

Application Memo

Water Content of Ester

Industry	:	Organic Chemical
Instrument	:	Karl Fischer Moisture Titrator
Measurement method	:	Volumetric Titration (Direct Method)
Standards	:	JIS 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 as in ISO, ASTM and JIS, etc.

Here in this application note, we measure water content of esters by direct method of KF titration according to JIS K 0113-2005 as quoted below. The esters in general are easy to dissolve in commercially sold extracting medium MET.

The test samples we measured according to the above method are as follows:

Amyl n-acetate/Isoamyl acetate/Acetic ether/Amyl n-propyl/
Isobutyl acetate/Methyl acetate/Acetic ethylene glycol monoethyl ether/
Triethyl orthoformate/formic isoamyl/Ethyl formate/Methyl formate/
Ethyl propionate/Methyl propionate/Methyl benzoate/Ethyl benzoate/
Diethyl oxate/Methyl salicylate/D-n-butyl phthalate/Triethyl phosphate.

2. Apparatus

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

3. Reagents

Titrant	:	KEMAQUA TR-3 and TR-5
Solvent	:	KEMAQUA MET (for general purpose)

4. Example

— Measurement results —

Sample name	Water content	
	mg	%
Amyl n-acetate	3.68	0.04
Isoamyl acetate	1.45	0.02
Acetic ether	0.97	0.01
Amyl n-propyl	1.86	0.02
Isobutyl acetate	2.01	0.02
Methyl acetate	5.89	0.13
Triethyl orthoformate	0.80	0.01
Formic isoamyl	3.61	0.04
Ethyl formate	6.41	0.35
Acetic ethylene glycol monoethyl ether	1.87	0.02

Sample name	Water content	
	mg	%
Ethyl propionate	1.07	0.01
Methyl propionate	6.58	0.07
Ethyl benzoate	4.51	0.04
Methyl benzoate	3.28	0.03
Diethyl oxalate	2.93	0.03
Methyl salicylate	13.22	0.11
D-n-butyl phthalate	1.01	0.01
Triethyl phosphate	17.28	0.16
Methyl formate	12.67	0.64

Please feel free to contact us for any further information.
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