

Karl Fischer Reagents

HydroSpec®

RICCA Chemical Company offers a full line of Karl Fischer Reagents for Moisture Analysis. Our product line includes both Coulometric and Volumetric Reagents, all formulated for high performance and reliable results. Our Reagents support a wide range of samples types from Ethanol and Fuels to Fats and Oils and General Organic Chemicals. Volumetric Reagents are available for both one- and two-component titrations, and also include solvents compatible with a variety of sample types. Coulometric Reagents are available for titration cells with or without a diaphragm. Specialized Reagents are designed to better analyze samples insoluble in Methanol to ensure fast, reliable, and reproducible results. Ricca also offers a full line of NIST Traceable Water Standards to monitor instrument performance.



Have Confidence in Your Analyses

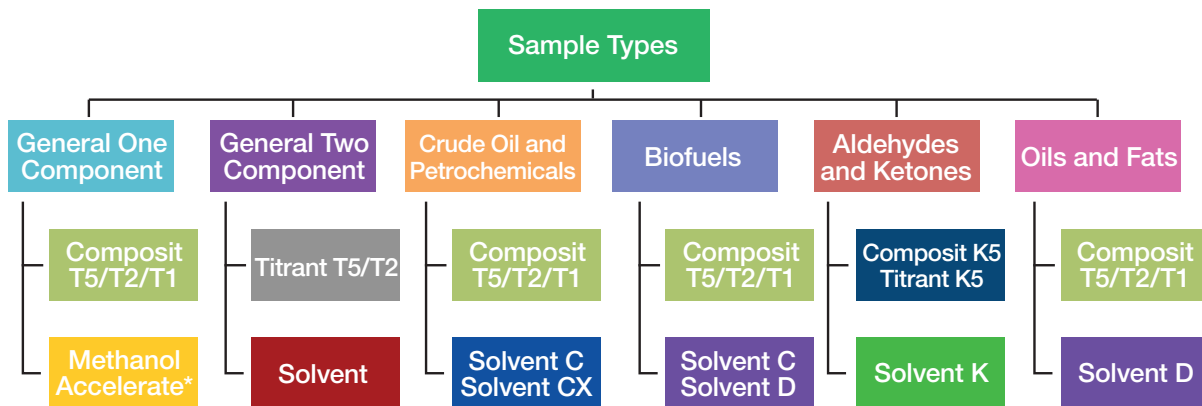
- Reliable, safe, pyridine-free Karl Fischer Reagents
- Reagents available in 500 mL and 1 L Sizes
- 1 L Bottles have the Industry Standard GL45 Neck Finish for Convenient Connection
- Stable Formulations and Comprehensive Chemical Compatibility
- 5 Year Shelf Life for Most Reagents
- Technical Support Every Step of the Way
- Tight Specifications for More Accurate Results and Low Lot-to-Lot Variability
- Serving Scientists Successfully for Over 45 Years
- Samples Available to Try Before You Buy*
- **Contact us today for your FREE Sample or see page 7 for our easy Sample Request Form!**
1-888-GO-RICCA or customerservice@riccachemical.com



