

KF Evaporator



Sample preparation using azeotropic distillation
in Karl-Fischer titration

Azeotrope Distillation

Numerous substances form azeotropic mixtures together. Such mixtures cannot be separated into their individual components by distillation, as the liquid and vapor phases have the same composition.

This property of an azeotrope can be utilized with the KF evaporator to separate the water contained in a sample from the matrix and to «pull it out» of the mixture.

Mixing water and toluene forms an azeotrope. The boiling point of this mixture (84 °C) is significantly lower than the boiling point of the two components (water: 100 °C, toluene: 110 °C). The composition of the vapor phase is 20% water and 80% toluene.

Principle of the KF Evaporator

Toluene (or another suitable solvent, such as xylene) is introduced into the KF Evaporator's spacious evaporator chamber. The pure toluene is then heated and a dry stream of carrier gas is passed through the solvent into a KF titration cell. Following conditioning of the titration cell, the sample can be injected into the evaporation chamber. The water in the sample and the toluene form an azeotrope. The water-toluene mixture is transferred with the carrier gas into the titration cell where the water content is determined by Karl Fischer titration.



851 Titrande with KF Evaporator and Touch Control. The perfect instrumentation for water determination in liquid samples that can neither be analyzed directly nor by the oven method.

Applications

The KF Evaporator is used for sample preparation in Karl Fischer titration. If you wish to determine the water content of liquid samples, but these are neither suitable for the direct nor for the oven method, the KF Evaporator could be the solution. Typical samples are crude oil, tar, turpentine, resins or also terpenes.

As only the water in the sample reaches the titration cell, both secondary reactions with the Karl Fischer reagents, as well as contamination of the cell and electrode(s), are avoided.



The oven is raised with a finger and the sample heated. Secondary reactions hardly occur, as the sample itself does not reach the titration cell.



Technical Data

Dimensions (WxHxD)	220x265x340 mm
Weight	7 kg
Temperature range	up to 200 °C
Carrier gas	dry nitrogen or air
Gas flow	max. 8 bar
Gas flow range	30 – 300 mL
Sample size	max. 10 mL

Ordering Information

2.136.0200 KF Evaporator

Spare parts

6.9015.000 Evaporator chamber

6.9015.010 Septum, 10 pcs.

6.9015.020 Gas inlet hose

Optional accessories

2.756.0110 756 KF Coulometer

2.831.0110 831 KF Coulometer

2.728.0010 Magnetic stirrer, for 756/831

2.851.0120 851 Titrande, with 840 Touch Control

2.852.0160 852 Titrande, with 840 Touch Control

2.801.0010 Magnetic stirrer, for 851/852

2.803.0010 803 Ti stand

All titrators include a generator electrode without diaphragm

www.metrohm.com