Sheet No.
GT200-ME020E Oil

Determination of hydrogen peroxide in oxydol (hydrogen peroxide solution)

Method : Oxidation-reduction titration
Apparatus : Automatic Titrator model GT-200(GT0EF)
Electrodes:Reference electrode, double junction (GTRE10B)
Inner solution: 1mol/l Potassium chloride
Outer solution: 1mol/l Potassium nitrate
Platinum electrode (GTPT1B)
Titration mode : INF, Detection: pH / mV
Related standard : Japanese Pharmacopoeia Oxydol/Quantitative method

*This application sheet is provided as reference, and does not assure the measurement results. Please consider analysis environment, external factors and sample nature for optimal conditions before the measurement.

Outline

Hydrogen peroxide is used for products such as bleaching agents and disinfectants. 2.5-3.5% w/v-hydrogen peroxide (containing stabilizer) has been specified by the Japanese Pharmacopoeia as oxydol. Hydrogen peroxide in oxydol is measured by oxidation-reduction titration using a platinum detection electrode.

Reagents

[Titration solution] .
■0.02mol/L-potassium permanganate in water (Volumetric analysis grade)
■Dilute sulfuric acid … Add 5.7ml sulfuric acid into pure water while agitating to 100ml total.

Analytical Procedure

(1) Collect 1ml sample using a whole pipette and add it into a 100ml beaker.
(2) Add 40ml pure water.
(3) Add 10ml dilute sulfuric acid.
(4) Titrate with 0.02mol/L-potassium permanganate solution.

[Calculation]
Hydrogen peroxide (% w / v) = (A1 - BL) x M x E x f x FW/S x R/10
(Use fixed calculation formula)

A1 : Titration volume of 0.02mol/L-potassium permanganate solution until an inflection point (ml)
BL : 0
M : Molar number 0.02mol/L-potassium permanganate solution
E : Valence of 0.02mol/L-potassium permanganate solution (5)
f : Factor of 0.02mol/L-potassium permanganate solution
FW : Equivalent number of hydrogen peroxide (17.01)
R : Dilution ratio (1)

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Other Requirements

■Polish the surface of the platinum detection electrode very lightly using cleanser or the like.
■Make sure to confirm labels and safety data sheets of reagents and gases used for the measurement and handle them with enough care.
■Wear protective equipment (eye protector, gloves and others) when handling reagents.

Measurement Results

	Sample size (ml)	Titration volume (ml)	Results (W/V%)
1	1	17.6786	3.0
2		17.7140	3.0
3		17.6752	3.0

Nos. of data	(n)	3
Average		3.0
Standard deviation	(SD)	0.0037
Relative standard deviation	(RSD%)	0.1215

Hydrogen peroxide in oxydol was measured using GT-200. The value measured by GT-200 was 3.0% w/v and the relative standard deviation (RSD %) was 0.12%. GT-200 can measure hydrogen peroxide with good repeatability.

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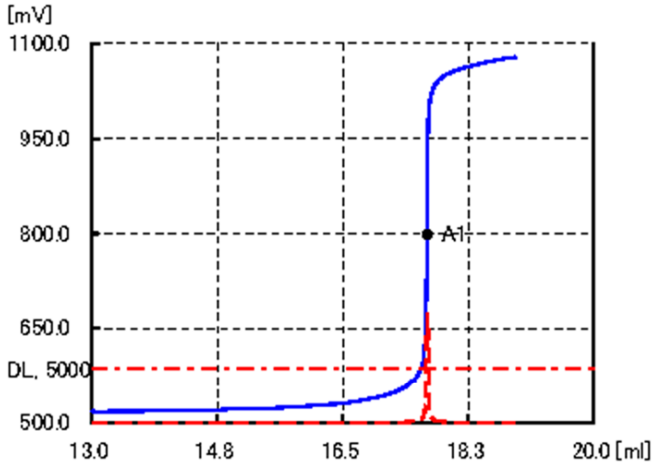
ID No. : 5 GT No.1 User : GT-200

Measurement : 2013/10/23 11:27
Sample name : Oxydol
Type : Sample Titr
Sample size (S) : 1 [ml]



C1 : 3.006 [%]

A1 : 17.6752 [ml] 798 [mV]

Initial potential (Pi)	: 508	[mV]			
Start	: 13	[ml]	518	[mV]	
End	: 18.906	[ml]	1079	[mV]	Time : 5’38”

Run file No. : 12 Hydrogen peroxide in Oxydol
Titration file No. : 35 Hydrogen peroxide
*Run file and Titration file parameters are set for each analysis item

Mode	: INF		End1, End1 Width : 800 [mV] ± 500 [mV]		
Detect	: mV1				
BRT No.	: 1		Preset1	Mode : V	BRT : 1
Reagent	: 25		Injection volume (Vol)	: 13 [ml]	Wait : 10 [sec]
WTint	: 10	[sec]	Position (Pos)	: Titration	
Vup	: 200	[µl]			
Vlow	: 10	[µl]			
dE	: 5	[mV]			
dT	: 3	[sec]			
DL	: 5000	[mV/ml]			
DetCnt	: 20				
Vmax	: 20	[ml]	C1 : (A1-BL)*M*E*f*FW/S*R/10		
Vover	: 0.5	[ml]			[%]

Reagent name(Reag) : 0.02M-KMnO4 Equivalent(E) : 5 Molarity (M) : 0.02 [Mol/l]
Factor (f) : 1
Formula weight (FW) : 17.005 Dilution factor (R) : 1

Buret Injection Speed : 500 [ul/sec]