*Sample Size is 220 mL

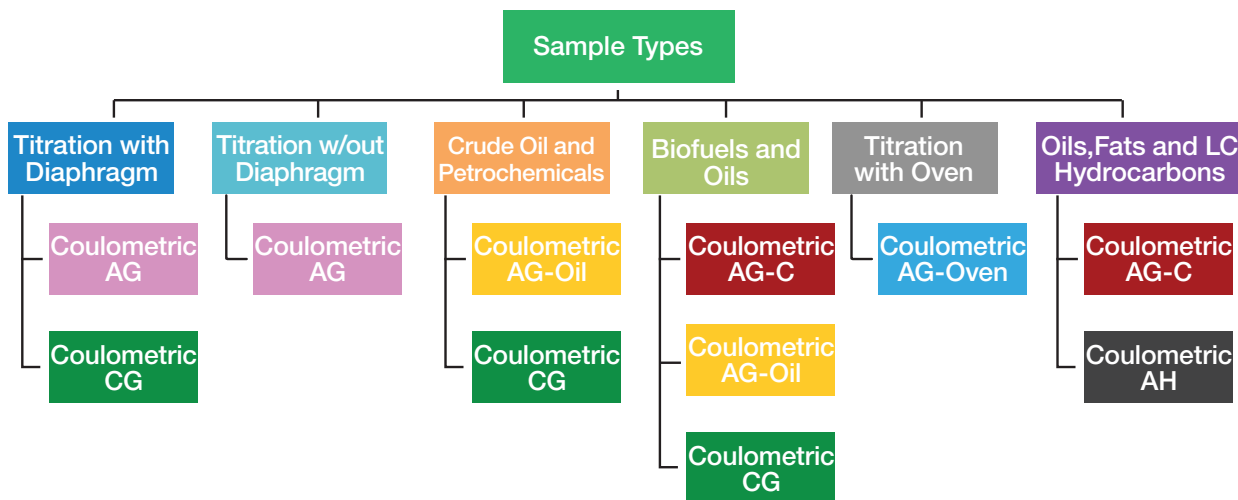
 **fisher scientific**
part of Thermo Fisher Scientific

Volumetric determination of water content is performed with either a One Component or Two Component Titration. In One Component Titrations, all the necessary reactants are present in a single reagent. For Two Component Titrations, the process uses two solutions - a solvent and a titrant in which Iodine is present. In either titration, the sample will be dissolved in the solvent contained in the titration cell before the test begins. The titrant is then added by a dosing pump. The amount of water present in the sample is then calculated based upon the volume of titrant needed to complete the reaction. RICCA's HydroSpec® Line of Reagents for Volumetric Titrations includes products for One and Two Component Titrations as well as specialty formulas created for specific sample types.



*Add to titration cell to accelerate the reaction and increase end point precision

Coulometric Titrations measure water content by generating free Iodine with an electrochemical current. The amount of current used to complete the titration is then used to determine water content. This test is performed one of two ways: In a cell with a diaphragm or without a diaphragm. Titrations with a diaphragm require two reagents: an anolyte solution for the anodic chamber and a catholyte solution for the cathodic chamber. Titrations without a diaphragm only use one reagent, an anolyte solution, as the cathodic chamber of the cell is designed not to need a reagent. RICCA's HydroSpec® Line of Reagents for Coulometric Titrations covers both cell types; HydroSpec® Coulometric AG and HydroSpec® Coulometric AH are versatile and can be used with or without a diaphragm.



Choosing the Best Reagents for Your Karl Fischer Titration:

Coulometric	
HydroSpec Coulometric AG	Most commonly used KF reagent for general purpose coulometric titrations. Can be used in titration cells with or without a diaphragm.
HydroSpec Coulometric AH	For samples that contain hydrocarbons.
HydroSpec Coulometric CG	Catholyte Solution
HydroSpec Coulometric AG-C	For samples that are poorly soluble in methanol and require the addition of chloroform. Typically used to analyze fuel.
HydroSpec Coulometric AG Oil	For samples insoluble in Methanol and the addition of chloroform is insufficient to properly dissolve sample. Typically used to analyze crude oil or heavy hydrocarbons.
HydroSpec Coulometric AG-Oven	For samples that have poor solubility in methanol or other commonly used solvents. Formulated for KF titration using oven.

Volumetric	
HydroSpec Composit T5	Most commonly used KF reagent for one-component volumetric titrations
HydroSpec Composit T1	Reagent for one-component Volumetric Titration and has a titer between 0.9 and 1.2mg/mL. For use with samples that have a low moisture content.
HydroSpec Composit T2	Reagent for one- component Volumetric Titration and has a titer between 1.8 and 2.3mg/mL. For use with samples that have a lower moisture content.
HydroSpec Composit K5	Reagent for one-component Volumetric Titration for samples containing Ketones and Aldehydes.
HydroSpec Titrant T5	Reagent for two-component Volumetric Titration and has titer between 4.8 and 5.3 mg/mL.
HydroSpec Titrant T2	Reagent for two-component Volumetric Titration and has titer between 1.8 and 2.3 mg/mL.
HydroSpec Titrant K5	Reagent for two-component Volumetric Titration for ketone and aldehydes.
HydroSpec Titrant K2	Reagent for two-component Volumetric Titration for ketone and aldehydes with lower moisture content.

