

Paint, Adhesive

Amine of Electrodeposition Paint

Acid• base titration by
Automatic Potentiometric Titrator

Standard

1. Abstract

The amine of electrodeposition paint is measured by titration with 0.1mol/L Hydrochloric acid after Tetrahydrofuran (THF) is added to the test sample. The endpoint is the inflexion point on titration curve.

The amine value is calculated from titration volume of hydrochloric acid titrant.

2. Reference

- 1) “Experiment and Calculation for Quantitative Analysis - vol.2” by Seiji Takagi from Kyoritsu Publishing Company

3. Cautions in measurement

- 1) Handle with care when you work on chemicals.

4. Post-measurement care

After the electrode is rinsed with pure water, keep it dipped in a beaker filled with pure water in order to avoid its tip drying up.

5. Test equipment

Main unit : Automatic potentiometric titrator (Standard preamplifier: STD-)

Electrode : Option Glass electrode

Option Double Junction sleeve type reference electrode

Standard Temperature compensation electrode

6. Reagent

Titrant : 0.1mol/L Hydrochloric acid (f=1.00)

Additive : Tetrahydrofuran (THF)

7. Measurement procedure

—Measurement—

- 1) Sample 5g in a 100mL beaker.
- 2) Add 50mL THF.
- 3) Titrate with 0.1mol/L Hydrochloric acid to obtain amine number.

8. Formula

Amine value (mL/g) = EP1 / S

EP1 : Titration volume (mL)

S : Sample size (g)

9. Example of measurement

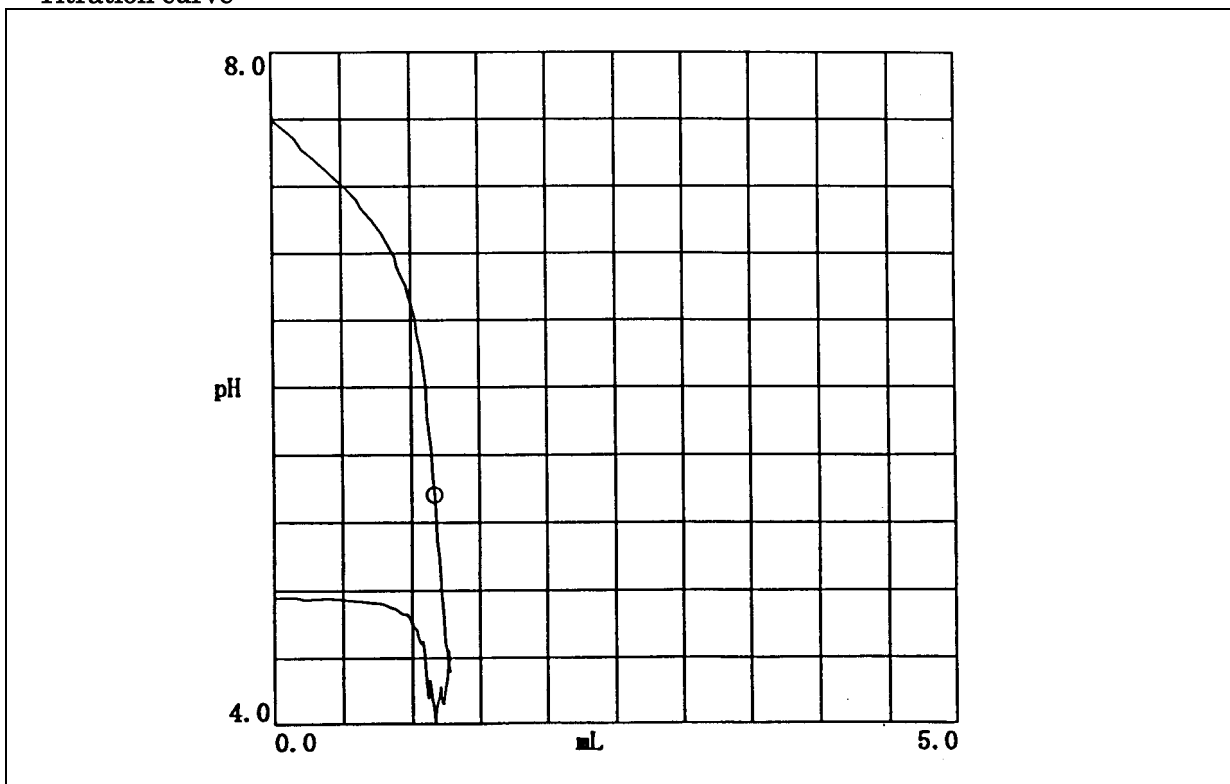
— Ambient condition —

Room temperature : 24 °C	Humidity : 85 %	Weather : Rainy
--------------------------	-----------------	-----------------

- Measurement parameter -

[Titration parameter]			
Titration mode	: Auto control	Titration form	: EP Stop
Reagent name	: HCl	Burette No.	: 1
Detector No.	: 1	Potential unit	: pH
Max. volume of titration	: 20.0mL	Wait time before titration	: 0s
Titration direction	: Auto		
[Control parameter]			
Number of EPs	: 1	Simulation	: Off
EP sense (Potential)	: 50.0	Data sampling potential	: 4.0mV
EP sense (Differential)	: 100.0	Data sampling volume	: 0.5mL
Over-titration	: 0.0mL	Separate potential setup	: Off
Gain	: 1		
Control speed	: 2.0		

- Titration curve -



(The above printout data were obtained from titration by AT-400WIN)

—Measurement results—

n	Sample (g)	Titration (mL)	Amine (mL/g)	Results of statistical calculation	
				Mean	SD
1	5.0036	1.2021	0.24025	0.24149 mL/g	0.00260 mL/g
2	5.0070	1.2004	0.23974	1.0751 %	
3	5.0092	1.2246	0.24447		

* The above results were obtained by 3 tests of the same sample.

10. Summary

The electrodeposition paint is an aqueous paint which is conductive electrically by itself. The material (metallic) to be coated by electricity is dipped in the paint to form coating film.

The test result shows a good repeatability with 1.08% relative standard deviation.

Precise and reliable measurement is assured by the automated potentiometric titration.