



# Fisher Chemical Aqualine Reagents

Your solution for water content  
determination by Karl Fischer titration

Coulometric titration  
Volumetric titration  
Water standard

# Aqualine Reagents

Our Fisher Chemical™ Aqualine™ Karl Fischer reagents portfolio is designed to meet the needs of the analytical chemist by providing accurate water content determination using volumetric or coulometric titration with unique benefits.

## Aqualine coulometric range: for low water content at ppm level

Fisher Chemical Aqualine coulometric reagents are ideal for use in coulometric Karl Fischer titrations for detecting low concentrations of water. Our Aqualine anolyte and catholyte solutions have been re-formulated to offer better performance. The improved formulation increases both the speed and accuracy of titration when determining water content at microgram level.

### Highlights:

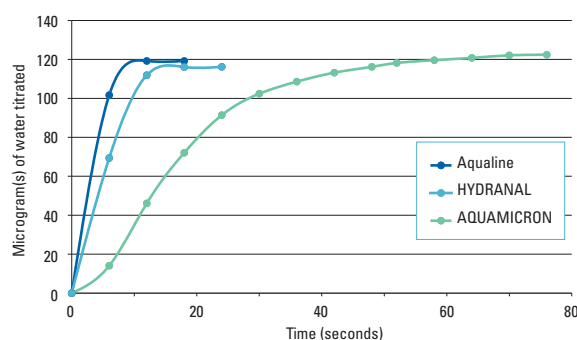
- **Fast** – Reach the endpoint quickly
- **Convenient** – Long product shelf-life
- **Reliable** – Very stable endpoint



## Aqualine coulometric range performance

Our Aqualine coulometric reagents contain a different base than Sigma-Aldrich™ HYDRANAL™ Coulomat A and Mitsubishi Chemical AQUAMICRON™ AX reagents. When compared to these reagents in terms of water recover and titration, Fisher Chemical™ Aqualine™ Electrolyte A displayed a more stable endpoint.

### Speed titration performance



**Figure 1:** The speed of titration of a 1mL injection of methanol with Aqualine Electrolyte A was measured. A comparison was made versus HYDRANAL™ Coulomat A and AQUAMICRON™ AX reagents. Results indicate that Aqualine coulometric reagents are fast and accurate with a stable endpoint.

## Aqualine water standard

We offer a series of long shelf-life Aqualine water standard reagents, which support the calibration of the Karl Fischer titrator instrument. Our water standard reagents are packaged in glass ampoules for your convenience.





## Aqualine volumetric range: for high water content analysis

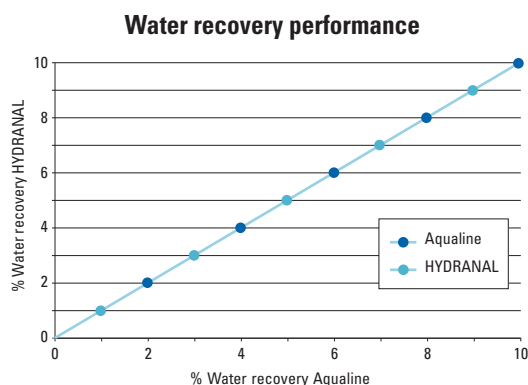
For the Karl Fischer titration by volumetry, we offer you the choice between single component reagents, two component reagents and reagents especially designed for aldehydes and ketones. **Our Aqualine reagents for Karl Fischer titration by volumetry perform identically to other Karl Fischer reagents on the market.**

### Highlights:

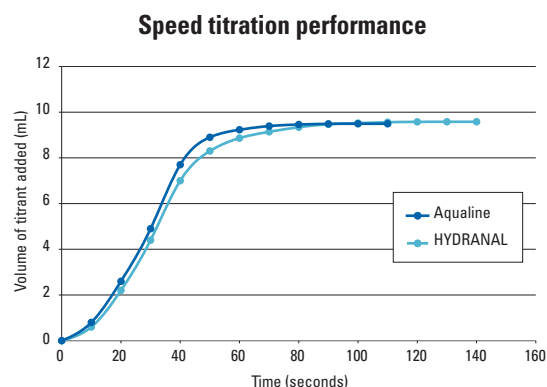
- **Reliable** – Fast and stable endpoints ensure reliable and accurate results
- **Safe** – Low toxicity and pyridine free
- **Convenient** – Available as a one or two component solution

### Aqualine volumetric range performance

When compared to Sigma-Aldrich™ HYDRANAL™ Composite 5 in terms of water recovery and speed titration, Fisher Chemical™ Aqualine™ Complete 5 showed identical results. The Aqualine volumetric range of products formulation is based on the HYDRANAL™ formulation using imidazole as base.



**Figure 2:** % Water recovery titration using THF solvent containing varying levels of water with Aqualine Complete 5 was performed. The comparison was made versus HYDRANAL™ Composite 5 using the same automated volumetric moisture meters without altering instrument setup. Results indicate that water content measurements were identical for both.



**Figure 3:** The speed of titration of 50µg water with Aqualine Complete 5 was recorded. The comparison was made versus HYDRANAL™ Composite 5 using the same automated volumetric moisture meters without altering instrument setup. Aqualine Complete 5 demonstrated faster and more stable endpoints versus HYDRANAL™ equivalent reagents.