Specialized Solvents	
HydroSpec Methanol Accelerate Medium	For use in one-component volumetric titrations. Increases reaction speed as compared to pure methanol
HydroSpec Solvent D	For samples containing Oils, Fats, and Hydrocarbons
HydroSpec Solvent CX	For use in one or two component Volumetric Titrations with samples that are poorly soluble in methanol and requires Chloroform and Xylene. Typically used for samples containing fuel, crude oil or heavy hydrocarbons.
HydroSpec Solvent C	For use in one or two component Volumetric Titrations with samples that are poorly soluble in methanol and requires the addition of Chloroform
HydroSpec Solvent K	Working medium for one or two component Volumetric Titrations for samples containing Aldehydes and Ketones
HydroSpec Solvent	General Purpose working medium for two-component Volumetric Titration for samples that are soluble in methanol.
HydroSpec Acid Buffer	Maintains proper pH of the reaction for samples of strong acid.
HydroSpec Base Buffer	Maintains proper pH of the reaction for samples of strong base.

Coulometric Reagents

RK1000001C	Coulometric AG General Purpose Analyte Solution for Cells With or Without Diaphragm	1 L
RK100000500	Coulometric AG General Purpose Analyte Solution for Cells With or Without Diaphragm	500 mL
RK10000061C	Coulometric AG General Purpose Analyte Solution for Cells With or Without Diaphragm	6 x 1L
RK100000650	Coulometric AG General Purpose Analyte Solution for Cells With or Without Diaphragm	6 x 500mL
RK1200001C	Coulometric AH Analyte Solution for Titration of Long-chain Hydrocarbons in Cells With or Without Diaphragm	1 L
RK120000500	Coulometric AH Analyte Solution for Titration of Long-chain Hydrocarbons in Cells With or Without Diaphragm	500 mL
RK12000061C	Coulometric AH Analyte Solution for Titration of Long-chain Hydrocarbons in Cells With or Without Diaphragm	6 x 1L
RK120000650	Coulometric AH Analyte Solution for Titration of Long-chain Hydrocarbons in Cells With or Without Diaphragm	6 x 500mL
RK130000110	Coulometric CG Catholyte Solution for Cells with a Diaphragm	110 mL
RK130000611	Coulometric CG Catholyte Solution for Cells with a Diaphragm	6 x 110 mL
RK1400001C	Coulometric AG Oven Analyte Solution for Titration with an Oven	1 L
RK140000500	Coulometric AG Oven Analyte Solution for Titration with an Oven	500 mL
RK14000061C	Coulometric AG Oven Analyte Solution for Titration with an Oven	6 x 1L
RK140000650	Coulometric AG Oven Analyte Solution for Titration with an Oven	6 x 500mL
RK1500001C	Coulometric AG-C Analyte Solution with Chloroform for Cells With or Without Diaphragm	1 L
RK150000500	Coulometric AG-C Analyte Solution with Chloroform for Cells With or Without Diaphragm	500 mL
RK15000061C	Coulometric AG-C Analyte Solution with Chloroform for Cells With or Without Diaphragm	6 x 1L
RK150000650	Coulometric AG-C Analyte Solution with Chloroform for Cells With or Without Diaphragm	6 x 500mL
RK1600001C	Coulometric AG Oil Analyte Solution for Samples Insoluble in Methanol for Cells With or Without Diaphragm	1 L
RK160000500	Coulometric AG Oil Analyte Solution for Samples Insoluble in Methanol for Cells With or Without Diaphragm	500 mL
RK16000061C	Coulometric AG Oil Analyte Solution for Samples Insoluble in Methanol for Cells With or Without Diaphragm	6 x 1L
RK160000650	Coulometric AG Oil Analyte Solution for Samples Insoluble in Methanol for Cells With or Without Diaphragm	6 x 500mL

