

ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

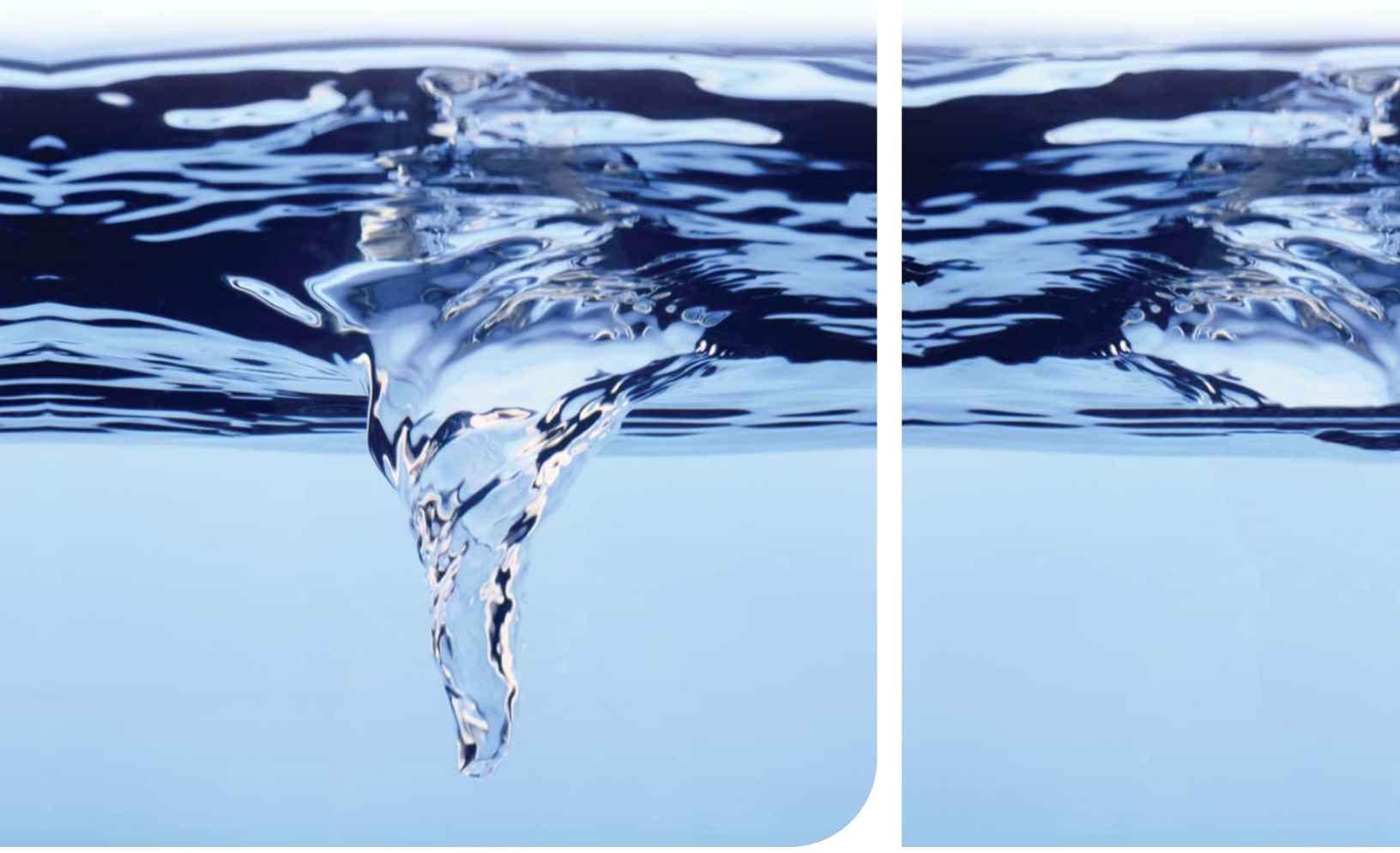
All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Visit our website - *Click HERE*

