

Cat. No.	Product Name	Specification	Pack Size
K118817	One-component Karl Fischer reagent by volumetric method (for aldehydes and ketones)	Solvent for Titration	500mL
K498346	Volumetric Karl Fischer reagent (for aldehydes and ketones)	F≥4.5-5mgH <sub>2</sub> O/mL, Pyridine free	500mL
K293400	Volumetric Karl Fischer reagent (for aldehydes and ketones)	F≥3mgH <sub>2</sub> O/mL, Pyridine free	500mL
K293393	Volumetric Karl Fischer reagent (for aldehydes and ketones)	F≥5mgH <sub>2</sub> O/mL, Pyridine free	500mL
K293870	Volumetric Karl Fischer reagent (for aldehydes and ketones)	F≥5mgH <sub>2</sub> O/mL, Pyridine free	A:500mL+ B:500mL
K293881	Volumetric Karl Fischer reagent (for aldehydes and ketones)	F≥3mgH <sub>2</sub> O/mL, Pyridine free	A:500mL+ B:500mL
K116410	One-component Karl Fischer reagent by volumetric method (for aldehydes and ketones)	5mgH <sub>2</sub> O/mL, Sample with higher water content	500mL
K141401	One-component Karl Fischer reagent by volumetric method (for aldehydes and ketones)	3.5mgH <sub>2</sub> O/mL, Sample with lower water content	500mL
K116412	One-component Karl Fischer reagent by volumetric method (for aldehydes and ketones)	1mgH <sub>2</sub> O/mL, Sample with micro water content	500mL

## » Coulomb Method

- Coulometric Karl Fischer titration with a diaphragm

A diaphragm electrolytic tank is suitable for the determination of very low water content of the sample (<50ug water/sample), precision requirements of the sample, nitro compounds, and unsaturated hydrocarbons, especially easy-to-be-reduced samples.

Cat. No.	Product Name	Specification	Pack Size
K293480	Karl Fischer reagent for coulomb method (with diaphragm)	Aldehyde ketone special	500mL
K293486	Karl Fischer reagent for coulomb method (with diaphragm)	Guanidine salt, diol, mixed electrolyte special	500mL
K293428	Karl Fischer reagent for coulomb method (with diaphragm)	1.5gH <sub>2</sub> O/100mL, for anode, pyridine free	250mL, 500mL
K293454	Karl Fischer reagent for coulomb method (with diaphragm)	1.5gH <sub>2</sub> O/100mL, for cathode, pyridine free	5mL, 10×5mL
C498206	Karl Fischer reagent for coulomb method (with diaphragm)	For cathode, pyridine free	5mL, 10×5mL
K116425	Karl Fischer reagent for coulomb method (with diaphragm)	Used as a diaphragm electrolyte, cathode, pyridine free	5mL
K116420	Karl Fischer reagent for coulomb method (with diaphragm)	For use as a diaphragm electrolyte, anode, general purpose	500mL

Cat. No.	Product Name	Specification	Pack Size
K119809	Karl Fischer reagent for coulomb method (with diaphragm)	Used as a diaphragm electrolyte, cathode, general purpose	5mL

- Coulometric Karl Fischer titration without a diaphragm

No diaphragm electrolytic cell suitable for the determination of hydrocarbons- chlorinated hydrocarbons, alcohol-phenols (most), esters - diethyl ethers, ketones (with special reagents) - acetamide, ethers and fragrances - edible oils, petroleum.

Cat. No.	Product Name	Specification	Pack Size
K293422	Karl Fischer reagent for coulomb method (without diaphragm)	1.5gH <sub>2</sub> O/100mL, universal cathode and anode, containing pyridine	125mL 250mL 500mL
K116422	Karl Fischer reagent for coulomb method (with or without diaphragm)	Used as an electrolyte with or without diaphragm, pyridine free, universal type	500mL
K293468	Karl Fischer reagent for coulomb method (with or without diaphragm)	1.2gH <sub>2</sub> O/100mL, for anode, pyridine free	250mL 500mL
K293475	Karl Fischer reagent for coulomb method (with or without diaphragm)	1.2gH <sub>2</sub> O/100mL, for cathode, pyridine free	5mL 10×5mL
K293502	Karl Fischer reagent for coulomb method (alcohol containing)	Cathode and anode solution is universal, pyridine free	500mL
K116419	Karl Fischer reagent for coulomb method	Used as an electrolyte	250mL
K293497	Karl Fischer reagent for coulomb method	Ethylene glycol amine, card furnace special	500mL

For more products, please visit our official website: <https://www.aladdinsci.com>



# A Complete Guide to Karl Fischer Reagents

Maximizing Accuracy in Moisture Analysis

aladdin®



The Karl Fischer method is a common method used to test moisture. Because of its rapid and accurate characteristics, it is widely used in the water detection of samples in different fields.

