Water in Acetyl salicylic acid

Karl Fischer application

Product group

Carboxylic acids, Pharmaceuticals

General Information concerning the product group

Carboxylic acids

Most carboxylic acids can be analysed relatively easily following standard KF titration methods. Due to their weakly acidic properties they exhibit only a slight effect on the pH of the KF solution. Only the stronger acids require neutralisation or buffering of the solvent prior to measuring. This is achieved by the use of organic amines.
In some cases esterification with methanol results in the formation of water. This potential interference should especially be taken into account with coulometric determination.
In the event of solubility problems solubilisers may be added. With some substances, only the adherent moisture can be determined by volumetric titration, or alternatively KF oven technology may be employed.

Pharmaceuticals

Pharmaceutical products are often characterized by complex formulations. Difficulties observed during Karl Fischer determination are often caused by the limited solubility. In some cases side reactions have to be considered. In dependance of composition and properties of the formulations, various measures are necessary for an undisturbed Karl Fischer determination.
In pharmaceutical guidelines (USP, Ph Eur, DAB) the Karl Fischer titration is described as common method for water determination. For some substances special procedures can be found. The determination of mass loss as method for water determination is not recommended.

Special Information concerning the sample and the methods

Acetyl salicylic acid does not cause any significant side reactions in the Karl Fischer solution. Since it dissolves relatively slowly in alcohols, a longer stirring time is necessary. The sample has to be pulverized carefully.Coulometry is only recommended after external extraction of the sample or in combination with the KF oven technique.

Titration one component system

Reagents

Titrant:	Aquastar - CombiTitrant 5	188005	
	One component reagent for volumetric Karl Fischer titration, 1 mL = approx. 5 mg water		
or	Aquastar - CombiTitrant 2	188002	
	One component reagent for volumetric Karl Fischer titration, 1 mL = approx. 2 mg water		
Solvent:	Aquastar - CombiSolvent	188008	50 mL
	Methanol-free solvent for volumetric Karl Fischer titration with one component reagents		
or	Aquastar - CombiMethanol	188009	50 mL
	Solvent for volumetric Karl Fischer titration with one component reagents, max. 0.01 % water		

Titration parameters
Stirring time: 3 - 5 min
Default titration settings, e.g.:
I(pol) = 20 - 50 µA, U(EP) = 100 - 250 mV
Stop criterion: drift < 20 µL/min

Sample size
0.2 - 0.5 g

Procedure
The titration medium is first placed into the cell and titrated dry by means of the titrant. Then the sample is added from a weighing boat (exact sample weight determination by weighing of weighing boat before and after addition) and the titration is started. For dissolution of the sample a stirring time of 3 - 5 min is recommended.

Titration two component system

Reagents

Titrant:	Aquastar - Titrant 5	188010	
	Titrant for volumetric titration with two component reagents, 1 mL = approx. 5 mg water		
or	Aquastar - Titrant 2	188011	
	Titrant for volumetric titration with two component reagents, 1 mL = approx. 2 mg water		
Solvent:	Aquastar - Solvent	188015	50 mL
	Solvent for volumetric titration with two component reagents		

Titration parameters
Stirring time: 3 - 5 min
Default titration settings, e.g.:
I(pol) = 20 - 50 µA, U(EP) = 100 - 250 mV
Stop criterion: drift < 20 µL/min

Sample size
0.2 - 0.5 g

Procedure
The titration medium is first placed into the cell and titrated dry by means of the titrant. Then the sample is added from a weighing boat (exact sample weight determination by weighing of weighing boat before and after addition) and the titration is started. For dissolution of the sample a stirring time of 3 - 5 min is recommended.

Application

Ordering Information

Product	Catalog No.
CombiTtitrant 2 one component reagent for volumetric Karl Fischer titration 1 ml ca. 2 mg H2O Aquastar®	188002
CombiTitrant 5 one-component reagent for volumetric Karl Fischer titration 1 ml □ ca. 5 mg H2O Aquastar®	188005
CombiSolvent methanol-free solvent for volumetric Karl Fischer titration with one component reagents Aquastar®	188008
CombiMethanol Solvent for volumetric Karl Fischer titration with one component reagents max. 0.01% H2O Aquastar®	188009
Titrant 5 titrant for volumetric Karl Fischer titration with two component reagents 1 ml □ ca. 5 mg H2O Aquastar®	188010
Titrant 2 titrant for volumetric Karl Fischer titration with two component reagents 1 ml □ ca. 2 mg H2O Aquastar®	188011
Solvent solvent for volumetric Karl Fischer titration with two component reagents Aquastar®	188015