AQUASTAR®

Karl Fischer Titration

Reagents





Karl Fischer Titration
Reagents



Karl Fischer Titration: 70 Years of Progress

Since its invention by the German petroleum chemist Karl Fischer in the 1930's, the iodometric titration method that bears his name has become an increasingly popular analytical technique for quantifying water in a variety of industries. During this time, Karl Fischer titration has evolved from an esoteric novelty to a widely used instrumental method employed in Research & Development, Production, and Quality Control. Karl Fischer titration has been included in most key international Pharmacopeias, as well as in ISO 9000, SOPs, and ASTM guidelines.

The popularity of Karl Fischer titration is due in large part to several critical advantages that it holds over other methods of quantifying water, including:

- High accuracy and precision
- Selectivity for water
- Small sample sizes
- Easy sample preparation
- Short analysis duration
- Nearly unlimited measuring range (1ppm to 100%)
- Suitable for analyzing solids, liquids, and gases
- No interference from other volatiles
- Suitable for automation







AQUASTAR® Products: 20 Years of Innovation

Since the 1980's, EMD Chemicals has been marketing leading-edge titrators, high-performance reagents, and quality water standards plus auxiliaries for Karl Fischer analysis under the Aquastar® brand name. During that time, the Aquastar® brand has become recognized for:

- Rapid titrations producing accurate reproducible results
- Innovative formulations for specialty applications
- Breadth of offerings
- Responsive customer service
- Knowledgeable technical support

Recently, through collaboration with the extensive research efforts of our parent company, Merck KGaA (Darmstadt, Germany), EMD Chemicals has introduced a range of NIST traceable ampoulized water standards and novel Karl Fischer reagent formulations. These new reagents are designed to be safer, faster, and more accurate, in order to meet the highest expectations of analysts in every industry.

One of the most important coulometric Karl Fischer reagents on the market today is the Aquastar® CombiCoulomat Fritless (Cat. No. 1.09257.0500) which has been specially formulated to optimize performance of fritless coulometric titrators, such as the Aquastar® AQC34 (Cat. No. AXAQC34-1), METTLER TOLEDO's DL32X, as well as similar instruments from other manufacturers.

We'll Put a Wealth of Karl Fischer Titration knowledge at Your Fingertips... for FREE!

Just fill out and return the attached pre-paid postcard and we'll rush you our new AQUASTAR® Karl Fischer Applications Resource CD.

This handy, easy-to-use CD is full of useful technical information for both new KF users and experienced analysts:

- Over 375 specific applications in 18 different product groups
- Introductory KF theory perfect for training new lab staff
- Technical notes on specific key topics
- Guides to reagent and instrument selection
- Practical tips and techniques gleaned from our years of KF experience

Request your FREE copy today!



Water Standards

Aquastar® Water Standards are the standards of choice to monitor the performance of Karl Fischer instrumentation, determine the titer of volumetric Karl Fischer reagents, and verify final water content results. These ampoulized liquid standards are directly traceable to NIST (National Institute of Standards and Technology) and are manufactured under strict control using validated procedures. The standards provide:

- Convenience and cost savings of easy-to-handle single-use ampoules
- Traceability to NIST SRM 2890
- Lot-specific Certificate of Analysis in every pack

Aquastar® Water Standards 1% and 0.1% are recommended for use in volumetric applications, while the Water Standards 0.1% and 0.01% are recommended for coulometric applications.

NEW ## AQUASTAR® Water Standard Oven, 1%

EMD Chemicals is proud to introduce a novel solid standard specially designed for use in validation and control of Karl Fischer ovens and solid evaporators. It features a number of distinct advantages over other solids (e.g., lactose, citrate, and tartrate) traditionally used with KF ovens:

- Low water content suitable for coulometry
- Wide usable temperature range: 140-400°C
- Long shelf-life: 5 years
- Stable even at high temperatures
- Lot-specific Certificate of Analysis in every pack

NEW ## AQUASTAR® Water Standard Oil, 15-30ppm

Our newest standard is a unique reference material developed specifically for use in verifying the accuracy of coulometric Karl Fischer equipment according to ISO 9001, as well as coulometric equipment in combination with a Karl Fischer oven or evaporator according to ISO 760. As with other ampoulized Aquastar® standards, this transformer oil-based standard is directly traceable to SRM 2890 from NIST and is supplied with a lot-specific Certificate of Analysis in every pack.

