PRODUCT INFO

Aquagent® Coulometric range

NEW!

Karl Fischer's titration is a worldwide accepted method for the determination of water since beginnings of the twentieth century. It is based on Bunsen's reaction, a two-step reaction with a stoichiometric relation between the consumed I_2 and the amount of water in the sample.

$$ROH + SO_2 + R'N \longrightarrow [R'NH]SO_3R$$

$$H_2O + I_2 + [R'NH]SO_3R + 2R'N \longrightarrow [RNH]SO_4R + 2[R'NH]I$$

pH 5-7

ROH = Alcohol, usually methanol
R'N = Nitrogen base

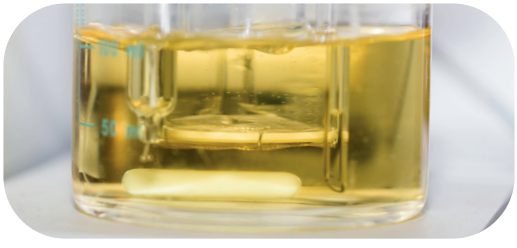
The first Karl Fischer reagents developed contained pyridine in their formulation, supposedly essential for the reaction. Later experiments showed that pyridine only acted as a buffer substance and could be replaced by other alkali compounds, capable of performing the same function, but being less toxic. For this reason, pyridine-free Karl Fischer reagents, such as our Aquagent®, contain imidazole instead of pyridine. Imidazole is a non-toxic base with good buffering capacity, allowing to quickly obtain stable endpoints from the titration.

Aquagent® Coulometric solutions

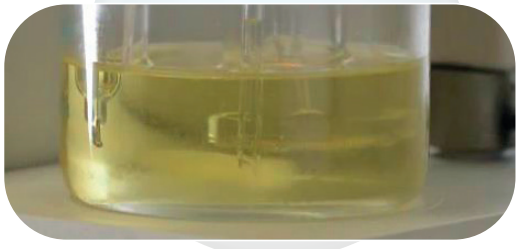
Coulometric titration is the indicated method for samples with a low water content (<0.1%) or for the determination of water in valuable samples. In these titrations, the necessary iodine is generated in the titration cell by oxidation of iodide at the anode. The water concentration is calculated from the current used to generate the iodine.

The measuring cell contains two compartments: anodic and cathodic, which can be separated by a semipermeable ion membrane (diaphragm). The measuring cells can therefore be with or without a diaphragm, depending on whether they are separated or not.

There are two types of coulometric cells depending on whether they have diaphragm or not. In the case of cells with diaphragm, it separates the cavity from the anode and the cathode, so two reagents are necessary. In the cells without diaphragm, all the needed components for the reaction to take place are in a single reagent.



Cell with diaphragm



Cell without diaphragm

Scharlau standards for Karl Fischer

Standards of a known water content are used to determine the titre of the reagents. The Aquagent® Coulometric range is completed with Scharlau standard for Karl Fischer. The Aquagent® standards are packed in vials to maintain optimum conditions until they are opened. Each vial provides sufficient standard for one titration. The Karl Fischer Aquagent® standards are traceables to NIST.

Scharlab offers an expanded and reformulated Aquagent® Coulometric range. It has the following advantages:

- Measurements with greater precision
- Greater temporal product stability
- Better stabilisation time

- Prevents oversaturation of the analytical chamber
- Greater homogeneity of results
- Faster reaction rate

Find the article number for the new formulations in the following table:

	FORMER FORMULATION	DESCRIPTION	PACKAGING	NEW FORMULATION
Cells with diaphragm	AQ00220500	Aguagent® Coulometric A, anolyte	500 ml	AQ00180500
	AQ00250100	Aquagent® Coulometric Oil	100 ml	AQ00460100
	AQ00250500		500 ml	AQ00460500
	AQ00230050	Aquagent® Coulometric CG, catholyte	10 x 5 ml	AQ00140050
	AQ00230100		100 ml	AQ00140100
	---	Aquagent® Coulometric AK, anolyte	500 ml	AQ00320500
	---	Aquagent® Coulometric CG-K	10 x 5 ml	AQ00130050
Cells without diaphragm	AQ00240500	Aquagent® Coulometric AG	500 ml	AQ00170500
	AQ00241000		x 1 l	AQ00171000
	---	Aquagent® Coulometric AD, anolyte	500 ml	AQ00390500
Standards	AQ00190040	Aquagent® standard solution 1.0	10 x 4 ml	AQ00190040
	---	Aquagent® standard solution 0.1	10 x 8 ml	AQ00120080

***New formulations**

For more information click here:

PI-AQUEN20