## Principle

- $\text{CH}_3\text{OH} + \text{SO}_2 + \text{RN} \rightarrow [\text{RNH}]\text{SO}_3\text{CH}_3$
- $\text{H}_2\text{O} + \text{I}_2 + [\text{RNH}]\text{SO}_4\text{CH}_3 + 2\text{RN} \rightarrow [\text{RNH}]\text{SOCH} + 2[\text{RNH}]\text{I}$ , (RN = organic base)

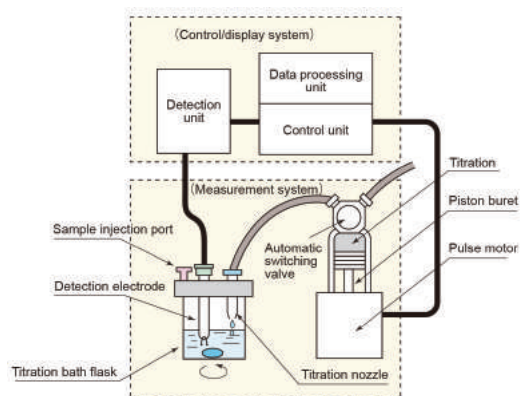
## Classification

The Karl Fischer hydrometry can be divided into coulomb and volumetric methods, depending on how iodine is produced.

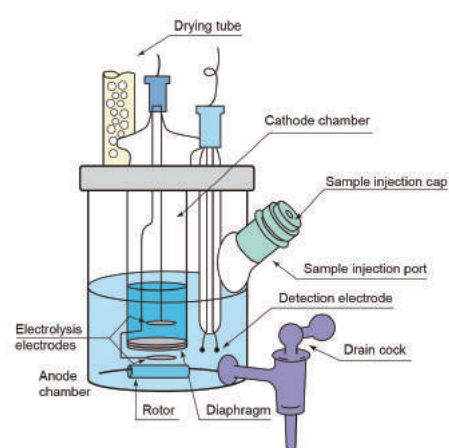
### » Volumetric Method

The Karl Fischer reagent for the volumetric method can be divided into single-component and two-component Karl Fischer reagents. The single-component Karl Fischer reagent is simple and cheap, but the titration stability is poor, and the titration speed is slow.

The two-component Karl Fischer reagent can make the titration speed two to three times faster than the original, and the titration agent and solvent are very stable when stored, but the solvent dissolution ability is limited.



### « Coulomb Method



Iodine in the Coulomb process is produced by the electrolysis of an anode electrolyte containing iodine ions. According to Faraday's law, the amount of iodine produced is proportional to the amount of electricity passed, so the total amount of water can be determined by measuring the total amount of electricity consumed. Compared with the volumetric method, the coulomb method is easy to operate, especially suitable for some volatile and unstable titrators, and has higher accuracy and precision.

## List of Aladdin Karl Fischer Reagent Products

### » Volumetric Method

- One-component Karl Fischer Reagent

Titration contains iodine, sulfur dioxide, and imidazole, dissolved in an alcohol solution. The solvent is methanol. Of these, 5mg/mL is suitable for samples with water content between 1000 ppm and 100%, 2mg/mL for samples with water content less than 1000 ppm, and 1mg/mL for samples with water content less than 200 ppm.