Buffers

Moisture determination of some samples, such as strong acids or bases, require the addition of an additional buffer to maintain the optimum pH range of 5 -8 during the Karl Fischer Titration. Ricca offers two ready-to-use buffer solutions for use in Karl Fischer titrations: our HydroSpec® Acid Buffer solution for strong acids and HydroSpec® Base Buffer solution for strong bases.

RK5000001C	Acid Buffer, for titrating strong acids with Volumetric Solutions	1 L
RK50000061C	Acid Buffer, for titrating strong acids with Volumetric Solutions	6 x 1L
RK5100001C	Base Buffer, for titrating strong bases with Volumetric and Coulometric Solutions	1 L
RK510000061C	Base Buffer, for titrating strong bases with Volumetric and Coulometric Solutions	6 x 1L

Volumetric Reagents

RK2000001C	Composit T5 For General Use One Component Volumetric Titrations	1 L
RK200000500	Composit T5 For General Use One Component Volumetric Titrations	500 mL
RK20000061C	Composit T5 For General Use One Component Volumetric Titrations	6 x 1L
RK200000650	Composit T5 For General Use One Component Volumetric Titrations	6 x 500mL
RK2100001C	Composit T2 For One Component Volumetric Titrations with Lower Moisture Content	1 L
RK210000500	Composit T2 For One Component Volumetric Titrations with Lower Moisture Content	500 mL
RK21000061C	Composit T2 For One Component Volumetric Titrations with Lower Moisture Content	6 x 1L
RK210000650	Composit T2 For One Component Volumetric Titrations with Lower Moisture Content	6 x 500mL
RK2200001C	Composit K5 For One Component Volumetric Titrations of Aldehydes and Ketones	1 L
RK220000500	Composit K5 For One Component Volumetric Titrations of Aldehydes and Ketones	500 mL
RK22000061C	Composit K5 For One Component Volumetric Titrations of Aldehydes and Ketones	6 x 1L
RK220000650	Composit K5 For One Component Volumetric Titrations of Aldehydes and Ketones	6 x 500mL
RK2300001C	Titrant T5 For General Use Two Component Volumetric Titrations	1 L
RK230000500	Titrant T5 For General Use Two Component Volumetric Titrations	500 mL
RK23000061C	Titrant T5 For General Use Two Component Volumetric Titrations	6 x 1L
RK230000650	Titrant T5 For General Use Two Component Volumetric Titrations	6 x 500mL
RK2400001C	Composit T1 For One Component Volumetric Titrations with Low Moisture Content	1 L
RK240000500	Composit T1 For One Component Volumetric Titrations with Low Moisture Content	500 mL
RK24000061C	Composit T1 For One Component Volumetric Titrations with Low Moisture Content	6 x 1L
RK240000650	Composit T1 For One Component Volumetric Titrations with Low Moisture Content	6 x 500mL
RK2500001C	Titrant T2 For Two Component Volumetric Titrations with Lower Moisture Content	1 L
RK250000500	Titrant T2 For Two Component Volumetric Titrations with Lower Moisture Content	500 mL
RK25000061C	Titrant T2 For Two Component Volumetric Titrations with Lower Moisture Content	6 x 1L
RK250000650	Titrant T2 For Two Component Volumetric Titrations with Lower Moisture Content	6 x 500mL
K2700001C	Titrant K5 For Two Component Volumetric Titrations of Aldehydes and Ketones	1 L
K2700006x1C	Titrant K5 For Two Component Volumetric Titrations of Aldehydes and Ketones	6 x 1 L