Ordering Information

Aquastar® Water Std 1.0% 10 mg H_2O/g NIST traceable

Size	Package	Cat. No.
10 X 8 ml	Ampoule 10 Pack	1.88052.0010

Aquastar® Water Std 0.1% 1.0 mg H_2O/g NIST traceable

Size	Package	Cat. No.
10 X 8 ml	Ampoule 10 Pack	1.88051.0010

Aquastar® Water Std 0.01% 0.1 mg H_2O/g NIST traceable

Size	Package	Cat. No.
10 X 8 ml	Ampoule 10 Pack	1.88050.0010

Aquastar® Water Std Oven 1% solid standard for KF ovens

Size	Package	Cat. No.
5 g	Glass Bottle	1.88054.0005

Aquastar® Water Std Oil (15–30ppm) standard for oil samples for the coulometric Karl Fischer method NIST traceable

Size	Package	Cat. No.
10 X 8 ml	Ampoule 10 Pack	1.88055.0010

Aquastar® Water Std 5 mg/ml 5 mg H_2O/ml

Size	Package	Cat. No.
250 ml	Glass Bottle	1.09259.0250

Aquastar® Lactose Std 5% solid standard for volumetry and KF ovens

Size	Package	Cat. No.
10 g	Poly Bottle	1.12939.0010

Aquastar® Sodium Tartrate Dihydrate 15.66% solid standard for volumetry

Size	Package	Cat. No.
100 g	Glass Bottle	1.06664.0100



Coulometric Reagents

Coulometric reagents contain iodide, as opposed to volumetric reagents which contain iodine. The iodine required by the Karl Fischer reaction is produced *in situ* through electrochemical oxidation. When current flows, iodide is oxidized to iodine at the anode. The resulting iodine molecules react with water and SO_2 according to the Karl Fischer reaction. Water content can be determined accurately by calculating the amount of current used over a specific time period. The coulometric method is primarily used for samples with water content of less than 1%.

Aquastar® coulometric reagents have long been recognized as reagents of choice for semi-micro determination of water content. EMD Chemicals has developed two new "single-solution" reagents that offer added convenience and eliminate the possibility of mistaking anolyte and catholyte reagents. The CombiCoulomat Frit reagent is recommended for use only in cells with diaphragms or ceramic frits. Both reagents are free of chlorinated hydrocarbons.

NEW

AQUASTAR® CombiCoulomat Fritless Reagent

This newly developed reagent is versatile and can be used with fritless cells, as well as with those that contain diaphragms or ceramic frits. The Aquastar® CombiCoulomat Fritless reagent offers several key advantages over conventional two-solution fritted cell reagent systems for analysis of routine samples:

- Convenience of a single solution
- Accurate and reproducible results
- Fast pre-titration times
- Free of chlorinated hydrocarbons
- Suitable for all titrators and titration cell types

UNIQUE

AQUASTAR® Coulomat A, Xylene Blend

The reliable Aquastar® Coulomat A, Xylene Blend is a high-performance anolyte specially formulated to dissolve mineral oils and other long-chained hydrocarbons. Containing two powerful co-solvents, this reagent is well suited for KF analysis of a variety of petrochemical products. When used in conjunction with Aquastar® Coulomat C as the catholyte, Aquastar® Coulomat A, Xylene Blend provides consistent results even in the case of hard-to-dissolve petrochemical samples.

