Determination of water in vegetable oil using Titrator TitroLine® 7500 KF trace

Use

The application describes the procedure of the coulometric water determination in vegetable oil products such as olive-, sunflower or similar vegetable oil.

Appliances

Titrator:	TitroLine 7500 KF trace M1 - 4

Electrodes

Generating electrode:	with diaphragm (TZ 1753) or without diaphragm (TZ 1752)

Reagents

Use with diaphragm (TZ 1753):

Anolyt:	Recommended from Sigma Aldrich: 80 ml HYDRANAL-Coulomat AG-H + 20 ml Chloroform. Merck: CombibiCoulomat frit + additional solvent
Catholyt	Hydranal Coulomat CG for Hydranal reagents; CombiCoulomat frit for Merck
Additional solvent	The addition of up to 20 % to the anolyt of a long chain alcohol such as decanol or octanol or chloroform is recommended for Merck combicoulomat.

Use without diaphragm (TZ 1752):

Reagent:	Recommended is from Sigma Aldrich: Hydranal Coulomat AG-H, from Merck CombiCoulomat fritless
Additional solvent	The addition of up to 20 % to the reagent of chloroform or a long chain alcohol such as decanol or octanol is recommended.
Standard	Standards are available from Merck and Sigma Aldrich. Recommended are the standards with concentration of 0.1 %.

Description

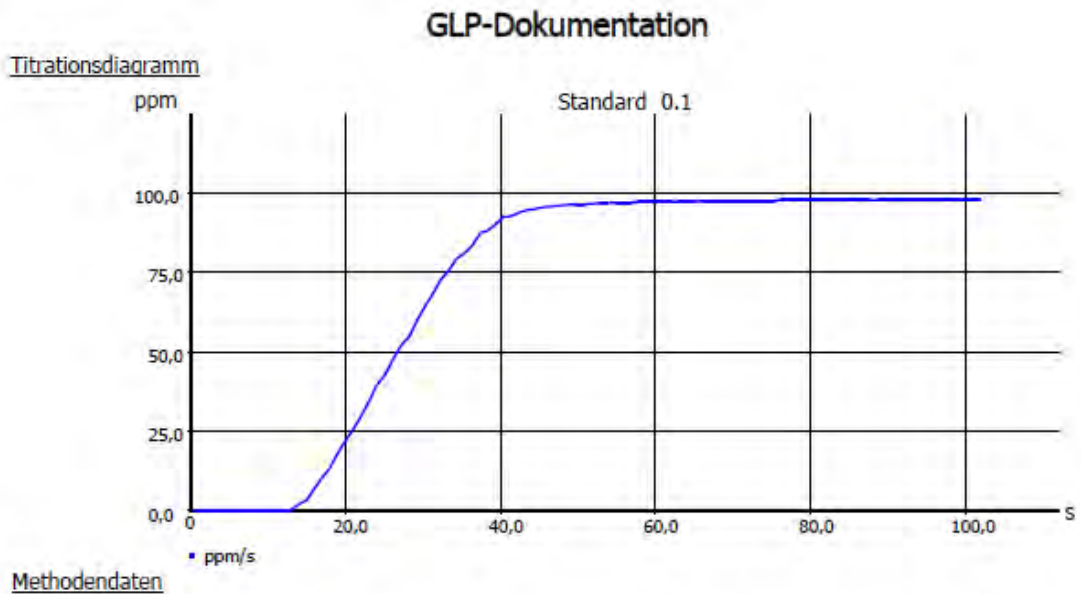
Set up the unit and fill the reagents as described in the operating manual. Switch on the instrument and wait until the drift is < 10 µg/min and stable. For M3 and M4 (generator electrode with diaphragm) it takes sometimes several hours to get a low drift value.

Standard and sample Titration

Before you start the sample titration the first time it is recommended to run some tests with a water standard. Standards with certificat in ampoules are recommended instead of pure water.

Standard:

- Open the ampoule
- Use a suitable plastic or glass syringe. Depended on the standard use a needle with a diameter between 0.8 mm and 1.2 mm and a length of minimum 70 mm.
- First rinse the syringe 1-2 times with 1 ml each of the standard then draw up slowly the entire ampoule content in the syringe without air-bubbles.
- Place a 100 ml glass beaker (tall form) on a balance, put the syringe inside and weigh it.
- Press tara
- Press the start button on the TL 7500 KF trace
- Inject about 0,75 – 1,5 ml of the standard into the titration vessel
- Place the syringe inside the glass baker on the balance and read the exact weight from the display/or press the print button for automatic transfer.
- Enter sample ID and sample weight. The titration starts automatically.
- Repeat the determination 2 -3 times.



