Application Note

Determination of moisture content in acrinol monohydrate

Industry	Pharmaceutical
Instrument	Karl Fischer moisture titrator
Measurement method	Volumetric titration/Direct method
Standards	The Japanese Pharmacopoeia

1. Scope

Measuring the moisture content in acrinol monohydrate using the Karl Fischer volumetric titration method is stipulated in the Japanese Pharmacopoeia. This Application Note describes an example of measuring the moisture content of this solution in accordance with the Japanese Pharmacopoeia.

2. Precautions

The method uses organic solvents, so place the Karl Fischer moisture titrator inside fume food.

3. Post-measurement procedure

Drain the dehydrating agent, and then clean the titration flask and twin platinum electrode using methanol.
If the burette is left filled with titrant, crystals will be deposited in the tip of the titration nozzle, clogging the discharge outlet. When the burette is not used for an extended period, drain the titrant from the burette, and clean the burette, titration nozzle, and the piping by flushing them with methanol. When not in use it for a short period, store the burette filled with titrant, and the titration nozzle immersed in methanol. This will prevent the discharge outlet from clogging.

4. Apparatus

Main unit	Karl Fischer moisture titrator (Volumetric titration)
Electrodes	Twin platinum electrode
Sampler	Finger shaped sampler (Available as an option)

5. Reagents

Dehydrating agent	KEM AQUA Solvent MET for general
Titrant	KEM AQUA Titrant TR-3

6. Procedure

- Preparation -

1) Add approximately 50 mL of the dehydrating agent to a titration flask.
2) Perform pre-titration, and remove the water from within the titration cell.

- Measurement -

1) Introduce approximately 0.2 g of the sample into the finger shaped sampler, and weigh it.
2) Open the side plug, and load the sample.
3) Attach the side plug, and start the measurement.
4) Weigh the finger shaped sampler. The difference in the weight of the sampler before and after the sample is loaded is the weight of the sample.

7. Calculation

Moisture (%) = ((Data × TF – Drift × T – Blank) / (Wt1 - Wt2)) × 0.1

Data	Titer (mL)
TF	Factor of titrant (2.8187 mg/mL)*
Drift	Drift value (mg/s)
T	Measurement time (s)
Blank	Blank test value (0 mg)
Wt1	Weight of the sampler before loading the sample (g)
Wt2	Weight of the sampler after loading the sample (g)

* To standardize the titrant, a standard substance (KEM AQUA Water Standard 10) with a known moisture concentration was used. This reagent contains approximately 10 mg of moisture per 1 gram. Using this rather than pure water has the advantage of reducing human error when measuring the mass and when adding the sample to the cell.

8. Example of measurement

— Titration parameter —

＜Titr.Para＞

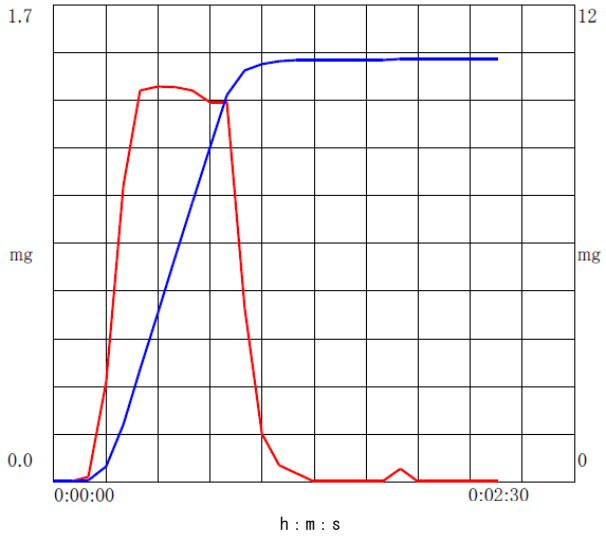
Titration mode	Normal
t(stir)	0s
t(wait)	0s
t(max)	0s
t(interval)	0s
Max. Volume	10.0mL
Dose mode	Off

＜Ctrl.Para＞

End Time	30s
Final vol.	0.01mL
Titr. speed	3
Detect. mode	1
Drift titr.	On
Start mode	Manual
End level	75mV
Data sampling time	5s
Stirrer speed	4

(The above condition is an example. The setting condition depends on the model.)

— Example of Titration curve —



— Measurement results —

Table1 Results of moisture measurement of acrinol monohydrate

	Sample (g)	Titration (mL)	Moisture (mg)	Concentration of water content (%)
1	0.2052	3.780	10.6547	5.19
2	0.2058	3.785	10.6688	5.18
3	0.2029	3.760	10.5983	5.22
Mean	-	-	-	5.20
SD	-	-	-	0.02
RSD (%)	-	-	-	0.40