

KEM Application Note

No. EKCR-07273

Coulometric Karl-Fischer Titration

Kyoto Electronics Manufacturing Co., Ltd.

Data No. LA47-07251

Moisture of N-66 polymer

-Summary-

Checked the possibility of measuring moisture of N-66 polymer in combination of MKC-520 with ADP-511S, and good repeatability was obtained.

-Measuring instrument-

Main unit: MKC-520 Coulometric KF moisture titrator
Option: ADP-511S Evaporator
Electrode: M-713 Twin platinum electrode
#433-0006 Inner burette

-Reagent-

Anolyte: Coulomat AG
Catholyte: Coulomat CG
Carrier gas: Nitrogen

-Measurement method-

Preparation:

- (1) Fill the titration cell with the anolyte and inner burette with the catholyte.
- (2) Pretitrate for dehydration.
- (3) Connect MKC-520 with ADP-511S and set the nitrogen flow at 200mL/min and the evaporation temperature at 200°C.

Measurement:

- (1) Place 1g sample in the sample boat and measure for its moisture.

-Equation-

Moisture (ppm): $((\text{Data}-\text{Drift}\times\text{t}-\text{Blank})/(\text{Wt1}-\text{Wt2}))\times\text{F}$

Data : Measured water content (μg)

Drift : Drift before measurement (μg/s)

t : Measuring time(s)

Blank : Blank value (μg)

Wt1 : Tare including sample weight (g)

Wt2 : Tare including residual weight (g)

F : Factor (1.00)

-Standard method-

Karl Fischer method

-Ambient conditions-

Temperature: 25 °C R. Humidity: 61 % Weather: Rain

-Measurement parameter-

[Titration]

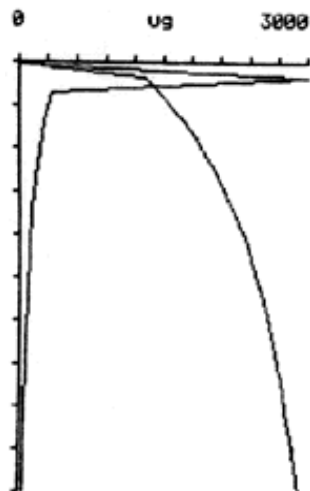
Method 4
 Titr. Cell No. 1
 t(stir) 300 s
 t(wait) 15 s
 t(max) 1800 s
 Drift Stop : Rel
 0.01 ug/s
 Cont. Gain 5.0
 Stable 0.1 ug/min
 Start : Manual
 Oven : ADP-
 Oven Temp 200 °C
 Pre Treat 2
 Back Purge 180 s
 Cell Purge 120 s

[Calculation]

Clac. No. 2
 Unit : ppm
 Weight : Variable
 Drift Comp. : Auto

[Data List]

Samp. Interval 60 s
 Display : Form2
 Print Meas. Data : On
 Print Graphic : Form2

-Printout data-

00:30:00

Result

Sample No. 03-01

Date 07/08/31 10:38

Titr. Cell No. 1

Wt1 1.0105 g

Wt2 0 g

Net 1.0105 g

Drift 0.11 µg/s

Result 2925.0 µg

2894.6 ppm

Titr. Time : 00 : 30 : 15

-Measurement results-

Run	Sample size (g)	Moisture (µg)	Concentration (ppm)	Statistics	
1	1.0105	2925.0	2894.6	Mean	2868.7 ppm
2	1.0123	2912.8	2878.0	SD	31.538 ppm
3	0.9847	2790.2	2833.6	RSD	1.0994 %

-Comments-

Compared with Karl Fisher Coulometry without a diaphragm. See the No. KCR-07272.