

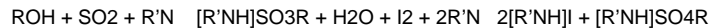
KF

Principle

Karl Fischer titration is a widely used analytical method for quantifying water content in a variety of products.

The fundamental principle behind it is based on the Bunsen Reaction between iodine and sulfur dioxide in an aqueous medium.

Karl Fischer Reaction:



The alcohol reacts with sulfur dioxide (SO₂) and a base to form an intermediate alkylsulfite salt, which is then oxidized by iodine to an alkylsulfate salt.

This oxidation reaction consumes water.



Water and iodine are consumed in a 1:1 ratio in the above reaction. Once all of the water present is consumed, the presence of excess iodine is detected voltametrically by the titrator's indicator electrode.

The amount of water present in the sample is calculated based on the amount of iodine consumed in the titration.

Capabilities

- 1) Coulometric KFT in coulometric Karl Fischer: iodine is generated in situ during the titration. Water is quantified on the basis of the total charge passed (Q), as measured by current and time. Coulometry is best suited for determination of water content in the range of 10 ppm to 5%.
- 2) Oven combined with Coulometric KFT: the sample is heated in an oven to free water contained to be titrated by coulometric KFT. The oven method is best suited for solids or incompatible samples and also for polymers in the range of 200 ppm to many percents.

Assets

	Asset	Details
	Mettler Toledo C30	Coulometric Karl Fischer Titrators
	Mettler Toledo KF-oven sample changer Stromboli	The samples are automatically transferred into a temperature controlled oven from where the evaporated water is transferred to the titration cell via an applied gas flow

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