### Comparative tests on actual samples

Sample	Working medium	Aqualine		HYDRANAL	
		Titration time min (std dev)	Water content % (std dev)	Titration time min (std dev)	Water content % (std dev)
Acetic acid (water added)	Methanol	3:23 (0:12)	1.51 (0.00)	3:59 (0:15)	1.50 (0.01)
Triethylamine	Methanol	1:24 (0:17)	1.39 (0.01)	0:55 (0:08)	1.37 (0.01)
Dichloroacetic acid	Methanol + Imidazole	1:11 (0:13)	1.90 (0.01)	1:04 (0:05)	1.90 (0.01)
Vegetable oil	50% Methanol + 50% Xylene	1:39 (0:28)	0.03 (0.00)	1:43 (0:18)	0.03 (0.00)
Shower gel	Methanol	2:01 (0:02)	81.09 (0.06)	2:34 (0:08)	80.84 (0.04)
Acetone	Ketosolver	1:50 (0:13)	1.01 (0.01)	1:53 (0:02)	1.02 (0.01)
Hand cream	50% Methanol + 50% Chloroform	1:24 (0:08)	84.80 (0.03)	1:27 (0:06)	84.62 (0.07)
Coffee	50% Methanol + 50% Formamide	5:30 (0:01)	5.44 (0.01)	5:04 (0:21)	5.40 (0.19)
Chocolate	50% Methanol + 50% Chloroform	4:26 (0:31)	1.75 (0.02)	6:07 (2:12)	1.65 (0.02)

# Select the suitable Fisher Chemical Aqualine reagent for your Karl Fischer titration

## Aqualine coulometric range: for low water content at ppm level

Product code	Product description	Pack size
<b>Analyte solutions</b>		
These contain methanol and chloroform as solvents		
10302912	Aqualine Electrolyte A – For general use in conventional cells with a diaphragm	500mL
10222132	Aqualine Electrolyte AD – For use in fritless (diaphragm-free) cells	500mL
These contain methanol as a solvent		
10689672	Aqualine Electrolyte AD-G – For use in fritless (diaphragm-free) cells	500mL
10724893	Aqualine Electrolyte AG – For general use in conventional cells with diaphragm	500mL
This contains methanol and pentan-1-ol as solvents		
10592785	Aqualine Electrolyte AG-H – For samples with high level of hydrocarbon content	500mL
<b>Catholyte solution</b>		
10169371	Aqualine Electrolyte CG – For general use in conventional cells with a diaphragm, contains methanol as a solvent	25mL
<b>Aqualine water standard</b>		
10609103	Aqualine Standard 0.2 – 0.2 mg/ml H <sub>2</sub> O standard	10 x 4mL
10323102	Aqualine Standard 1.0 – 1 mg/ml H <sub>2</sub> O standard	10 x 4mL
10609672	Aqualine Standard 5.0 – 5 mg/ml H <sub>2</sub> O standard	500mL
10546242	Aqualine Standard 10.0 – 10 mg/ml H <sub>2</sub> O standard	10 x 8mL
10723383	Aqualine Water Standard-KF oven – For use in KF oven technique, contains 5.55 ±0.05% water	10g
10261552	Aqualine Sodium-tartrate Dihydrate Standard – Primary standard for volumetric analysis, contains 15.66 ±0.05% water	100g
10598050	Aqualine Water Solution – 1ml = 5 mg H <sub>2</sub> O in Methanol	500mL

## Aqualine volumetric range: for high water content analysis

<b>Single component reagents</b>		
10538810	Aqualine Complete 1 – Water equivalent 1mg H <sub>2</sub> O/ml	1L
10744761	Aqualine Complete 2 – Water equivalent 2mg H <sub>2</sub> O/ml	1L
10754761	Aqualine Complete 2 – Water equivalent 2mg H <sub>2</sub> O/ml	2.5L
10181570	Aqualine Complete 5 – Water equivalent 5mg H <sub>2</sub> O/ml	1L
10676262	Aqualine Complete 5 – Water equivalent 5mg H <sub>2</sub> O/ml	2.5L
<b>Reagents for aldehydes and ketones</b>		
10092042	Aqualine Complete 5K – Water equivalent 5 mg H <sub>2</sub> O/ml	1L
10205592	Aqualine Matrix K – Matrix K should be used in conjunction with Complete 5K	1L
<b>Two component reagents</b>		
10786291	Aqualine Titrant 2 – Water equivalent 2 mg H <sub>2</sub> O/ml	1L
10284100	Aqualine Titrant 2 – Water equivalent 2 mg H <sub>2</sub> O/ml	2.5L
10528810	Aqualine Titrant 5 – Water equivalent 5 mg H <sub>2</sub> O/ml	1L
10172050	Aqualine Titrant 5 – Water equivalent 5 mg H <sub>2</sub> O/ml	2.5L
10101580	Aqualine Solvent	1L
10264390	Aqualine Solvent	2.5L
10199511	Aqualine Solvent CM – Solvent for samples with high hydrocarbon content	1L
10510852	Aqualine Solvent CM – Solvent for samples with high hydrocarbon content	2.5L

All our Aqualine solutions are pyridine free

## To place an order, contact your local Fisher Scientific office.



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