Ordering Information

Aquastar® CombiCoulomat Frit Reagent for cells with diaphragm

Size	Package	Cat. No.
500 ml	S40 Glass Bottle	1.09255.0500

Aquastar® CombiCoulomat Fritless Reagent for cells with or without diaphragm

Size	Package	Cat. No.
500 ml	S40 Glass Bottle	1.09257.0500

Aquastar® Coulomat A, anolyte for cells with diaphragm

Size	Package	Cat. No.
500 ml	38 Poly-Coated Glass Bottle	AX1697A-1
4 L	38 Poly-Coated Glass Bottle	AX1697A-30

Aquastar® Coulomat C, catholyte for cells with diaphragm

Size	Package	Cat. No.
25 ml	Glass Bottle	AX1697C-1
10 X 5 ml	Ampoule 10 Pack	AX1697C-3
2 L	38 Poly-Coated Glass Bottle	AX1697C-30

Aquastar® Coulomat A, Xylene Blend for mineral oils

Size	Package	Cat. No.
100 ml	Poly Bottle	AX1697AX-1



One-Component Volumetric Reagents

In one-component volumetric Karl Fischer analysis, the titrant contains all four ingredients required by the KF reaction: iodine, base, sulfur dioxide, and an alcohol. Aquastar® CombiTitrants are free of toxic ingredients, like 2-methoxyethanol, and are available in packaging compatible with all major brands of titrators. The range includes titrants with nominal titer values of 1, 2, and 5 mg H_2O/mL to cover a wide range of practical applications. Additional advantages of these reagents include:

- High titration rate for faster analyses
- Distinct endpoints to ensure confidence in results
- Poly-coated glass bottles for increased safety
- Global availability to facilitate international methods transfer

AQUASTAR® CombiMethanol

Anhydrous methanol is the solvent typically used in one-component KF of routine samples. The quality of methanol used for KF analysis is critical to minimizing both pre-titration/blanking times and interfering side reactions. Aquastar® CombiMethanol is optimized specifically for use in KF titrations by strictly limiting key impurities and water content:

- Carbonyl compounds (acetone, formaldehyde, etc.)
- Substances reducing permanganate
- Substances darkened by sulfuric acid
- Titrable acid and base
- Maximum 100ppm H_2O

NEW

AQUASTAR® CombiSolvent

The Aquastar® CombiSolvent is an innovative methanol-free solvent for one-component volumetric Karl Fischer titration that is used in conjunction with the Aquastar® CombiTitrants. This ethanol-based reagent is less toxic and less hygroscopic than conventional methanol.

Additionally, the high-performance formulation of this solvent enables substantial reductions in titration times, allowing the analyst to perform more titrations in the same amount of time than when using methanol as a solvent.

Ordering Information

Aquastar® CombiTitrant 1 1 mg H_2O/ml

Size	Package	Cat. No.
1 L	38 Poly-Coated Glass Bottle	1.88001.1000
1 L	GL45 Poly-Coated Glass Bottle	1.88001.1045

Aquastar® CombiTitrant 2 2 mg H_2O/ml

Size	Package	Cat. No.
1 L	38 Poly-Coated Glass Bottle	1.88002.1000
1 L	GL45 Poly-Coated Glass Bottle	1.88002.1045
2.5 L	38 Poly-Coated Glass Bottle	1.88002.2500
2.5 L	GL45 Poly-Coated Glass Bottle	1.88002.2545

Aquastar® CombiTitrant 5 5 mg H_2O/ml

Size	Package	Cat. No.
1 L	38 Poly-Coated Glass Bottle	1.88005.1000
1 L	GL45 Poly-Coated Glass Bottle	1.88005.1045
2.5 L	38 Poly-Coated Glass Bottle	1.88005.2500
2.5 L	GL45 Poly-Coated Glass Bottle	1.88005.2545

Aquastar® CombiMethanol dried Methanol for KF titration max. 0.01% water

Size	Package	Cat. No.
1 L	38 Glass Bottle	1.88009.1000
1 L	GL45 Glass Bottle	1.88009.1045
2.5 L	38 Glass Bottle	1.88009.2500
2.5 L	GL45 Glass Bottle	1.88009.2545

Aquastar® CombiSolvent Oils for mineral oils

Size	Package	Cat. No.
1 L	38 Poly-Coated Glass Bottle	1.88020.1000

Aquastar® CombiSolvent Fats for fats in foodstuffs

Size	Package	Cat. No.
1 L	S40 Glass Bottle	1.88021.1000

Aquastar® Solvent Oils & Fats universal solvent for oils and fats.

