

Application Memo

Water Determination in Acids (2) [Liquid acids]

Industry	:	Inorganic Chemical
Instrument	:	Karl Fischer Moisture Titrator
Measurement method	:	Volumetric titration /Direct method
Standards	:	JIS K 0113, ASTM E 203, ISO 760

1. Overview

The moisture in liquid acids can be determined by the Karl Fischer titration method (Volumetric) in accordance with “JIS K 0113 (’92)—General rules for methods of potentiometric, amperometric, coulometric, and Karl-Fischer titrators.”

Almost all the liquid acids can be dissolved in the solvent of a 1:1 mixture of Methanol and 2-propanol or the Dehydrating solvent MI and measured for water content. The Karl Fischer reaction proceeds under the normal condition of the pH range of 5 to 7. When a sample is delivered, the pH of the titrant may decrease, and accordingly titration rate will slow down. If such is the case, add a base or buffer to the solvent in advance.

And some of measured samples in this application note are as follows:

Acetic acid/Propionic acid/Sulfuric acid/Methasulfonic acid etc.

2. Apparatus

Main unit : Karl Fischer moisture titration volumetric system

3. Reagents

Titrant : Composite 2 (made by RdH)
Solvent : Dehydrating solvent MI (made by Hayashi)
Hydranal buffer (made by RdH)

4. Example

—Measurement results—

Sample	Sample size (g)	Dehydrating solvent	Water content	
			(mg)	(%)
Acetic acid	8.264	Dehydrating solvent MI + Hydranal buffer	3.05	0.037
Propionic acid	5.006	Dehydrating solvent MI + Hydranal buffer	3.89	0.078
Sulfuric acid	0.2529	Dehydrating solvent MI + Hydranal buffer	4.39	1.74
Methasulfonic acid	3.092	Dehydrating solvent MI + Hydranal buffer	10.29	0.33

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