Determination of Peroxide value

Use

The peroxide number gives the initial evidence of rancidity in unsaturated fats and oils. Other methods are available but peroxide value is the most widely used. It gives a measure of the extent to which an oil sample has undergone primary oxidation.

Appliances

- Titrator: TL 6000/7000 (TL 6000/7000 M1/10) consists of
- Basic device
- Magnetic stirrer TM 235
- 10 mL exchange unit WA 10, with brown glass bottle for titrant complete

Electrodes

- Electrode: Pt 62 or Pt 61, or Pt 62 RG with cable L 1 A

Reagents

- Titration agent: Sodium thiosulphate solution $(Na_2S_2O_3)$ 0.01 or 0.001 mol/L
- Solvent: Acetic acid/chloroform or acetic acid/decanol (3/2)
- Other reagents: Potassium iodine solution sat.

Description

Preparation of Sodium thiosulfate solution 0.01 or 0.001 mol/L

The 0.01 or 0.001 mol/L titrant are prepared freshly from a 0.1 mol/L titrant solution. The solution should be stored in a dark place.

Preparation of the solvent mixture

For 1 L solvent mixture add 600 mL acetic acid to 400 mL chloroform or decanol (hexanole is also suitable)

Preparation of the potassium iodine solution

The solution should be freshly prepared before using. Mix 1.0 g potassium iodine and 1.3 g distilled water.

Titration

Weigh 1 g or more of the sample (exactly on 0,0001 g) in an Erlenmeyer volumetric flask. Add 30 mL of the solvent mixture to dissolve the sample. Add 0,5 mL of the potassium iodine solution, close the Erlenmeyer flask with a stopper and stir well for 60 sec. Add 30 mL of distilled water, place the electrode and titration tip in the sample and start the method (stir very well). Carry out a blank titration without the sample in the same matter before. The result of PV is calculated in milliequivalents O_2 per kg sample.

Electrode handling

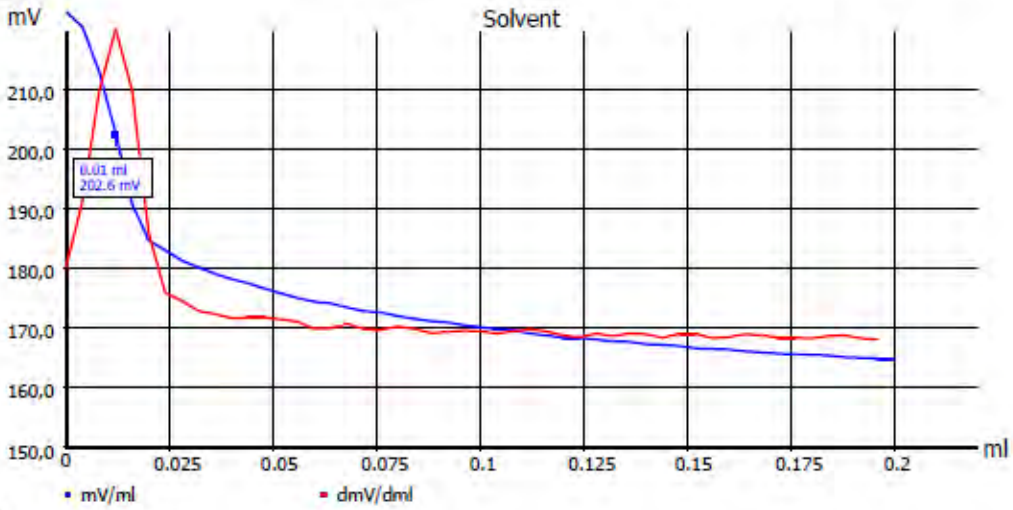
If not in use, the electrolyte should be stored in the electrolyte solution. For further details, please refer to the electrode's operating instructions.

Methods

Blank value (page 1):

GLP documentation

Titration graph



Method data

Method name:	POV Blank	Titration duration:	4 m 20 s
End date:	03.05.13	End time:	16:52:27

Titration data

Sample ID:	Solvent	Weight:	1.00000 g
Start mV:	223.0 mV	End mV:	164.9 mV
EQ:	0.012 ml / 202.6 mV	Blank:	0.012 ml

Calculation formula

Blank:	EQ1 -> M01		
Statistics:	Off	Statistics:	Off

Blank value (page 2):

Method data overall view

Method name:	POV Blank	Created at:	04/30/13 16:06:44
Method type:	Automatic titration	Last modification:	05/03/13 15:43:45
Measured value:	mV	Damping settings:	None
Titration mode:	Linear	Documentation:	GLP
Linear steps:	0.004 ml		