Size	Package	Cat. No.
1 L	S40 Glass Bottle	1.88016.1000

Aquastar® CombiSolvent ethanol-based solvent for one-component volumetric Karl Fischer titration.

Size	Package	Cat. No.
1 L	S40 Glass Bottle	1.88008.1000
2.5 L	S40 Glass Bottle	1.88008.2500

Two-Component Volumetric Reagents

Unlike one-component volumetric Karl Fischer analysis, in two-component volumetric reagent systems, the titrant contains only iodine and methanol, while the solvent containing the other KF components – sulfur dioxide and a suitable base dissolved in methanol – is used as the working medium in the titration cell.

Two-component reagents are distinguished by greater long-term stability and faster titration times than one-component reagents. The former is due to the fact that the KF reaction components are divided between the two reagents, making each of the reagents less susceptible to slow side reactions over time. Faster titration times result from the initial availability of sulfur dioxide and base in the solvent to which the sample to be analyzed is added.

Additionally, two-component reagents typically produce slightly more accurate results than one-component reagents due to the higher buffer capacity of the solvent.

Ordering Information

Aquastar® Titrant 2 2 mg H_2O/ml

Size	Package	Cat. No.
1 L	GL45 Poly-Coated Glass Bottle	1.88011.1045

Aquastar® Titrant 5 5 mg H_2O/ml

Size	Package	Cat. No.
1 L	38 Poly-Coated Glass Bottle	1.88010.1000
1 L	GL45 Poly-Coated Glass Bottle	1.88010.1045
2.5 L	38 Poly-Coated Glass Bottle	1.88010.2500
2.5 L	GL45 Poly-Coated Glass Bottle	1.88010.2545

Aquastar® Solvent for two-component titration

Size	Package	Cat. No.
1 L	38 Poly-Coated Glass Bottle	1.88015.1000
2.5 L	38 Poly-Coated Glass Bottle	1.88015.2500

Aquastar® Solvents Oils & Fats universal solvent for oils and fats.

Size	Package	Cat. No.
1 L	S40 Glass Bottle	1.88016.1000

NEW

AQUASTAR® CombiSolvent Oils & Fats

Developed in Germany through collaborative research efforts of our parent company, Merck KGaA (Darmstadt, Germany), this versatile solvent based on environmentally favorable long-chain alcohol is specially formulated to serve as a solvent for both one-component and two component volumetric KF methods. Therefore, this product can be considered a universal volumetric solvent for KF analysis of light-to-medium oils and fats (such as butter, margarine, edible oils, ethereal oils), and cosmetic creams and ointments.

The many advantages of Aquastar® CombiSolvent Oils & Fats include:

- Convenient
- Simple to use
- Environmentally favorable
- Fast titration speed
- Excellent solubility of many oils and fats
- Suitable for one-component and two-component KF



Special Reagents for Oils and Fats

To ensure accurate and reproducible results when performing Karl Fischer analysis of water in oils and fats, the samples must be completely dissolved. If samples are partially dissolved, only a fraction of the total water content will be quantified.

For many years, analysts had to pre-mix their own co-solvents with conventional KF reagents to produce reagents suitable for oils and fats analysis. Today, several specially formulated Aquastar® reagents for both volumetric and coulometric KF quantification of water in oils and fats are conveniently available.