Methodendaten

Methodenname:	Water in ppm	Titrationsdauer:	1 m 42 s
Enddatum:	21.03.13	Endzeit:	11:24:16

Titrationsdaten

Proben ID:	Standard 0.1	Einwaage:	3.51320 g
Startdrift:	2.8 µg/min	Enddrift:	4.5 µg/min
Wasser:	343.899 µg		
Result:	97.9 ppm		
Mittelwert:	98.1 ppm	rel. STABW:	0.9 %

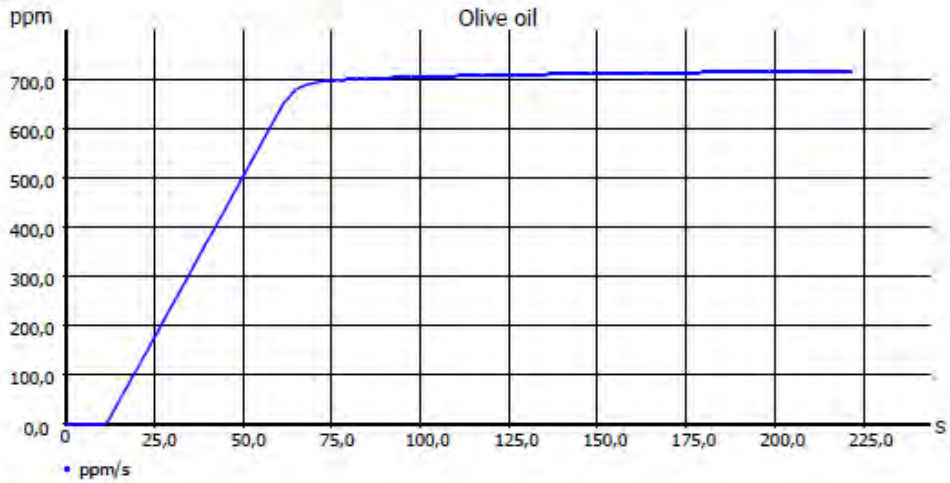
Sample:

- Open the sample container
- Use a suitable plastic or glass syringe. Depended on the sample use a needle with a diameter between 0.9 mm and 1.5 mm.
- First rinse the syringe 1-2 times with the sample and then then draw up slowly the sample in the syringe without air-bubbles.
- Place a 100 ml glass beaker (tall form) on a balance, put the syringe inside and weigh it.
- Press tara
- Press the start button on the TL 7500 KF trace
- Inject about 1 – 2 ml of the sample into the titration vessel
- Place the syringe inside the glass baker on the balance and read the exact weight from the display/or press the print button for automatic transfer.
- Enter sample ID and sample weight. The titration starts automatically.

Note:
If the sample is not homogenous it has to be homogenised before.

GLP documentation

Titration graph



Method data

Method name:	Olive oil	Titration duration:	3 m 42 s
End date:	16.05.13	End time:	10:32:59

Titration data

Sample ID:	Olive oil	Weight:	0.68190 g
Start drift:	64.7 µg/min	End drift:	7.0 µg/min
Water:	488.529 µg		
Water:	716.4 ppm		

Calculation formula

Water:	µg*M*F1/(F2*W)	Mol (M):	1.00000
Factor 1 (F1):	1.0000	Factor 2 (F2):	1.0000
Weight (W):	0.68190 g (m)	Statistics:	Off

Method

Method data overall view

Method name:	Olive oil	Created at:	05/16/13 9:59:24
Method type:	Automatic titration	Last modification:	05/16/13 9:59:24
		Documentation:	GLP

Start drift:	10.0 µg/min
Stop drift (delta):	2.0 µg/min
Stop drift tolerance:	0.02 ug/min²
Stop delay time:	5 s

Min. titration time:	60 s
Max. titration time:	600 s

Working point:	300 mV
Control factor:	4

Hints

If you have any questions concerning the application, you are welcome to contact us.

Literature

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