Cat. No.	Product Name	Specification	Pack Size
K116413	Volumetric Karl Fischer titrant (one component)	3-5mgH <sub>2</sub> O/mL, Sample with high water content	500mL
K116414	Volumetric Karl Fischer titrant (one component)	2mgH <sub>2</sub> O/mL, Sample with low water content	500mL
K116415	Volumetric Karl Fischer titrant (one component)	1mgH <sub>2</sub> O/mL, Sample with micro water content	500mL
K118706	Volumetric Karl Fischer titrant (one component)	5mgH <sub>2</sub> O/mL, Sample with higher water content	500mL
K163025	Volumetric Karl Fischer titrant (one component)	3-5mgH <sub>2</sub> O/mL, Sample with higher water content	500mL
K118707	Volumetric Karl Fischer titrant (one component)	2mgH <sub>2</sub> O/mL, Sample with lower water content	500mL
K118708	Volumetric Karl Fischer titrant (one component)	1-2mgH <sub>2</sub> O/mL, Sample with micro water content	500mL
K492606	Volumetric Karl Fischer titrant (one component)	3-5mgH <sub>2</sub> O/mL, Sample with regular water content	500mL
K293224	Karl Fischer reagent by volumetric method (one component)	Pyridine free, F≥5mgH <sub>2</sub> O/mL	500mL
K293196	Karl Fischer reagent by volumetric method (one component)	Pyridine free, F≥3mgH <sub>2</sub> O/mL, ethanol	500mL
K293222	Karl Fischer reagent by volumetric method (one component)	Pyridine free, F≥5mgH <sub>2</sub> O/mL, ethanol	500mL
K116416	Solvent for Karl Fischer titration by volumetric method (one component)	water contents≤0.01%, Used as a reaction medium	500mL
K118709	Solvent for Karl Fischer titration by volumetric method (one component)	water contents≤0.01%, Used as a reaction medium	500mL

- Two-component Karl Fischer Reagent

The titration agent contains iodine and methanol. The solvent contains sulfur dioxide, imidazole, and methanol. Of these, 5mg/mL is suitable for samples with water content between 1000 ppm and 100%; 2mg/mL is suitable for samples with less than 1000 ppm water content and 1mg/mL is suitable for samples with less than 200 ppm water content.

Cat. No.	Product Name	Specification	Pack Size
K293862	Karl Fischer reagent by volumetric method (two-component)	F≥5mgH <sub>2</sub> O/mL, Pyridine free	A:500mL+ B:500mL
K293853	Karl Fischer reagent by volumetric method (two-component)	F≥3mgH <sub>2</sub> O/mL, Pyridine free	A:500mL+ B:500mL
K293836	Karl Fischer reagent by volumetric method (two-component)	F≥2mgH <sub>2</sub> O/mL, Pyridine free	A:500mL+ B:500mL
K293231	Karl Fischer reagent by volumetric method (two-component)	F≥1mgH <sub>2</sub> O/mL, Pyridine free	A:500mL+ B:500mL
K573417	Karl Fischer reagent by volumetric method (two-component)	F≥3mgH <sub>2</sub> O/mL, Sample with regular water content, Solution A	500mL
K573419	Karl Fischer reagent by volumetric method (two-component)	F≥3mgH <sub>2</sub> O/1mL, Sample with regular water content, Solution B	500mL
K123001	Karl Fischer reagent by volumetric method (two-component)	5mgH <sub>2</sub> O/mL, Sample with higher water content, Solution B	500mL
K301080	Karl Fischer reagent by volumetric method (two-component)	3mgH <sub>2</sub> O/mL, Sample with lower water content, Solution B	500mL
K123003	Karl Fischer reagent by volumetric method (two-component)	2mgH <sub>2</sub> O/mL, Sample with lower water content, Solution B	500mL
K123005	Karl Fischer reagent by volumetric method (two-component)	1mgH <sub>2</sub> O/mL, Sample with lower water content, Solution B	500mL
K123000	Karl Fischer reagent by volumetric method (two-component)	5mgH <sub>2</sub> O/mL, Sample with higher water content, Solution A	500mL
K301079	Karl Fischer reagent by volumetric method (two-component)	3mgH <sub>2</sub> O/mL, Sample with lower water content, Solution A	500mL
K123002	Karl Fischer reagent by volumetric method (two-component)	2mgH <sub>2</sub> O/mL, Sample with lower water content, Solution A	500mL
K123004	Karl Fischer reagent by volumetric method (two-component)	1mgH <sub>2</sub> O/mL, Sample with lower water content, Solution A	500mL
K119434	Karl Fischer reagent by volumetric method (two-component)	3mgH <sub>2</sub> O/1mL, Sample with lower water content, Solution B, Pyridine	500mL
K112828	Karl Fischer reagent by volumetric method (two-component)	3mgH <sub>2</sub> O/1mL, Sample with regular water content, Solution A, Pyridine	500mL

- Karl Fischer Reagent for Aldehydes and Ketones

Aldehydes (R-CHO) and ketones (R-CO-R) react with the usual methanol-containing reagents to form acetals and ketones. The water produced in the reaction is titrated at the same time, resulting in an increase in water content or even loss of the endpoint. Aldehydes and ketones do not contain methanol and can be used to titrate samples containing aldehydes and ketones.