AQUASTAR® CombiSolvent Oils and AQUASTAR® CombiSolvent Fats

Aquastar® CombiSolvent Oils is based on toluene and methanol. It is specifically formulated to facilitate volumetric KF analysis of water in various mineral oils, lubricating oils, and fuel oils. This solvent is used for one-component volumetric KF and should be used in conjunction with CombiTitrant 5 or CombiTitrant 2.

Aquastar® CombiSolvent Fats is based on decanol, butyl acetate, and methanol, and is recommended for volumetric KF analysis of water in fatty foods, such as butter, margarine, vegetable fats, chocolate, mayonnaise, etc. This solvent is used for one-component volumetric KF and should be used in conjunction with CombiTitrant 5 or CombiTitrant 2.

AQUASTAR® Coulomat A, Xylene Blend and AQUASTAR® Water Standard Oil

Aquastar® Coulomat A, Xylene Blend is especially well suited for direct coulometric KF analysis of water in various petrochemical products, such as fuels, mineral oils, and other long-chained hydrocarbons. When used in conjunction with Aquastar® Coulomat C, this product provides consistent results even in the case of hard-to-dissolve petrochemical samples.

Aquastar® Water Standard Oil is a unique reference material developed specifically for use in verifying the accuracy of coulometric Karl Fischer equipment used in direct analysis of oils, as well as oil evaporators used in indirect analysis. This transformer oil-based standard is directly traceable to SRM 2890 from NIST and is supplied with a lot-specific Certificate of Analysis in every pack.

Ordering Information

Aquastar® Solvent Oils & Fats universal solvent for oils and fats.

Size	Package	Cat. No.
1 L	S40 Glass Bottle	1.88016.1000

Aquastar® CombiSolvent Oils for mineral oils

Size	Package	Cat. No.
1 L	38 Poly-Coated Glass Bottle	1.88020.1000

Aquastar® CombiSolvent Fats for fats in foodstuffs

Size	Package	Cat. No.
1 L	S40 Glass Bottle	1.88021.1000

Aquastar® Coulomat A, Xylene Blend for mineral oils

Size	Package	Cat. No.
100 ml	Poly Bottle	AX1697AX-1

Aquastar® Water Standard Oil (15–30ppm) standard for oil-samples for the coulometric Karl Fischer method

Size	Package	Cat. No.
10 X 8 ml	Ampoule 10 Pack	1.88055.0010



Methanol-free Reagents for Aldehydes and Ketones

Aldehydes and ketones undergo interfering side reactions with conventional methanol-based Karl Fischer reagents. Both side reactions – the formation of acetals and ketals, as well as bisulfite addition – are typically characterized by sluggish or vanishing endpoints and lead to inaccurate results.

During acetal or ketal formation, water is generated as a by-product, leading to erroneously high results in Karl Fischer analysis. Conversely, bisulfite addition consumes water, leading to results that appear too low.

The extent of these interfering side reactions depends on the reactivity of the specific aldehydes or ketones that are present in the sample matrix, as well as the reactivity of the Karl Fischer reagents. Through utilization of specially formulated methanol-free reagents for aldehydes and ketones, it is possible to effectively suppress the side reactions and ensure accurate/reproducible results.



Ordering Information

Aquastar® CombiTitrant 5 Keto 5 mg H_2O/ml

Size	Package	Cat. No.
1 L	38 Poly-Coated Glass Bottle	1.88006.1000
1 L	GL45 Poly-Coated Glass Bottle	1.88006.1045

Aquastar® CombiSolvent Keto methanol-free solvent

Size	Package	Cat. No.
1 L	S40 Glass Bottle	1.88007.1000

Aquastar® Coulomat AK Anode solution

Size	Package	Cat. No.
500 ml	38 Poly-Coated Glass Bottle	AX1697E-1

Aquastar® Coulomat CK Cathode solution

Size	Package	Cat. No.
25 ml	Glass Bottle	AX1697F-1
10 X 5 ml	Ampoules (10/pack)	AX1697F-3

Specialized reagents for moisture analysis in aldehydes and ketones are available for both coulometric and volumetric Karl Fischer methods. For coulometric titration, Aquastar® Coulomat AK and Aquastar® Coulomat CK reagents are offered. For volumetric titration, we offer Aquastar® CombiTitrant 5 Keto and Aquastar® CombiSolvent Keto – an environmentally favorable high-performance reagent system.

