

Application Memo

Moisture of Alcohols

Industry	:	Organic Chemical
Instrument	:	Karl Fischer Moisture Titrator
Measurement method	:	Volumetric Titration (Direct Method)
Standards	:	JIS K 0113, ASTM E 203, ISO 760

1. Overview

Moisture titration using Karl Fischer reagent is popularly practiced water determination worldwide as the most reliable method. The procedure is adopted in many official standards as test method specified in ISO, ASTM, DIN, BS and JIS.

Here in this application, water content of alcohols is determined by volumetric titration according to JIS K 0113-2005 as quoted below.

Generally the alcohols are easy to dissolve in water, for which we use KEMAQUA MET solvent as extracting medium. The samples we have tested are as follows:

Methanol/ Ethanol/ n-Butanol/ Isobutanol/ Secondary butanol/ Tertiary butanol/
1-propanol/ 2-propanol/ n-amyl alcohol/ Isoamyl alcohol/ Tertiary amyl alcohol/
Propargylic alcohol/ Benzyl alcohol/ n-hexyl alcohol/ Ethylene glycol/Propylene glycol/Glycerin, etc.

2. Apparatus

Main unit	:	Karl Fischer moisture titration volumetric system
Electrode	:	Twin platinum electrode for KF titration

3. Reagents

Titrant	:	KEMAQUA TR-3 and 5 (Kyoto Electronics)
Solvent	:	Extracting medium MET (for general purpose) (Kyoto Electronics)

4. Example

—Measurement results—

Sample name	Water content	
	(mg)	(%)
Methanol	1.35	0.017
Ethanol	8.72	0.221
n-Butanol	0.81	0.009
Isobutanol	1.69	0.021
Secondary Butanol	6.63	0.082
Tertiary Butanol	3.19	0.041
1-Propanol	3.70	0.046
2-Propanol	1.73	0.022
n-Amyl Alcohol	1.14	0.014

Sample name	Water content	
	(mg)	(%)
Isoamyl Alcohol	4.06	0.050
Tertiary Amyl Alcohol	6.71	0.083
Propargylic Alcohol	50.45	0.532
Benzyl Alcohol	4.88	0.047
n-Hexyl Alcohol	1.63	0.020
Ethylene Glycol	3.31	0.033
Propylene Glycol	3.32	0.032
Glycerin	2.90	0.554

Please feel free to contact us for any further information.

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