Water Standards

Ricca offers a full line of NIST Traceable Water Standards for Karl Fischer Titrations. Typically, the high range standard, 10.0mg/g is used for standardization of Volumetric Karl Fischer Titrants. The other lower range water standards 1.0mg/g and 0.1mg/g, are used with Coulometric Karl Fischer Titrators to monitor instrument performance. You can see a breakdown of the water standards as follows:

- “10.0” contains 10.0mg (10,000 micro grams) of H₂O per gram of solution (1g = 1mL)
- “1.0” contains 1.0mg (1,000 micro grams) of H₂O per gram of solution(1g = 1mL)
- “0.1” contains 0.1mg (100 micro grams) of H₂O per gram of solution (1g = 1.16mL*)

K410000105R	Water Standard 0.10 mg/g Standard for Coulometric Karl Fischer Titration	10 x 5 mL
K420000105R	Water Standard 1.00 mg/g Standard for Coulometric Karl Fischer Titration	10 x 5 mL
K430000105R	Water Standard 10.0 mg/g Standard for Volumetric Karl Fischer Titration	10 x 5 mL

Specialized Solvents

RK3000001C	Methanol Accelerate Medium for One Component Volumetric Titrations	1 L
K300000500C	Methanol Accelerate Medium for One Component Volumetric Titrations	500 mL
RK30000061C	Methanol Accelerate Medium for One Component Volumetric Titrations	6 x 1L
K3000006500	Methanol Accelerate Medium for One Component Volumetric Titrations	6 x 500mL
RK3100001C	Solvent D Medium for One and Two Component Volumetric Titrations of Oils,Fats, and Long-chain Hydrocarbons	1 L
RK310000500	Solvent D Medium for One and Two Component Volumetric Titrations of Oils,Fats, and Long-chain Hydrocarbons	500 mL
RK31000061C	Solvent D Medium for One and Two Component Volumetric Titrations of Oils,Fats, and Long-chain Hydrocarbons	6 x 1L
RK310000650	Solvent D Medium for One and Two Component Volumetric Titrations of Oils,Fats, and Long-chain Hydrocarbons	6 x 500mL
RK3200001C	Solvent CX Medium for One and Two Component Volumetric Titrations with Chloroform and Xylene	1 L
K320000500C	Solvent CX Medium for One and Two Component Volumetric Titrations with Chloroform and Xylene	500 mL
RK32000061C	Solvent CX Medium for One and Two Component Volumetric Titrations with Chloroform and Xylene	6 x 1L
K3200006500	Solvent CX Medium for One and Two Component Volumetric Titrations with Chloroform and Xylene	6 x 500mL
RK3300001C	Solvent C Medium for One and Two Component Volumetric Titrations with Chloroform	1 L
K330000500C	Solvent C Medium for One and Two Component Volumetric Titrations with Chloroform	500 mL
RK33000061C	Solvent C Medium for One and Two Component Volumetric Titrations with Chloroform	6 x 1L
K3300006500	Solvent C Medium for One and Two Component Volumetric Titrations with Chloroform	6 x 500mL
RK3400001C	Solvent K Medium for One and Two Component Volumetric Titrations of Aldehydes and Ketones	1 L
K340000500C	Solvent K Medium for One and Two Component Volumetric Titrations of Aldehydes and Ketones	500 mL
RK34000061C	Solvent K Medium for One and Two Component Volumetric Titrations of Aldehydes and Ketones	6 x 1L
K3400006500	Solvent K Medium for One and Two Component Volumetric Titrations of Aldehydes and Ketones	6 x 500mL
RK3500001C	Solvent Medium for Two Component Volumetric Titrations	1 L
K350000500C	Solvent Medium for Two Component Volumetric Titrations	500 mL
RK35000061C	Solvent Medium for Two Component Volumetric Titrations	6 x 1L
K3500006500	Solvent Medium for Two Component Volumetric Titrations	6 x 500mL

