



# **INSTRUCTIONS FOR APPLICATION OF CED PRIMERS**

## **TE-8500**

## *Cationic Epoxy Electrocoating*

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## *Cationic Epoxy Electrocoating*

### **1.Introduction :**

Cationic epoxy primers presently in use are water-based thermosetting organic coatings that are applied by cathodic electrodeposition, an electrical painting process capable of producing a uniform, corrosion resistant coating on metallic surface of complex geometry.

TE-8500 is a dramatic extension of TFC's cationic technology. It is based on a new polymer and emulsion system that is capable of producing significantly increased throwing power and ED bath stability than old resin system.

TE-8500 makes it possible to apply the required film thickness by way of electrodeposition and achieve significant gains in economics, corrosion resistance, chipping and appearance for car bodies and small parts.

## *Cationic Epoxy Electrocoating*

### **2. Replenishment Materials :**

Product Name	Materials	Function	Container	Net Weight
TE-8500	Modified cationic epoxy type emulsion	Main components of ED film	50 Gal	200 Kg
E-5411 E-5413P	Pb free, Black paste		50 Gal	233 Kg
E-5632	Flow additive	To improve the film build and appearance evenness	50 Gal	188 Kg

**3. Properties and compositions of Replenishment Resin and Paste:**

Item		Resin emulsion	Black pigment paste
		TE-8500	E-5411/ E-5413P
compositions	solids	35-37	40-45
	solvent	1.5-3.5	10-13
	D.I.H <sub>2</sub> O	59.5-63.5	42-50
	Total	100	100
Properties	pH	6.5±0.3	-
	Conductivity	2600±250 µs/cm	-
	Specific gravity	1.03-1.07	1.18-1.28
	Viscosity	< 100cps	300-800cps

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### **4. Tank Control:**

(1) Preparation of ED Bath :

Component	TE-8500/(E-5411/E-5413P)
TE-8500	450
D.I.H <sub>2</sub> O	450
E-5411	100
Total	1000.0

(2) Procedure:

- ① Place about 1/3 tank volume of D.I.H<sub>2</sub>O into the ED tank ◦
- ② Add resin component of TE-8500 under agitation ◦
- ③ Let stir for 30 min~1 hour before adding slowly the black pigment paste under increased agitation.
- ④ Add the remained D.I. H<sub>2</sub>O and stir for 30min.
- ⑤ Adjust the pH of ED bath to 5.6-6.0 by acetic acid ◦
- ⑥ Filtration of bath material by UF to reduce the bath conductivity to about 1400  $\mu\text{s}/\text{cm}$  ◦
- ⑦ Start the operation of cooling system ◦

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### (3) Compositions and Properties of ED Bath :

	Item	TE-8500/(E-5411/E-5413P)
Compositions	Resin	13.15-17.25
	Pigment and filler	1.85-2.75
	Solvent	2.0-3.5
	D.I.H <sub>2</sub> O	76.5-83.0
	Total	100
	NV (wt%) (solid content)	15.0-20.0
	P/B ratio	0.14-0.16
Properties	conductivity (μs/cm)	1050-1450
	pH	5.6-6.0

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(4) The operating standard of ED bath and coating condition :

Item		Standard
Bath Material Data	Solids	15-20 %
	P/B ratio	14-16%
	Conductivity	1050-1450 $\mu\text{s}/\text{cm}$
	pH	5.6-6.0
	Solvent	2.0-3.5 %
Coating Condition	Bath temperature	26°-30°C
	Deposition voltage	100-300 V
	Coating time	120~180 sec
	Baking conditions	175°C×20min (Metal temp.)

(5) Replenishment :

- 1.The blend ratio of replenishment(TE-8500/(E-5411/E-5413P)) is 4:1 ◦
- 2.The TE-8500 and (E-5411/E-5413P) should added to increase the solid content ◦
- 3.Feed the (E-5411/E-5413P) to increase the P/B ratio when the ratio is lower than standard ◦



**5. Physical and Chemical Properties of ED Film :**

Item		Standard	Remark
1	Appearance	No pits or dirt , and crater rating is $> 8$	
2	L panel	No any pits	
3	Film thickness	$> 15\mu\text{m}$	
4	Solvent resistance	Rub back and forth by MIBK soaked cotton , no any remarkable gloss loss on the film surface.	
5	Hardness	$> 2\text{H}$	
6	Adhesion	100/100	
7	Gloss	20-70	
8	Impact strength	$> 500\text{mm}$	500g $\times\Phi$ 1/2''
9	Ductile strength	$> 4\text{mm}$	
10	Salt spray test	$> 1000$ hours	Zinc phosphate pretreated cold rolled Steel

## *Cationic Epoxy Electrocoating*

### **6.Cleaning Procedure before the Initial Paint filling :**

(1)Compositions of cleaning liquid : (For 1 ton tank)

TC-515 surfactant	0.6%	6L
BCS	0.6%	6L
<u>D.I.H<sub>2</sub>O</u>	<u>98.8%</u>	<u>988L</u>
Total	100%	1000L

(2)Procedure :

- ①Remove the dirt and other substances of the bottom of ED tank .
- ②Circulation cleaning (full system) by means of D.I.H<sub>2</sub>O with addition of 0.6% TC-515 and BCS. Necessary time for circulation 12-24 h. Circulation has to include all relative facilities.
- ③Transportation of whole cleaning liquid to transfer tank. Circulation cleaning of transfer tank including all relative facilities.
- ④Flush out the pipes of ED tank by D.I.H<sub>2</sub>O with high pressure.
- ⑤Rinse the inside tank walls of ED tank by D.I.H<sub>2</sub>O.
- ⑥Circulation cleaning (full system) by means of D.I.H<sub>2</sub>O. Necessary time for circulation 12-24 h. Circulation has to include all relative facilities.

## Cationic Epoxy Electrocoating

### 7. Daily report of production check:

Item		standard	record	record	record
ED Bath	Temperature (°C)	26-30			
	Deposition voltage(V)	100-300			
	Deposition current	Depend on the surface area			
	Circulation /liquid level	normal			
Bath composition	Solids (%)	15-20			
	pH	5.6-6.0			
	Conductivity (μs/cm)	1050-1450			
	Solvent (wt %)	2.0-3.5			
UF system	temperature				
	pressure				
	flow rate				
anolyte	Conductivity (μs/cm)	1000-2000			
	pH	2.0-5.0			
filter	Pressure In/Out<1bar				
Heat exchanger	Temperature In/Out				
Replenishment D.I.H <sub>2</sub> O	pH	5.5-7.0			
	conductivity(μs/cm)	<10			
Circulating permeate rinse	Conductivity (μs/cm)	<50			
Replenishment amount	TE-8500				
	E-5411				
	solvent				
	Acetic acid				
	D.I. H <sub>2</sub> O				