Ford Motor Company

FORD LABORATORY TEST METHOD EU-AQ 002-01

CONTROL TESTS FOR ZINC PHOSPHATE COATING PROCESS

Application

These test methods are used where applicable to check the concentration of the solutions used in the phosphate coating process.

Solutions Required

See FLTM EU-AZ 2-1 for preparation of solutions and indicators.

Standard Sodium Hydroxide - 0.1 N	Reagent No. 1
Standard Hydrochloric Acid - 0.1 N	Reagent No. 4
Standard Potassium Permanganate - 0.1 N	Reagent No. 9
Standard Potassium Ferocyanide	Reagent No. 12
Standard Ferrous Sulphate Solution - 0.1 N	Reagent No. 10
Standard Sodium Thiosulphate Solution - 0.1 N	Reagent No. 14
Standard Potassium Dichromate Solution - 0.1 N	Reagent No. 15

Indicators

Phenolphthalein	Reagent No. 101
Brom Cresol Green	Reagent No. 108
Brom Phenol Blue	Reagent No. 109
Sodium Diphenylamine Sulphonate (Oxidized) 0.002 g tablets	Reagent No. 110
Iron Test Paper	Reagent No. 111
Starch Solution	Reagent No. 113
Orthophenanthroline	Reagent No. 114
Methyl Orange	Reagent No. 105

Apparatus

Gas Evolution Tube

Source: ICI Metal Pretreatment (Paint Division)
Wexham Road
Slough, Bucks

Date	Action	Revisions	
2001 01 31	Revised	Editorial – no technical change	A. Cockman
2000 04 19		Editorial – no technical change	A. Cockman
1994 02 28			

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Conditioning and Test Conditions

All test values indicated herein are based on material conditioned in a controlled atmosphere of 23 +/- 2 °C and 50 +/- 5 % relative humidity for not less than 24 h prior to testing and tested under the same conditions unless otherwise specified.

Procedure

Test A - Cleaner Control

Free Alkali

1. Pipette 10 mL of cleaner solution into a 150 mL Erlenmeyer flask.
2. Add 5 drops of phenolphthalein indicator.
3. Titrate with 0.1 N HCl until solution changes from pink to colourless.

   mL of 0.1 N HCl used = Free Alkali Value

Test A - Cleaner Control

Total Alkali

1. Pipette 10 mL of cleaner solution into a 150 mL Erlenmeyer flask.
2. Add 10 drops of brom cresol green or methyl orange indicator.
3. Titrate with 0.1 N HCl until colour changes from purple red to yellow or yellow to pink respectively.

   mL of 0.1 N HCl used = Total Alkali Value

Test B - Rinse Water Control

Total Alkali (after alkaline cleaning)

1. Pipette 50 mL of rinse water into a 250 mL Erlenmeyer flask.
2. Add 5 drops brom cresol green or methyl orange indicator.

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3. Titrate with 0.1 N HCl to colour change.

   mL of 0.1 HCl used = Total Alkali Value

   If solution turns yellow or red respectively after addition of indicator, this indicates that phosphate solution is getting into the rinse water, possibly through a misdirected nozzle. The solution is thus acid and should be tested according to the Total Acid method.

Total Acid (after phosphating)

1. Pipette 50 mL of rinse water into a 250 mL Erlenmeyer flask.

2. Add 5 drops phenolphthalein indicator.

3. Titrate with 0.1 N NaOH to pink colour.

   mL of 0.1 N NaOH = Total Acid Value

Test C - Phosphate Coating Control

Total Acid

1. Pipette 10 mL of phosphate solution into a 150 mL Erlenmeyer flask.

2. Add 5 drops of phenolphthalein indicator.

3. Titrate with 0.1 N NaOH to the development of a pink colour.

   mL of 0.1 N NaOH = Total Acid Value

Test C - Phosphate Coating Control

Free Acid

1. Pipette 10 mL of phosphate solution into a 150 mL Erlenmeyer flask.

2. Add 3 drops of brom phenol blue indicator.

3. Titrate with 0.1 N NaOH to a colour change from yellow to light blue.

   mL of 0.1 N NaOH used = Free Acid Value

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