Buffers

pH Calibration ISO 17025

- Reference
- Precision Reference
- Buffer Concentrates

pH Control

- Dissolution
- Phosphate
- Acetate
- Other Buffers

Compendial Solutions

- ASTM
- APHA
- EPA
- USP/EP
- ACS
- AOAC
- TAPPI

Extraction Chemicals

- Ethanol (Organic and Conventional)
- Acetone
- Isopropanol
- ACS and HPLC Grades

General Use

HPLC Reagents Cleaning Solutions

- Electrode
- Surface
- Glassware
- Equipment

Acids

- Hydrochloric Acid
- Sulfuric Acid
- Nitric Acid
- Trichloroacetic Acid
- Acetic Acid
- Boric Acid
- Citric Acid
- Hydrofluoric Acid
- Phosphoric Acid
- Other Acids

Bases

- Sodium Hydroxide
- Potassium Hydroxide
- Ammonium Hydroxide
- Other Bases

Other Aqueous Solutions

Non-Aqueous Solutions

Reagent Grade Chemicals

Solvents

Standards

Conductivity/TDS - ISO 17025

- Potassium Chloride
- Sodium Chloride

Ion Selective Electrode (ISE)

- Ionic Strength Adjustors
- Filling Solutions
- ISE Standards

Ion Chromatography (IC) ISO 17025/Guide 34

- Eluants
- Standards

Color Standards

- USP Colorimetric
- EP Colorimetric
- Gardner
- Platinum-Cobalt (APHA-Hazen)

UV-VIS Absorbance

Oxidation-Reduction Potential

Spectroscopy ISO 17025/Guide 34

ICP/ICP-MS

- Single Elements
- Multi-element

Atomic Absorption (AA)

- Single Elements
- Ionization Buffer Agents
- GFAA
- Calibration & Spiking Blends
- Matrix Modifiers
- CVAA

Organic Standards ISO 17025/Guide 34

Anions/Nonmetals

- Chlorine Equivalent
- Nitrogen/Nitrate/Nitrite
- Ammonia
- Carbon
- BOD/COD
- Chloride
- Fluoride
- Sulfate
- Phosphate

Turbidity

Specific Gravity

High Purity Water

- Molecular Biology Grade
- ASTM Types I-IV
- HPLC
- USP/EP Purified

Proteomics

- Protein Crosslinkers
- Protein Modifiers
- LCMS Mobile Phases
- GC Derivatization Reagents
- Molecular Biology Buffers and Solvents

Terpenes

- Camphene
- Delta-3-Carene
- Beta-Caryophyllene

- D-Limonene
- Linalool
- Myrcene
- Nerol
- Alpha-Phellandrene
- Beta-Pinene
- Alpha-Pinene
- Alpha-Terpinene
- Terpinolene

Titriments

Acids (Aqueous, Non-Aqueous)

- Hydrochloric
- Sulfuric
- Nitric
- Acetic
- Perchloric

Bases (Aqueous, Non-Aqueous)

- Sodium Hydroxide
- Potassium Hydroxide
- Sodium Carbonate
- Ammonium Hydroxide

Oxidation-Reduction (Redox)

- Sodium Thiosulfate
- Potassium Permanganate
- Phenylarsine Oxide
- Iodate
- Iodate-Iodide
- Biiodate
- Bromate-Bromide
- Potassium Dichromate
- Iodine
- Ferrous Ammonium Sulfate
- Ceric Sulfate

Other Titrants

- EDTA
- Mercuric Nitrate
- Calcium Chloride
- Potassium Thiocyanate
- Sodium Chloride
- Zinc Sulfate
- Silver Nitrate

Karl Fischer Reagents

- Coulometric Reagents
- Volumetric Reagents
- Solvents
- Water Standards

Indicators

pH Indicators

- Mixed Indicators
- Universal Indicators
- Acid-Base Indicators
- Adsorption Indicators
- Hardness Indicators
- Oxidation Reduction Indicators
- Complexometric Indicators
- Other Indicators

In the United States:

For customer service, call 1-800-766-7000

To fax an order, use 1-800-926-1166

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