60 unless specified otherwise.

BASE - Vinyl coated steel

DRAIN PORT - 1½" with plug (see DV7 option below)

CARBON PORT - Consult Application Engineering Department for optional carbon chamber.

PIPE, FITTINGS - CPVC

HOSE - 1½" - 10 ft. vinyl wire reinforced suction hose with strainer, 10 ft. vinyl PVC ribbed discharge hose with polypropylene quick disconnect couplings, CPVC fittings solvent socketed, Neoprene 'O'-rings at threaded connections.

PRESSURE GAUGE - Protected by Neoprene diaphragm, CPVC air release valve.

MODEL	NUMBER OF SLEEVES	SURFACE AREA SQ. FT.	OVERALL DIM. LxWxH	PIPE SIZE (In.)	FLOW* RATE GPH	PUMP MAX. PSI	HP	FOR TANK SIZE (GAL.)**	PRICE CODE NUMBER
C(PVC)N360S 1½C H2CE1N(M1 x M1)-D1.5-G3A	12-30"	21.6	53 x 22 x 42	1½	2600	23	1.5	100-200	2021N
C(PVC)N480S 1½C H2CE1N(M1 x M1)-D1.5-G3A	12-40"	28.8	53 x 22 x 52	1½	2600	23	1.5	200-300	2022N
C(PVC)N600S 1½C H2CE1N(M1 x M1)-D1.5-G3A	12-50"	36.0	53 x 22 x 62	1½	2600	23	1.5	400-500	2023N
C(PVC)N480Sx2 2C H2CE3N(M1 x M1)-D3.0-G3A	24-40"	57.6	66 x 22 x 52	2	3200	28	3	600-700	2024N
C(PVC)N600Sx2 2C H2CE4N(M1 x M1)-D5.0-G3A	24-50"	72.0	66 x 22 x 62	2	3200	28	5	800-1000	2025N

*With slurry tank and valves below.

** For larger tank sizes, consult Application Engineering Dept.

OPTIONAL

MODEL	DESCRIPTION	PRICE CODE NUMBERS
Dri-Stop® Pump Protector		
	Dri-Stop 2R for use with double mechanical seal pumps. (Requires SPB4 motor starter.)	O-2DS2R
Motor Starter with Overload Protection - SPECIFY VOLTAGE		
-ST4	NEMA 4, Watertight, push button, 115-230V/1/50-60	O-MS1P
-SPB4	NEMA 4, Watertight, push button*, 115-230V/1/50-60	O-MS1P-S
-ST4	NEMA 4, Watertight, push button, 230-460V/3/50-60	O-MS3P
-SPB4	NEMA 4, Watertight, push button*, 230-460V/3/50-60	O-MS3P-S
Specify operating voltage and motor current (amps)		
Other optional features recommended for Ti-Cad operation		
Portable -P	Add 6" to arrive at axle width and 3" to height. Two fixed wheels and two swivel casters, w/pull handle	O-2042
Slurry Tank -SV7	For chemical mixing, pump priming, or precoating. Polyethylene tank with PVC frame, CPVC piping and seven CPVC ball valves, including flow control, drain, backwash and bypass valves.	SEE CHART
-DV7	Drain valve assembly (installed)	O-2056

* With step down control transformer (required for Dri-Stop operation)

SLURRY TANK - SV7			
FOR SYSTEM NUMBER	SLURRY TANK SIZE (Gallons)	PIPE SIZE	PRICE CODE NO.
2021N	11	1½"	O-2073
2022N	18	1½"	O-2087
2023N	18	1½"	O-2087
2024N	18	2"	O-2091
2025N	18	2"	O-2091

PRICING EXAMPLE:

2021N – C(PVC)N360S 1½C H2CE1N(M1 x M1) D1.5 G3A +

optional:

2042 – portable

2073 – slurry tank w/values

MS3P-S – 3φ motor starter

2DS2R – Dri-Stop

= Final assembly

Registered trademarks: Teflon, Neoprene - DuPont



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