ELECTRO-COAT EP5000

INTRODUCTION

ELECTRO-COAT EP 5000 is a water electrophoretic lacquer which when applied to metal or metal coatings produces a clear protective coating.

ELECTRO-COAT EP 5000 can be used at the end of the normal plating cycle without any alterations to the existing plating cycle. The work is transferred directly from the final electroplating stage through rinses into the ELECTRO-COAT EP 5000 without the need or an intermediate drying stage.

ELECTRO-COAT EP 5000 concentrate can be used both to make up and maintain the bath solution.

TYPICAL PROCESS SEQUENCE

Final electroplating stage (or mechanical polished or untreated components after cleaning)
Cold water rinse
Demineralised water rinse x 2
Pre-dip in demineralised water with 2% v/v ELECTRO-COAT EP 5000 bath solution
ELECTRO-COAT EP 5000 plate
Post-dip in pure ultrafiltrate (permeate) or demineralised water
Demineralised water rinse
Demineralised water containing Rinse Aid
Air dry
Cure

EQUIPMENT

TANK : Tanks in contact with lacquer solution should be made out of suitable plastic material or of steel with acid and solvent resistant lining such as Polypropylene ELECTRO-COAT EP 5000 working tank should be fitted with an overflow compartment a circulating pump with a circulation pf more than 5 times tank volume per hour and a filter with a 1-micron cartridge.

HEATERS : A low energy (quartz) heater.

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ANODES	: Stainless steel anodes grade 316/318
ULTRAFILTER UNIT	: Necessary.
OVEN	: Recirculatory hot air or tunnel is preferred. The best system is that of a conveyor oven with temperature zoning in which the parts are heated slowly to the curing temperature.
RACKS	: Normal PVC plastisol coat racks.

MAKE UP

ELECTRO-COAT EP 5000 concentrate	20 to 25% v/v
Demineralised water	Rest

To make up a new solution add slowly demineralised water to the concentrate with constant mixing. Do not add all the water in one go. The demineralised water should have a conductivity of less than 5 us/cm. A low speed electric stirrer should be used for thorough mixing.

New baths will generally take a few days to settle down and should be left circulating 24 hours a day.

OPERATING CONDITIONS

Solids Content	8 to 10% by weight
pH	4.2 to 4.8 (Electrometric)
Temperature	25 to 30℃, optimum 28℃
Circulation	Continuous
Conductivity	350 to 600 us/cm at 25℃ and 8% soilds content
Voltage	30 to 50 volts, maximum ripple 20%
Cathode current density	Average 0.05 to 0.1 A/d㎡ Surge 0.15 to 0.5 A/d㎡
Cathode/Anode area	2/1 (Anode area should be less than cathode area)
Deposition Rate	Typically 8 microns in the first 30 seconds At 42V for 60 seconds 14 to 16 microns 42V for 120 seconds 22 to 28 microns.
Process times	Variable between 10 to 120 seconds. A dwell time of 10 to 15 seconds should be allowed before switching on the current.
Curing temperature	145 to 170℃ Fully cured at a metal temperature of 160℃ for 20 minutes.

BATH REPLENISHMENT

The solids content should be maintained between 8 to 10% by weight or as required. The additions of ELECTRO-COAT EP 5000 concentrate should never be made directly to the tank. The best method is to add working solution to the required amount of the concentrate in a separate container and premix, adding to the working solution through the weir. The solids content should be determined twice a week, depending upon the sage. Make additions at the end of a day.

The solvent is lost by evaporation, drag cut and ultrafiltration. It is normally maintained by the addition of ELECTRO-COAT EP 5000 concentrate. However if solvent additions are necessary then they should be made in increments of 0.5% through the weir. It will take about two hours of solution circulation before its full affect become apparent.

The solvents used are :

ELECTRO-COAT EP 5000 to replace discarded permeate and excessive evaporatlon losses.ELECTRO-COAT EP 5000 is used to make routine maintenance additions and replace lasses due to drag out.

WASTE DISPOSAL

Simply increasing its pH with alkalt can precipitate the solids from ELECTRO-COAT EP 5000 bath solution. The supernatant liquid will contain small amount of solvent and lactic acid. This liquid should be further diluted before discharge to meet local authority laws.

ELECTRO-COAT EP 5000 rinses should also be treated as above.

HEALTH AND SAFETY

ELECTRO-COAT EP 5000 as supplied has a flash point of more than 16℃. The material will not support combustion in case of fire use water.

ELECTRO-COAT EP 5000 contains fully blocked isocyanates

ELECTRO-COAT EP 5000 concentrate should be stored between 5℃ and 30℃/

Risk & Safety Phrases

R36 lrritating to eyes
R39 Contains Isocyanates
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S51 Use only in well ventilated areas.