AQUASTAR® CombiTitrant 5 Keto and AQUASTAR® CombiSolvent Keto

Developed in Germany through collaborative research efforts of our parent company, Merck KGaA (Darmstadt, Germany), these two one-component volumetric reagents represent a breakthrough in performance of specialized Karl Fischer products for moisture analysis in aldehydes and ketones. This unique reagent combination offers a number of distinct advantages over other products commonly used for the same purpose:

- Non-toxic formulations
- Faster titrations
- Sharper endpoints
- More reproducible results
- No precipitations
- Better at suppressing side reactions

Auxiliary Products for Karl Fischer Titration

Drying Agents

Taking all possible precautions to eliminate the entry of atmospheric moisture into the titration cell is key to ensuring accurate and reproducible results. Proper titration vessel maintenance, including regular greasing of all ground glass joints and o-rings, is one important factor in achieving this goal. The other factor is the choice of drying agent for the titrator drying tubes.

Drying agents suitable for this purpose include molecular sieve, silica gel, and others. For maximum drying efficiency, we recommend using t.h.e.® Desiccant, available in 100% indicating and 8% indicating forms. t.h.e.® Desiccant beads, which are spherical and chemically inert, are characterized by high adsorptive capacity and efficiency. The color of the beads turns from deep blue to pink with hydration, thereby alerting the analyst to the need for changing the drying agent.

Titration Aides

Certain sample matrices present particular challenges to conventional Karl Fischer reagents and require the use of a titration aide for successful analysis.

Samples that are too acidic or basic necessitate buffering the volumetric solvent or the coulometric anolyte using imidazole or benzoic or salicylic acid, respectively. For volumetric KF only, a pre-formulated buffer is available to handle acidic samples.

Some natural products and other solids release their water very slowly with conventional KF reagents. The use of formamide as a co-solvent is recommended to accelerate water extraction from proteins, carbohydrates, inorganic salts, and similar substances.

Ordering Information

t.h.e.® Desiccant, 8 mesh indicating, 8%

Size	Package	Cat. No.
500 g	Poly Bottle	DX0014-1
2 Kg	Glass Bottle	DX0014-3

t.h.e.® Desiccant, 6–8 mesh indicating, 100%

Size	Package	Cat. No.
500 g	Glass Bottle	DX0017-1
2 Kg	Glass Bottle	DX0017-3

Molecular Sieve Type 3A 1/16" pellets

Size	Package	Cat. No.
500 g	Glass Bottle	MX1583A-1
2.5 Kg	Glass Bottle	MX1583A-2

Imidazole, GR ACS for buffering acidic samples

Size	Package	Cat. No.
50 g	Poly Bottle	IX0005-2
500 g	Poly Bottle	IX0005-1

Aquastar® Buffer for buffering acidic samples

Size	Package	Cat. No.
500 ml	38 Poly-Coated Glass Bottle	AX1699D-1
2 L	38 Poly-Coated Glass Bottle	AX1699D-3

Benzoic Acid, GR ACS for buffering basic samples

Size	Package	Cat. No.
500 g	Poly Bottle	BX0360-1

Salicylic Acid, GR ACS for buffering basic samples

Size	Package	Cat. No.
500 g	Poly Bottle	SX0060-1

Formamide, GR ACS for natural products

Size	Package	Cat. No.
100 g	Glass Bottle	FX0420-3
500 g	Glass Bottle	FX0420-8
1 Kg	Glass Bottle	FX0420-6





AQUASTAR® Adapters for Reagent Bottles

AQUASTAR® reagents listed in this catalog are packaged in bottles having one or more of three common neck types. Most reagents are available in bottles with neck diameters that connect directly to many popular titrator brands. However, on occasion, an analyst may find it necessary to use a reagent bottle with a neck size that does not attach directly to their titrator's screw caps.

