

AQUACOUNTER Application Sheet	COM series	DATA No. L8	1st edition
Petroleum Products		Quantification of chlorides in freezer oils	

1. Measurement outline

The usual method for quantifying chlorides in freezer oils requires a potentiometric titration method with silver nitrate. No method for quantifying chlorides in freezer oils has been stipulated in official standards.

This section introduces an example in which the sample was dissolved in a solvent mixture of toluene and 2-propanol for potentiometric titration with silver nitrate titrant.

Approximately 20g of sample is weighed precisely, and is dissolved in 100mL solvent mixture. Approximately 2mL (1+1) nitric acid is added and then electrodes are immersed for potentiometric titration with 0.01mol/L silver nitrate titrant.



2. Reagents and Electrodes

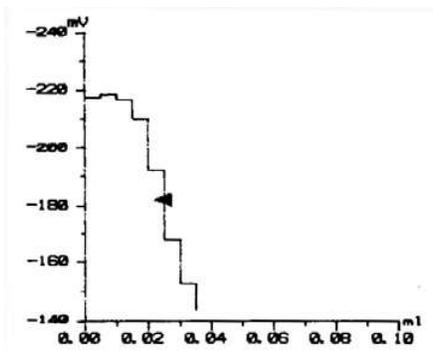
(1) Reagents	Titration solvent	0.01mol/L silver nitrate titrant
	Titration solvent	1 : 1 = toluene : 2-propanol
	Loading buffer	(1+1) nitric acid
(2) Electrodes	Indicator electrode	Silver indicator electrode AG-311 to IE-1 jack (P/N E231245-A)
	Reference electrode	Silver reference electrode MS-231 to RE-1 jack (P/N D231243-A)
	Note) Silver reference combination electrode AGR-801 (P/N D231269-A) can also be used instead of using AG-311 and MS-231. Reference electrode RE-201 (standard accessory) cannot be used.	

3. Measurement conditions example (for COM-1600S)

Master File 1 Condition 1 (for BLANK)				Master File 2 Condition 2 (for Cl determination)			
Method	Auto			Method	Auto		
Buret No.	1	Mode No.	13	BURET No.	1	Mode No.	9
Meas Unit	mV	Pre Int	0 sec	Meas Unit	mV	Pre Int	0 sec
S-Timer	0 sec	Del K	0	S-Timer	10 sec	Del K	2
CP mL	0 mL	Del Sens	0 mV	CP mL	0 mL	Del Sens	0 mV
Direction	N/A	Int Time	5 sec	Direction	N/A	Int Time	5 sec
DP mL	0 mL	Int Sens	3 mV	DP mL	0 mL	Int Sens	3 mV
End Sens	1000	Brt Speed	2	End Sens	99999	Brt Speed	2
Over mL	0 mL	Pulse	4	Over mL	0 mL	Pulse	40
Max volume	20 mL			Max Volume	1 mL		
Unit	mL			Unit	ppm		
Size	0 g			Size	-- g		
Blank	0 mL			Blank	BLANK result value		
Factor	Titre of the titrant			Factor	Titre of the titrant		
Molarity	0.01 mol/L			Molarity	0.01 mol/L		
K	0			K	35.45 (as Cl)		
L	0			L	0		
Formula	D			Formula	(D-B)*K*F*M*1000/S		
					to be set automatically.		

4. Measurement example

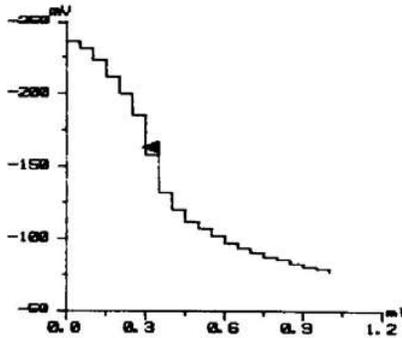
(1) Blank measurement



Blank measurement results

Sample No.	Titration value (mL)	Average value (mL)
1	0.024	0.026
2	0.027	

(2) Sample measurement



Measurement results on chlorides in freezer oil

Sample No.	Sample volume (g)	Titration value (mL)	Concentration (ppm)
1	20.046	0.292	4.76
2	20.009	0.291	4.75
Avg.			4.76 ppm

5. Outline

About the blank for solvent mixture

Since this measurement is quantification of trace chlorides, it is always necessary that the blank measurement for solvent mixture be taken. Caution is required that the blank value may be abnormally large depending on the solvent purity.

Key words

Freezer oil, quantification of chlorides, precipitation titration

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