Determination of chloride/sodium chloride (salt) in food samples

Application

Use

Potentiometric determination of chloride/sodium chloride (“salt”) in food samples such as salt, spice mixtures, cheese, meat or tomato sauce.

Appliances

Titrator:	TitroLine 6000/7000/7750
Burette:	WA 20 (or WA 10, WA 50)
Stirrer:	TM 235

Electrodes

Electrode:	AgCl 62 (with cable L 1 A) or AgCl 62 RG
Electrolyte:	KCl 3 mol/L (not for AgCl 62 RG)

Reagents

Solvent:	distilled water
Titration agent:	silver nitrate solution $(AgNO_3)$ 0.1 mol/L
Standard:	NaCl titrimetric standard HNO_3 1 mol/l

Description

Preparation of the silver nitrate solution

Please use for the 0.1 molar solution a ready prepared commercial solution.

Application

Connect the Ag type electrode with the electrode cable at the electrode plug of the TitroLine® 6000/7000/7750. Open the refilling hole of the electrode (only AgCl 62).

Standard titration

For a standard titration weigh in 70- 90 mg of the NaCl standard in a 150 ml beaker, add appr. 80 ml dist. water and 1 ml HNO_3 1 mol/l. Place the electrode and burette tip in the sample and start the method. The titration should stops at the equivalence point.

((W*F2)/((EQ1-B)*M*F1)

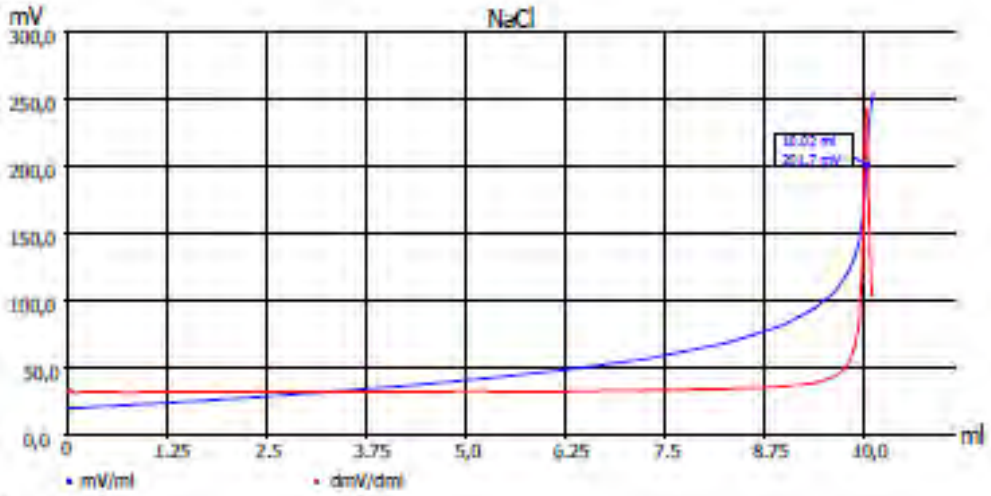
W = weight of the NaCl standard in g
F1 = 1
F2 = 1000 Conversion factor of mg to g
B = 0 Blank value

The result is the calculated as mol/l and can be automatically transferred into the interchangeable unit WA20:

Titre: (W*F2)/((EQ1-B)*M*F1) -> WA

GLP documentation

Titration graph



Method data

Method name:	Titre AgNO3	Titration duration:	3 m 4 s
End date:	11.01.13	End time:	18:27:02

Titration data

		Weight:	0.58660 g
Start mV:	19.7 mV	End mV:	255.4 mV
EQ:	10.024 ml / 201.7 mV	Titre:	0.1001 mol/l

Date: : Calculation formula

Titre:	(W*F2)/((EQ1-B)*M*F1) -> WA	Mol (M):	58.44000

Sample

chemical equation: $Ag^+ + Cl^- \rightarrow AgCl \downarrow$

calculation: **(EQ1-B)*T*M*F1/(W*F2)**

EQ1:	ml consumption at the equivalence point
B =0	Blank value
T =	exact concentration of the titrant in mol/l (c * factor)
M =	molecular/equivalent weight of NaCl or Cl
F1 = 0.1	conversion factor for % (*100/1000)
W =	weight of the sample in gram
F 2 = 1	

Weigh about 0.05- 10 g (please refer to the table) in a 150 ml glass beaker, dilute the sample with dist. water up to 80 – 100 ml and add 1 ml of HNO_3 1 mol/l. Place the electrode and burette tip in the sample and press the “START” key. The titration stops at the equivalence point. The result can be read from the display or is printed on the connected printer.

Cheese samples, butter or other solid food products:

Weigh the sample in a 150 or better 250 glass beaker and add 100 ml hot water (55 °C). For butter boling water is recommended. It is also recommended to use a homogenisator for the better extraction of the NaCl from the sample. Add 1 ml HNO_3. The warm/hot sample can be titrated directly.

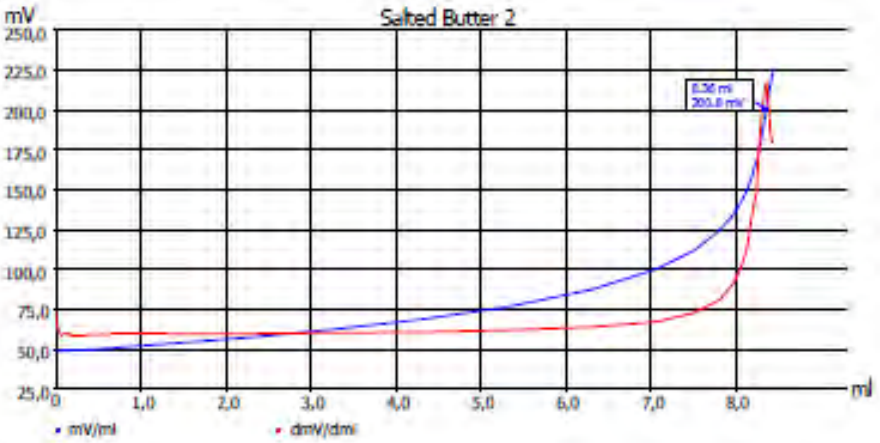
Sample amount using a 0.1 m AgNO3:

Salt content	appr. sample weight
< 0.1 %	> 10 g
0.1 – 1 %	1 – 10 g
1 – 10 %	0.1 – 2 g
10 - 50 %	0.05 - 0.1 g
50 – 100 %	0.05 g

Result example :

GLP documentation

Titration graph



Method data

Method name:	Salt in %	Titration duration:	2 m 10 s
End date:	07.03.13	End time:	16:46:19

Titration data

Sample ID:	Salted Butter 2	Weight:	2.93600 g
Start mV:	49.7 mV	End mV:	225.9 mV
EQ:	8.361 ml / 200.8 mV	Salt:	1.66 %

Calculation formula

Salt:	(EQ1-B)*T*M*F1/(W*F2)	Mol (M):	58.44300
Blank value (B):	0.0000 ml	Titre (T):	0.10000000 (a)
Factor 1 (F1):	0.1000	Weight (W):	2.93600 g (m)
Factor 2 (F2):	1.0000	Statistics:	Off

Method

Method data overall view

Method name:	Salt in %	Created at:	03/07/13 16:30:12
Method type:	Automatic titration	Last modification:	03/07/13 16:40:54
Measured value:	mV		
Titration mode:	Dynamic	Documentation:	GLP
Dynamic:	Steep		
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:	Increase		
Pretitration:	Off		
End value:	Off		
EQ:	On		
Slope value:	User-defined	Value:	200

Dosing parameter

Dosing speed:	100.00 %	Filling speed:	30 s
Maximum dosing volume:	50.00 ml		

Unit values

Unit size:	20ml
Unit ID:	1296649042
Reagent:	AgNO3 0.1 mol/L
Batch ID:	Any Comment
Concentration [mol/l]:	0.10000
Determined at:	01/18/13 23:13:00
Expire date:	12/31/12
Opened/compounded:	08/19/11
Test according ISO 8655:	01/01/00
Last modification:	02/15/13 9:54:17

Hints

If you have any questions on the application, you can feel free to contact us..

Literature

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