Measuring speed / drift:	User-defined:	minimum holding time:	04 s
		maximum holding time:	15 s
		Measuring time:	03 s
		Drift:	10 mV/min
Initial waiting time:	5 s		
Titration direction:	Decrease		
Pretitration:	Off		
End value:	Off		
EQ:	Off		

Dosing parameter

Dosing speed:	100.00 %	Filling speed:	30 s
Maximum dosing volume:	0.20 ml		

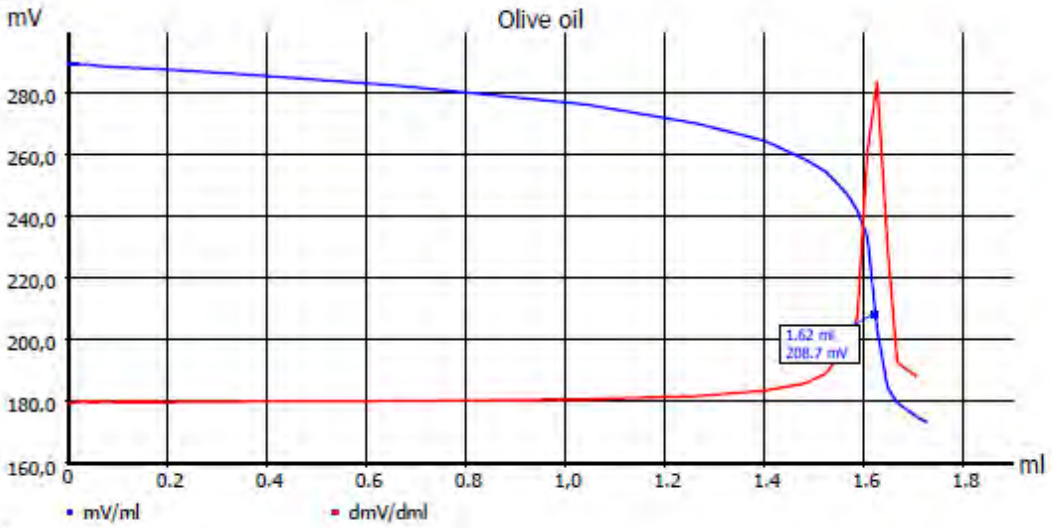
Unit values

Unit size:	10ml
Unit ID:	10035516
Reagent:	Na2S2O3
Batch ID:	no entry
Concentration [mol/l]:	0.01000
Determined at:	04/09/13 19:04:39
Expire date:	--
Opened/compounded:	--
Test according ISO 8655:	--
Last modification:	04/09/13 12:04:42

sample titration (page 1):

GLP documentation

Titration graph



Method data

Method name:	POV	Titration duration:	1 m 59 s
End date:	03.05.13	End time:	16:55:47

Titration data

Sample ID:	Olive oil	Weight:	1.00940 g
Start mV:	289.3 mV	End mV:	173.2 mV
EQ:	1.624 ml / 208.7 mV	POV:	15.97

Calculation formula

POV:	(EQ1-B)*T*M*F1/(W*F2)	Mol (M):	1000.00000
Blank value (B):	0.0120 ml (M01)	Titre (T):	0.01000000 (a)
Factor 1 (F1):	1.0000	Weight (W):	1.00940 g (m)
Factor 2 (F2):	1.0000	Statistics:	Off

sample titration (page 2):

Method data overall view

Method name:	POV	Created at:	04/30/13 16:11:15
Method type:	Automatic titration	Last modification:	05/03/13 15:14:08
Measured value:	mV	Damping settings:	None
Titration mode:	Dynamic	Documentation:	GLP
Dynamic:	Average		
Measuring speed / drift:	User-defined:	minimum holding time:	03 s
		maximum holding time:	15 s
		Measuring time:	03 s
		Drift:	10 mV/min
Initial waiting time:	0 s		
Titration direction:	Decrease		
Pretitration:	Off		
End value:	Off		
EQ:	On (1)		
Slope value:	Flat	Value:	120

Dosing parameter

Dosing speed:	100.00 %	Filling speed:	30 s
Maximum dosing volume:	5.00 ml		

Unit values

Unit size:	10ml
Unit ID:	10035516
Reagent:	Na2S2O3
Batch ID:	no entry
Concentration [mol/l]:	0.01000
Determined at:	04/09/13 19:04:39
Expire date:	--
Opened/compounded:	--
Test according ISO 8655:	--
Last modification:	04/09/13 12:04:42

Hints

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

Literature

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