For such occasions, EMD Chemicals is pleased to offer two convenient reusable adapters that maximize the connectivity of the various bottle types.

Ordering Information

Aquastar® Bottle Adapter for connecting 38mm neck bottles to titrators with 45mm screw caps

Size	Package	Cat. No.
1 EA	Chipboard Box	109138ST-1

Aquastar® S40 Cap Adapter for connecting 40mm neck bottles to titrators with 45mm screw caps

Size	Package	Cat. No.
1 EA	Poly Bag	9.67206.0001

AQUASTAR® Karl Fischer Reagent Selection Guide

The table below is a quick reference tool for selecting the most appropriate reagents for several popular sample types. Once you have established the general characteristics of the sample in question, read across the row to determine the recommended reagent combinations, marked by an "X."

For more extensive reagent selection help, as well as pre-developed methods for over 375 specific substances of interest, please request the AQUASTAR® Karl Fischer Applications Resource CD.

Volumetric		Reagent Combination: CombiTitrant 5 (1.88005)	CombiTitrant 2 (1.88002)	CombiTitrant 1 (1.88001)	CombiTitrant 5 Keto (1.88006)	Titrant 5 (1.88010)	Titrant 2 (1.88011)	Coulomat C (AX1697C)	Coulomat CK (AX1697F)	Sample Type
CombiSolvent	1.88008	X	X	X						routine samples
CombiMethanol	1.88009	X	X	X						routine samples
Solvent	1.88015	X	X	X		X	X			routine samples
Solvent Oils and Fats	1.88016	X	X	X		X	X			long-chain hydrocarbons
CombiSolvent Oils	1.88020	X	X	X						mineral oils
CombiSolvent Fats	1.88021	X	X	X						fats in foods
CombiSolvent Keto	1.88007				X					samples containing aldehydes and ketones

Coulometric										Sample Type
CombiCoulomat Frit	1.09255									routine samples in fritted cells
CombiCoulomat Fritless	1.09257									routine samples in fritless and fritted cells
Coulomat A	AX1697A							X		routine samples
Coulomat A, Xylene Blend	AX1697AX							X		mineral oils
Coulomat AK	AX1697E								X	samples containing aldehydes and ketones

EMD Chemicals' products are warranted to meet the specifications set forth on their label only. EMD Chemicals' sole responsibility under this warranty shall be limited to replacement of non-conforming product. Any change or modification of an EMD Chemicals' product or its prescribed procedure for use may adversely affect its stated specification and therefore EMD Chemicals shall not be liable in the event of any such change or modification. All EMD Chemicals' products are sold on the condition that they be used and disposed of only within the scope of currently recognized critical standards related to human health and the physical environment. Price and specifications are subject to change without notice. We reserve the right to discontinue items without prior notice.

EXCEPT FOR THE WARRANTY STATED ABOVE, EMD CHEMICALS MAKES NO OTHER WARRANTY OF ANY KIND WITH REGARD TO ITS PRODUCTS WHETHER EXPRESS, ARISING BY OPERATION OF LAW, OR IMPLIED BY COURSE OF DEALING, USAGE OF TRADE OR OTHERWISE, INCLUDING WITHOUT LIMITATION THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. EMD CHEMICALS SHALL NOT IN ANY CIRCUMSTANCE BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES. ALL SALES ARE SUBJECT TO EMD CHEMICALS' TERMS & CONDITIONS OF SALE.

Aquastar® is a registered trademark of EMD Chemicals Inc.

METTLER TOLEDO is a registered trademark of Mettler-Toledo, Inc.

t.h.e.® is a registered trademark of EMD Chemicals Inc.

LT 081049 REV08/05

EMD Chemicals Inc.
480 S. Democrat Road
Gibbstown, NJ 08027
Phone 800-222-0342
Fax 856-423-4389
www.emdchemicals.com



Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP